

The African Observatory
of Science, Technology
and Innovation (AOSTI)



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The African Observatory of Science, Technology and Innovation (AOSTI): The Road Thus Far and Future Prospects

**A synopsis of the progress on the implementation of
The 12th Ordinary Session Decision Assembly/AU/Dec.235 (XII) of February 2009
&
The 22nd Ordinary Session Decision Assembly/AU/Dec.452 (XX) of January 2013.**

September 2015

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INTRODUCTION

The value proposition of the African Union (AU) Assembly in creating the African Observatory of Science, Technology and Innovation (AOSTI) was to produce sound evidence to support policy-making within the national and regional structures of the union as far as science, technology and innovation (STI) are concerned. Thus, AOSTI is mandated to lead measurements of STI in Africa, to facilitate review of related policies and to spearhead adherence to common data quality principles & standards which are pertinent to inform socio-economic development of the African continent.

This document provides a snapshot of the progress made thus far in the implementation of two STI major decisions by the AU Assembly as well as other policy directives issued at the relevant ministerial levels. It looks at new perspectives as STI measurements tangle other areas of development.

The collaboration between the Host Country and the African Union Commission constitutes the main building block upon which the observatory is made operational. Over the period under consideration and owing to the complexities of STI, especially its cross-cutting feature, this narrative highlights AOSTI's experience in engaging extended partnership and collaboration for efficient and effective service delivery.

The document is structured along three major sections. The first section provides the genesis of the Observatory with emphasis on the collaboration between the Commission of the African Union and the Host Country, the various activities and investments in human, logistics and financial resources which underpin its operation. The second section takes stock of the work so far undertaken by AOSTI in terms of project and its entrenchment in the STI communities. The third section highlights the work ahead in terms of its operation and programme of work. It concludes by demonstrating the mutual accountability of stakeholders in making AOSTI sustainable.

SECTION 1: OPERATIONALISING AOSTI

1. Founding Premise: the need to establish an observatory of STI in Africa

The need to establish an African Observatory of Science, Technology and Innovation (AOSTI) can be traced back to the Decision Assembly/AU/DEC.235 (XII) of February 2009 which was endorsed by the 12th Ordinary Session of the Assembly of the African Union (*Pictured*). This decision was proposed by the Republic of Equatorial Guinea.

Consistent with the aforementioned decision, the Assembly agreed that the Republic of Equatorial Guinea shall host the Observatory.

Accordingly, the host country went on to pledge a seed fund of US\$3.6 million to support its start-up activities.

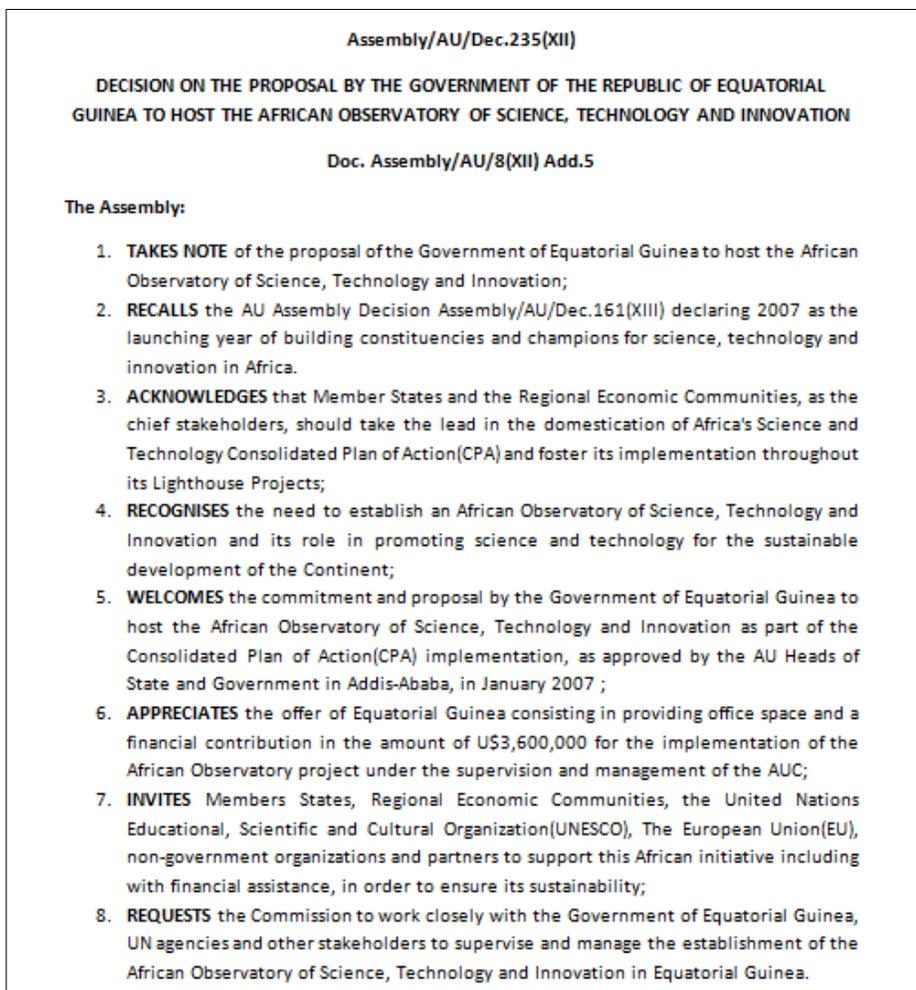
In order to implement the said decision, a consultative meeting was held in Malabo in June (1-5) of 2010.

Participants in the meeting included a delegation from the host country, representatives of the department of Human Resources, Science and Technology

(HRST) of the African Union Commission and delegates from the Science Policy and Capacity-Building Division of United Nations Educational, Scientific and Cultural Organization (UNESCO).

His Excellency Agapito Mba Mokuy¹, - at the time Presidential Advisor on matters related to international organizations and national coordinator of the observatory - led the national

¹ H.E. Agapito Mba Mokuy is now the Minister of Foreign Affairs and Cooperation of the Republic of Equatorial Guinea



delegation. Dr Ahmed Hamdy from the science and technology division at HRST led the AUC delegation, while Dr Shamila led the UNESCO's one.

The consultative meeting discussed the institutional and hosting arrangements, governance and financial implications. The meeting set up a roadmap for the observatory's start-up activities.

A month later, on the 6th of July 2010, a Host Country Agreement relating to the headquarters of AOSTI was signed between the Government of the Republic of Equatorial Guinea and the African Union Commission. On the basis of the Host Country Agreement, in September 2011, the NEPAD CEO and the Commissioner HRST released Dr Philippe K Mawoko, the then Coordinator of the African Science, Technology and Innovation Indicators Initiative (ASTII), to serve as the AOSTI Interim Director.

Subsequent to the above developments, a brainstorming workshop was held in Malabo between 15th and 16th December, 2011. Jointly organized by the NEPAD Secretariat, HRST and the Office of the Presidential Advisor on matters of international organizations and national focal point for the observatory, the brainstorming workshop discussed a work-plan for the AOSTI start-up activities. About 40 international experts attended the workshop.

The brainstorming workshop discussed, among other things, the essence of an Observatory of STI in Africa in the context of the Consolidated Plan of Action (CPA). Participants noted that the ASTII initiative was underway in about twenty countries and the efforts made by African countries in measuring R&D and innovation would serve as a basis for the AOSTI program of work. To that end, the meeting called for the adoption of an approach that would bring about complementary benefits as well as alignment between the ongoing ASTII, as a project, and the yet-to-start Observatory, as an institution.

2. The AOSTI Inter-governmental Meeting: Mapping out the users' Needs

While the hosting arrangements were underway, it was necessary for the various AOSTI stakeholders to better understand the governance structure which would underpin this new technical office, as well as comprehending how the users' needs shall be mapped out in relation to their products and services.

To this end, the HRST Commissioner called for an AOSTI inter-governmental meeting.

The inter-governmental meeting was held in Malabo from the 9th to the 11th of May, 2012. It was jointly organized by AOSTI and the services of the then Presidential Advisor in charge of international organizations and national coordinator of AOSTI. Representatives from African ministries in charge of STI and relevant partners attended the meeting.

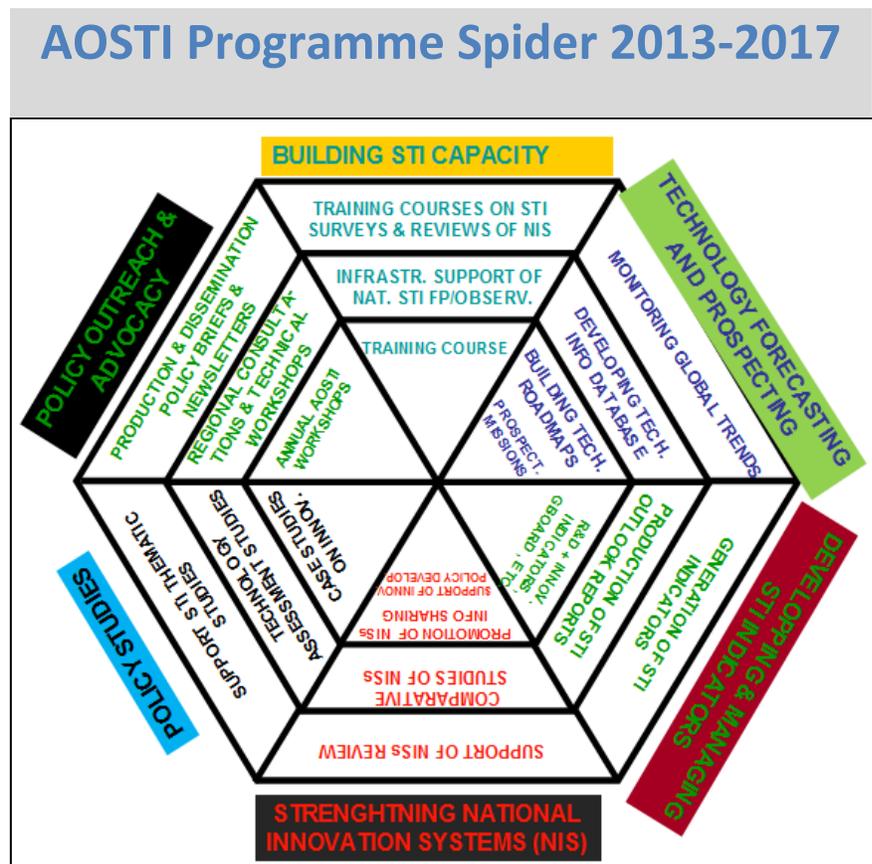
The main outputs of the meeting were as follows:

- A draft statute document; and
- A five year work programme 2013-2017 (*Pictured*).

It is worth mentioning that the vision and mission of AOSTI were formulated by the inter-governmental meeting as follows:

AOSTI Vision: To be a continental repository of STI statistics and a source of policy analysis in support of evidence based policy making in Africa.

AOSTI Mission: To champion evidence-based STI policy-making by backstopping African countries to manage and use statistical information in accordance with the African charter of statistics.



These outputs were endorsed by the AMCOST V meeting which was held in Brazzaville in November, 2012.

It is necessary to note that the current AOSTI programme of work has evolved and has taken into account the new developments offered by STISA-2024, particularly its monitoring and evaluation component.

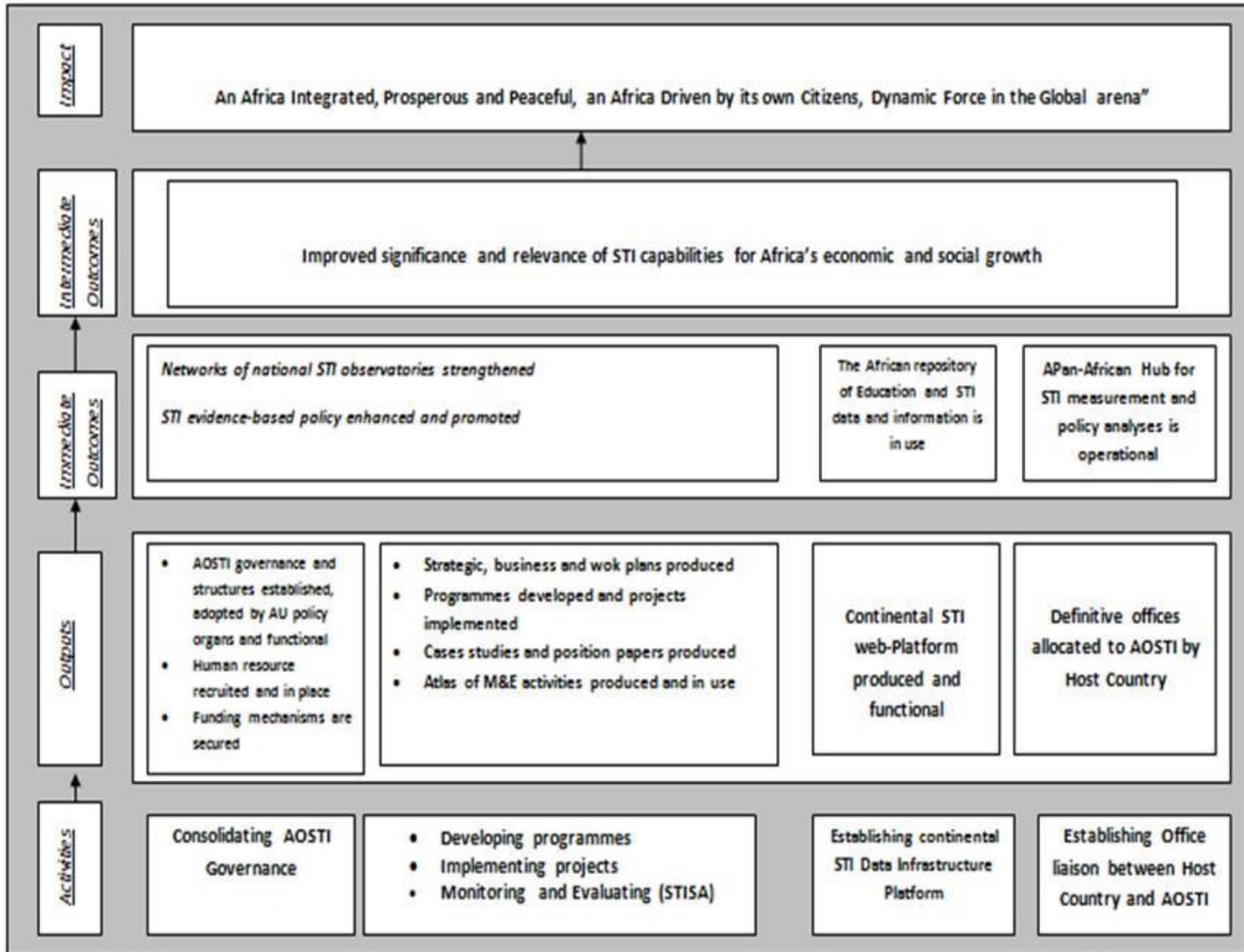
As a follow-up to the recommendations of the Inter-governmental Meeting, the following position papers were produced (See paragraph on AOSTI has impact on the African STI communities). These papers are:

- (i) A Review and assessment of best practices of science, technology and innovation observatories
- (ii) Comprehensive assessment of science, technology and innovation policy capacity needs and preparation of a related programme of work for AOSTI
- (iii) Development of an African framework for reviewing national innovation systems (NIS) and proposals of a related programme of work for AOSTI
- (iv) Assessment of the scientific production of the African Union

3. Internal logical model of the Observatory

The internal logical framework for AOSTI is represented as follows:

INTERNAL LOGICAL MODEL OF THE AFRICAN OBSERVATORY OF SCIENCE, TECHNOLOGY AND INNOVATION (AOSTI)



4. The AOSTI foundation stone

The President of the Republic of Equatorial Guinea, His Excellency Obiang Nguema Mbasogo, while hosting his peers at the AU Summit held at the AU international Conference Centre in Sipopo in June 2011 laid the AOSTI foundation stone (*Pictured*) in the front site of the conference centre.

The ceremony was witnessed by all the African Heads of State and Government and international partners who attended the AU Summit.

At the time of the ceremony, H.E. Obiang was the sitting Chair of the African Union and His Excellency Jean Ping was the Chairperson of the African Union Commission. Both dignitaries made thoughtful speeches, calling on other African countries and partners to support the AOSTI. In his speech, His Excellency President Obiang made references to the African tradition, stating that: “*it takes a whole village to raise a child*”.

The ceremony of the foundation stone upon which the AOSTI building shall be erected. It captured the essence of the Decision Assembly/AU/DEC.235 (XII) of February 2009.

5. AOSTI Premises

The AOSTI Secretariat is temporarily housed in the International Conference Centre in Sipopo, Malabo (Equatorial Guinea). The planning for the construction of a dedicated premise for AOSTI by the host government is underway. To that end, the host country, in cooperation with the AUC, has agreed on an architectural design for the building that will house the AOSTI Secretariat.

On 27 January 2013, at a side event during the AU Summit, the Director of HRST handed over the architectural plans (*Pictured*) for the host country to manage the bidding process for the actual construction of the AOSTI premises.

6. The Creation of the African Observatory of STI

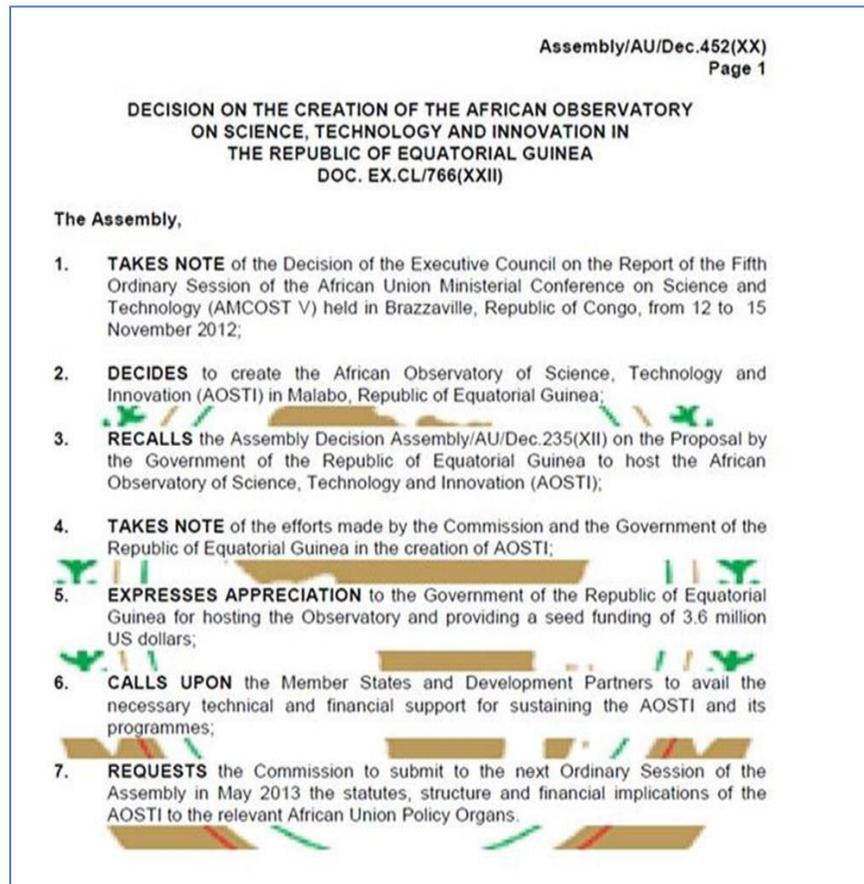
During the year 2013, AOSTI placed in the public domain several publications in line with the recommendations from the intergovernmental meeting. As will be observed in the following pages, these publications included: working papers, policy briefs and publications in international journals. AOSTI was also involved in capacity building programmes at national and regional levels. AOSTI also initiated partnerships and collaborations within Africa and abroad.

These results were presented to the Bureau of AMCOST as well as to AMCOST meetings. This valued addition prompted AMCOST to recommend the actual creation of AOSTI.

The actual creation of AOSTI occurred through the Decision Assembly /AU/Dec.452 (XX) of the 22nd Ordinary Session of the Assembly of the African Union which was held in January, 2013 (*Pictured*).

From this decision, AOSTI consolidated the statute document, the structure and financial implications, which were submitted to HRST and then cleared by the AU Legal Counsel for consideration by relevant policy organs.

The AU Subcommittee on Structure and the Specialized Technical Committee on Justice and Legal Affairs have yet to meet to consider these instruments before their adoption by the AU Assembly.



7. Human Resources

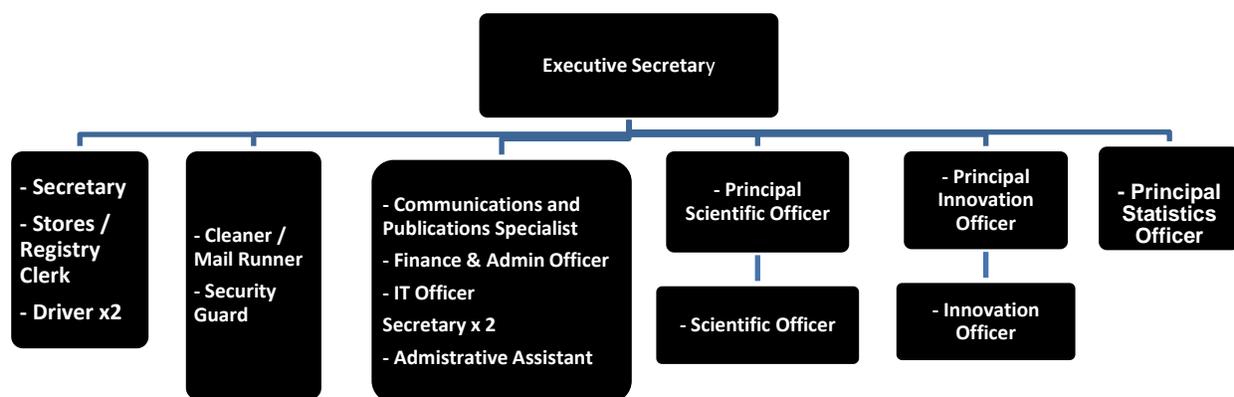
The current staff complement at the AOSTI Secretariat comprises four staff members. This core team has been entrusted with the task of building the governance of AOSTI, as well as starting the AOSTI programme of work as agreed by the inter-government meeting of May, 2012, and which was later strengthened by STISA-24.

The support staff members were shortlisted but have not yet started fulfilling their obligations due to financial constraints. The staff members include a research assistant, an administrative assistant, a driver and a messenger.

The current AOSTI professional staff complements (whose profiles are given in annex) comprises the following:

- Dr. Philippe Kuhutama Mawoko: Interim Director in the office since November 2011;
- Dr. AlmamyKonte: Senior expert in innovation policy in the office since June 2012;
- Dr. Bi Irie Vroh:Senior expert in science and technology policy in the office since June 2012; and
- Mr. Johnstone KimanziKang’otole:Expert in finances and administration in the office since May 2012

On the basis of the findings from the “Review and Assessment of Best Practice of Science, Technology and Innovation Observatories”-AOSTI Position Paper(2013)-, the following structure for AOSTI has been proposed.



Earlier estimation for a nucleus of human capital (17 staff members) to run AOSTI as in this structure shall amount to USD 1.200.000 annually.

8. Liaison with AUC/HRST

AOSTI has been privileged and honored for the working visits undertaken by the Directors and Commissioners of Human Resources Science and Technology Directorate of the African Union Commission. During the period 2012 to 2015 and using the opportunities of their missions to Equatorial Guinea, the following AUC officials visited the AOSTI Office in Sipopo, as follows:

- The Director Mrs Vera Ngosi visited AOSTI during the ceremony of laying the AOSTI foundation stone in June 2011 and she participated in the AOSTI intergovernmental meeting which was held in May, 2012.
- The Director Dr Abdul-Hakim Rajab Elwaer used the opportunities of the two AU Summit meetings held in Malabo to discuss the AOSTI programme of work.

- His Excellency Commissioner Professor Jean Pierre Ezin made two visits during which he discussed the AOSTI Office businesses. This took place in June, 2011, and November 2012.
- His Excellency Commissioner Dr Martial De-Paul Ikounga has visited the AOSTI office three times exchanged views with the staff on various office matters. The visits took place in September 2013, June 2014 and August, 2015.

During their visits to Malabo, the Directors and Commissioners exchanged views with the local authorities, and especially with His Excellency the Minister of Foreign Affairs and Cooperation of the Republic of Equatorial Guinea.

9. Audit of the AOSTI financial, systems and programmatic operations

The AOSTI financial systems and programmatic operations have been subjected to the AUC auditing process for the period commencing March, 2011, to May, 2013, for the expenditures incurred to the tune of US\$ 1.37M. The audit was carried out in May 2013. The opinion of the audit was positive.

10. AOSTI Finances

So far, the Government of the Republic of Equatorial Guinea remains the main funder of the AOSTI. This is in line with the country's commitment to host AOSTI and the pledged seed funding of US\$3.6m in accordance with the AU Assembly Decision/AU/Dec.232 (XII) of February 2009. The host country has provided office space, as well as contributing towards setting up the AOSTI programme of work and processes.

To date, the summary of funds received by AOSTI is shown below:

Item	Project Name	Funds paid date	Amount in FCFA	Amount in USD	Source of funds
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1	Running AOSTI	27/07/2011	170.000.000	370,000	Host Country
2	Running AOSTI	31/05/2012	521.640.000	1,000,000	Host Country
3	Running AOSTI	12/02/2014	371.000.000	780,000	Host Country
4	GO-Spin project	2013		45,000	UNESCO
5	Support for Projects	2013		50,000	AfDB
6	STI Information system			Pledged 450,000	Sida
7	Bibliometric study in the ECOWAS member states	70,000 paid So far in 2015		Pledged 150,000	ECOWAS
8	RINEA Project	Ongoing process		45,000Euros	European Union

AOSTI acknowledges the various forms of support received including in kind or implicit financial support to attend STI events. This includes the support from the African Union Commission, NEPAD, AfDB, ECOWAS, UNESCO, UNU-MERIT, OECD, ISESCO and ITU.

SECTION 2: AOSTI'S ACHIEVEMENTS

There is evidence that AOSTI has impact on the African STI communities as it is highlighted in this section.

1. Assessment of the best practices for STI observatories

This study identifies activities and governance structures of STI observatories around the world. It avails mechanisms by which observatories collect process, analyse and disseminate statistical information and how they build new knowledge thereof.

Recommendations for better governance of observatories are also presented.

The African Union, the Regional Economic Communities, the Member States partners can use this report for a wider debate, allocation of resources and implementation of observatories of STI.

AOSTI has recommended Kenya and Egypt to use of this report in their effort to establish their national observatories of STI.

Highlights of the Working Paper include:

- Africa has enough assets and skills to run an observatory for STI;
- Production of quality STI statistics is a prerequisite for the establishment of an Observatory for STI;
- AU member states should provide the necessary resources to their statistical units to carry out surveys and collate relevant STI data to feed AOSTI;
- AOSTI reputation must be protected through work ethics and its professional and scientific autonomy must be guaranteed;
- AOSTI shall have unrestricted access to aggregate information and to key stakeholders in the national systems of innovation of member states.

2. STI Policy-making in Africa: An Assessment of capacity needs and priorities

This report provides an assessment of the STI policy capacity needs and priorities of African countries. It is based on reviews of the reports on national STI policy development activities, reviews of the outcomes of policy development efforts, and interviews with key stakeholders in governments and development partner institutions. A questionnaire framework was designed and sent to ministries or officials responsible for science and technology to collect specific data.

This report has received several citations among policy makers. AOSTI uses this report to devise inputs in the development and evaluation of innovation policy training courses and in the development of indicator for policy in the context of the Monitoring and Evaluation of STISA. Furthermore, this report would assist member states to strengthen their national capacity to undertake R&D and innovation surveys and to effectively engage in STI policy formulation and implementation.

Recommendations and conclusions of the study include:

- Mobilize and make available existing African and international expertise to support STI policy activities in Africa;
- Establish a consortium for STI policy training by bringing together the various institutions offering similar courses in order to design and implement a single comprehensive programme.
- Develop a virtual tailor-made resource centre for STI policy information through a web-based library. is to suit the information needs of African policy-makers.
- Develop a policy-makers' guide to innovation concepts and innovation policy formulation with examples of practices. These will drawn from other parts of the world, covering definitions and applications of innovation concepts as well as guidelines for innovation policy formulation, implementation, monitoring and evaluation.

3. The state of scientific production in the African Union

This report commenced and initiated a series of studies which will develop and produce relevant indicators of S&T production activities in AU member states, and to develop a framework for linking these indicators to policy-development objectives.

The report evaluates the scientific outputs of all 54-member countries of the AU and the Regional Economic Communities (RECs, thus making intra-African comparisons possible). The results are generally positive, showing high levels of growth in both total scientific production and in production quality.

In general, this study shows that there are scientific areas in which great production momentum exists and needs to be supported and sustained. It also highlights areas of inertia that require greater investment in order to make Africa's scientific output more competitive.

Findings from this study include

- However, the scientific production of the AU, although small, grew 22% faster than that observed at the world level over the 2005–2010 period
- Despite this very low level of intra-African collaboration, it is noteworthy that 36 of the 54 AU member states increased their level of collaboration within Africa between 2005 and 2010
- The areas of science in which the AU has a concentration of research effort and demonstrated research excellence include

Recommendations from this study include

- Monitor and evaluate Africa's scientific production matter
- Boost intra-African cooperation in S&T while maintaining strong collaboration outside Africa
- Address gaps in fields of science that are essential to today's competitive knowledge economy
- Sustain the current growth trend of Africa's scientific production by adequate policy measures

4. Strengths and Weaknesses of African countries and regions

AOSTI published this addendum to “The state of Scientific Production in the African Union” in order to give details of the strengths and weaknesses of countries and regions. In this supplement, graphical techniques known as positional analysis are used to facilitate the interpretation of the concepts of the relative strengths and weaknesses of African countries and Regional Economic Communities in scientific fields.

The addendum examines the scientific fields of specialization of the AU with positional analyses by field of science.

In this addendum, AOSTI uses graphical techniques to facilitate the interpretation of the concepts of the “relative strengths and weaknesses of African countries/regions in scientific fields” as introduced in the: “Assessment of Scientific Production in the African Union, 2005–2010”

Each of the AU member states can then interpret this purpose of monitoring and evaluation of its national scientific production and adjust relevant policy processes.

The definitions of the various concepts used in this addendum and the details on the grouping of scientific fields are found in the main document.

5. Monitoring Africa’s progress in Research and Experimental Development (R&D) investments

This policy brief provides an informed assessment on the progress made by the member states of the African union towards meeting the target of 1% of GDP on R&D expenditure. This policy decision can be traced to the Monrovia Declaration of 1979, the Lagos Plan of Action (LPA) for the Economic Development of Africa (1980–2000), the Eighth Ordinary Session of the Executive Council of the AU that met in 2006 in Khartoum, Sudan and the Ninth Executive Council of the AU held in Addis Ababa, Ethiopia in 2007.

6. Development of a continental data and information management system

The need for an African information system which will serve as a continental repository for STI statistics is long overdue. To that end, AOSTI, through the Commissioner HRST Office, made a request for support from the International Telecommunication Union (ITU). The latter funded the development of a business plan and the need to do feasibility studies to the tune of USD50.000. The actual construction of the repository platform will require additional human and financial resources.

The Swedish International development Agency (Sida) has pledged UDSD 450,000 or half of the budgeted amount to conclude the construction of the information system.

In its functional form, the platform will avail information on STI indicators and policies for the African countries including related legislations and regulations; it will enable STI data mining and enable networking and interaction among STI stakeholders by use of modern web technologies.

With the implementation of STISA-24, the revision of the second decade of education and the creation of specialized technical committees by the African Union, a common platform for Education, Science, Technology and Innovation (ESTI) data and statistics will strengthen the inter-sector approach to socio-economic development. Hence the platform will include ESTI data and statistics.

7. AOSTI is building STI capacity at regional and national levels

AOSTI and the Host Country

AOSTI interacts with the host country. The latest is a follow-up on training in STI indicators which was convened in Brazzaville in November, 2014. The training was jointly organised by AOSTI and the UNESCO regional office for ECCAS. Two representatives (2) from the Ministry of Education and Science of the Republic of Equatorial Guinea attended the workshop. These representatives discussed with AOSTI ways to convene training on STI indicators and related policies in Malabo and Bata. Such training would prepare the host country to undertake surveys on R &D and innovation and their applicability to national policy context. The concept note for the training has been prepared and the actual training workshop will be held in due course.

Similarly, it is envisaged that the host country will champion some of the flagship projects of AOSTI.

AOSTI and ECOWAS: an evolving and strong partnership to implement ECOPOST.

Since the AOSTI's inception, both the ECOWAS Secretariat and AOSTI have collaborated in the development phases of the ECOWAS Policy on S&T (ECOPOST) Framework. ECOWAS has invited AOSTI to lead regional capacity building trainings in the areas of STI indicators and analyses of related policies. Both institutions have formalized their partnership through a five - year Memorandum of Understanding (MOU). The MOU was signed by the African Union Commission on behalf of AOSTI and ECOWAS.

In this context, the following training workshops are worth mentioning

- a) September 3-5, 2012, in Lomé, Togo. Theme: Development phases of ECOPOST Framework.
- b) June 4-6, 2013, in Niamey, Niger. Theme: Definition and development of STI indicators in the context of the ECOWAS Policy on S&T (ECOPOST) Framework.
- c) May 12-15, 2014, in Abidjan, Republic of Cote d'Ivoire .Theme: R&D indicators in the ECOWA region: Towards the ECOWAS Science and Technology Outlook.

AOSTI and UNU-MERIT: Design and Evaluation of Innovation Policy in Africa

This series of capacity building programmes in DEIP started with a training course which was held in Nairobi, Kenya, between the 6th and 10th October, 2014. The training was organized by AOSTI in collaboration with the Pan-African University-Institute for Basic Sciences, Technology and Innovation (PAU-ISTI) and the United Nations University, Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT).

The workshop targeted participants from the Southern and Eastern African countries and two Regional Economic Communities (SADC) and COMESA). At least forty (40) African STI experts (policy makers, government's official and other relevant stakeholders involved in STI activities) were trained and have acquired a complete comprehension of DEIP methodologies and principles.

The workshop was funded by SIDA through the Work Package 1 of the Phase 3 of the African science, technology and innovation indicators initiative (ASTII). The Faculty which supported the workshop was fully supported by UNU-MERIT.

This partnership has been formalized through a five-year MOU which was signed by UNU-MERIT and the AUC on behalf of the African Observatory of Science, Technology and Innovation ("AOSTI") and Pan African University Institute of Basic Sciences, Technology and Innovation ("PAUSTI").

The outcome to the training was the publication of a policy brief entitled "Innovation for Development in Eastern and Southern Africa, Challenges for Promoting ST&I Policy". Elements contained in the policy brief are readily available for M&E of STISA as far as policy is concerned.

AOSTI and UNESCO: Collating information on STI policies and policy instruments

This project was recommended by AMCOST IV which, in its meeting of November 2012, called on AOSTI to collaborate with the UNESCO led Global Observatory on STI Policy instruments (GO-SPIN) and STI Global Assessment Programme (STIGAP).

The project has been beneficial to AOSTI as an inventory of country profiles will provide relevant and reliable information about STI policies and policy instruments in participating African countries and feed into the monitoring and evaluation phases of STISA.

The following have been achieved with the financial support of UNESCO:

- AOSTI staff participated in the UNESCO/AOSTI/NEPAD training workshop which was convened in Dakar in March, 2013. About 42 participants from six member states (Burkina Faso, Gabon, Niger, Burundi, Senegal, and Ivory Coast) were trained to implement the GO-Spin project in their respective countries.
- AOSTI went the extra miles to coordinate the implementation of the GO-Spin project in the following six countries Burkina Faso, Gabon, Niger, Burundi, Senegal, and Ivory Coast.

- AOSTI provided its expertise to train parliamentarians and other stakeholders on STI governance.
 - In Senegal, fifty participants, including thirty from the Parliament, a dozen from the Economic, Social and Environmental Council and players from departmental structures and research have been trained.
 - In Burkina Faso, an audience (of 45 participants) was composed of parliamentarians and staff of the National Assembly, representatives of the ministries involved in STI, universities, research institutes and associations.
 - In Brazzaville, in February 2015, twenty (20) AOSTI focal points from the ECCAS region were trained on STI measurement and policy instruments upon the request of UNESCO regional office in Yaoundé.
 - In Cairo, in May 2015, AOSTI provided its expertise to train 20 experts from Egypt (high-level profile experts, government officials, researchers, statisticians and Parliament commission staff) on GO-SPIN concepts, methodologies and survey. The theme of the national workshop was: “Monitoring and Evaluation Tools for Science, Technology and Innovation (STI) Policies, Policy instruments and Governing Bodies”.
 - On the request of the UNESCO (Dakar and Bamako), AOSTI trained in May of 2015 (in Bamako), 25 experts from the Sahel region (Mali, Senegal, Burkina Faso and Niger) on STI policy instruments.

AOSTI and ISESCO: Capacity building on STI measurement and policy impact

- AOSTI and the Islamic Educational, Scientific and Cultural Organization (ISESCO) are collaborating to support capacity building on STI measurement and implication for policy in Africa.
- This collaboration was begun by the national STI workshop which was held in Abidjan 15-17 April 2013. (The theme was: capacity strengthening of national R&D and innovation systems). About 35 participants including representatives from government, Academia and civil society, attended the training.
- Further on this collaboration, in December 2013 in Abidjan (Theme: the role of parliamentarians in the elaboration of science, technology and innovation policies and legislation), more than 20 parliamentarians were trained on the role of parliamentarians in STI policy making. These trainings were held with the financial support of ISESCO.

AOSTI and NEPAD: Training the trainers in R&D and Innovation surveys

AOSTI has helped the NEPAD Agency for in-country and regional training of participants in the ASTII project. These countries are undertaking R&D and Innovation surveys and building R&D and Innovation indicators thereof.

Within the phase 3 of ASTII initiative, AOSTI provided its expertise to the NEPAD Science, Technology and Innovation Hub (NSTIH). Thus, in Cotonou, Benin, twenty five (25) people including interviewers, statisticians, government officials, and researchers were trained on Science, Technology and Innovation (STI) data collection for the production of R&D and Innovation indicators in Benin.

Further, on this collaboration, in April 2015, thirty (30) experts from Democratic Republic of Congo (DRC) were trained on the concepts and methodologies used for the R&D and Innovation measurement.

AOSTI has provided bibliometric data to NEPAD in order to conclude the publication of African innovation outlook.

AOSTI and NEPAD have produced two joint policy briefs namely

- AOSTI-ASTII (2013), Monitoring Africa’s progress in Research and Experimental Development (R&D) investments.
- AOSTI-ASTII (2013), Assessment of the Scientific Production in the African Union, 2005–2010

AOSTI and the CEMAC Parliament

AOSTI started a joint collaboration with the Parliament of the Economic Community of Central African States (CEMAC) by organizing (at the CEMAC Parliament in Malabo --Equatorial Guinea-- a one-day session, during the first CEMAC parliamentary session in February 2014 *(Pictured)*). The session focused on the importance of STI for a sustainable socio-economic development of the CEMAC region and the role of Parliamentarians in STI governance. The theme of the workshop was: “STI for development, role of parliamentarians”.

In February 2015, the CEMAC Parliament invited AOSTI to give communication on the theme on STI Collaboration and partnership.

An MOU has been prepared and will be signed in due course.

8. AOSTI has established its presence in cyber space

Since the launch of its website, AOSTI has created hype with regard to its products and services. This graph shows the world coverage with interest in AOSTI. In other words, AOSTI has a presence in the entire world Cyberspace.

Indeed, the website has increased the visibility of AOSTI.

AOSTI website traffic as illustrated by this graph is a snapshot of 2014 with recorded of traffic about 20000 hits per month on average.

In 2014, there were 4 African countries among the top 25 visitors in terms of the number of hits, pages downloaded and bandwidth used. These countries were South Africa, Algeria, Kenya and Senegal.

9. An increased demand of AOSTI products and services

Novel Partnership and Collaboration in the area of STI indicators and policy measurement: AOSTI initiated a series of Partnerships/collaboration with several institutions and organizations to advance the implementation of its programme of work. These include

- *Vice Chancellors' Leadership Seminar 2015 at the ACU & SARIMA Conference held in Johannesburg, South Africa May 11-14, 2015;*
AOSTI delivered the keynote address entitled "Global Importance of Research Uptake and the Role of Universities: -Measurement and Policy Perspectives". A sample of Vice chancellors from 22 universities respectively from the following countries was in attendance: Nigeria, Ghana, Cameroon, Ethiopia, Kenya, Uganda, Rwanda, Zimbabwe, Zambia, Botswana, Mauritius and South Africa.
- *The Global Research Council (GRC) held November 23-25 2014.*
The council called on AOSTI to deliver the key-note address at its African Summit which was held in Stellenbosch, South Africa, between 23th and 25th November 2014. The title of the key-note address was "African Experience in Measuring Science, Technology and Innovation: Implication for Policy". Participants included representatives of science-granting councils in the Sub-Saharan Africa, Research Councils and Academics. There were a dozen of Japanese scientists who accompanied Dr Yuichiro Anzai, the President of the Japan Society for the Promotion of Science, Japan. A total of 100 delegates attended the meeting.

- *Workshop on the proposed Kenya Observatory of Science, Technology and Innovation (KOSTI). Nairobi, Kenya April 02, 2014.* Key note address delivered by AOSTI: “The African Observatory of Science, Technology and Innovation: Context and Perspectives.

This workshop was jointly organized by the Kenyan State Department in charge of Education, Science and Technology (MoEST) and the World Bank (WB). The workshop was attended by more than 100 participants.

- *The Organisation for Economic Cooperation and Development (OECD) invited AOSTI to be Lead Commentator.*

Held from the 1st to the 2nd July, 2013, in Marseille, France OECD/IHERD and IRD experts meeting Theme was “Increasing evidence-based approaches in the design and implementation of innovation and research policy in developing countries.

The meeting aimed at increasing the knowledge and understanding of policy and management instruments in higher education, research and innovation, so that developing countries are better able to plan, produce and use research for development. A total 50 international experts including Policy-makers and policy-shapers of research and innovation policies, academics in the fields of innovation, higher education and research for development, managers from Higher education institutions, Public research organisations, Research funding agencies, Development Assistance Agencies supporting higher education and research attended the meeting.

- *Partnerships with the Science and Technology Department and the National Science Foundation (DST-NRF, South Africa).*

AOSTI was invited to share its experience in analyzing science production in Africa. (Theme: Establishment of Center of Excellence in Scientometrics and science, technology and Innovation policy (SciSTIP)). At the meeting, the talk given by AOSTI was entitled: “Scientometrics and science policy for Africa: beyond data production”.

10. Published papers/policy briefs by AOSTI staff

1. *Innovation Policy Approach for the Informal Economy: A New Policy Framework*. **Almamy Konte**, Rasigan Maharajh, and Erika Kraemer-Mbula (2015) Book chapter in *The Informal Economy in Developing Nations: Hidden Engine of Innovation- New economic insights and policies* by Charmes and al.: Cambridge University Press(To appear)
2. *Measuring Innovation in the Informal Economy Matters for Africa's Development*; by **Philippe K. Mawoko** (2015). A comment to the paper "Formulating an agenda for the measurement of innovation in the informal economy" *The Informal Economy in Developing Nations: Hidden Engine of Innovation- New economic insights and policies* by Charmes and al.: Cambridge University Press(To appear)
3. *Innovation for Development in Southern and Eastern Africa, Challenges for Promoting ST&I Policy*, Policy brief Number I (2015); Iizuka, M., **Mawoko, P.** and F. Gault (2015), Available at <http://www.merit.unu.edu/innovation-for-africa-series-deip-kenya-2014>.
4. *Towards web resources for analysis of science, technology and innovation in Africa*. In *Innovation and Development*. Volume 1, Issue 2, 329-330. Fred Gault & **Philippe K. Mawoko** (2011). Available at: <http://www.tandfonline.com/doi/abs/10.1080/2157930X.2011.615132>.

SECTION 3: THE WAY FORWARDS

1. Thematic Areas for the Period 2013-2017

As mentioned earlier, this section summarised the thematic areas for AOSTI as agreed upon by the Intergovernmental meeting which was held in Malabo in May 2012

Thematic Area 1: Building STI capacities

- Training courses on STI surveys and NIS reviews Infrastructure support to national STI focal points or observatories
- Training courses on STI policy formulation, monitoring, evaluation and implementation

Thematic Area 2: Technology Forecasting and Prospecting

- Monitoring global trends
- Technology Information Databases
- Building Technology Roadmaps
- Supports for Technology Prospecting Missions

Thematic Area 3: Developing and Managing STI Indicators

- Production of generation STI indicators and African STI Outlook reports
- Production of R&D and Innovation Indicators for Sectors (by economic sector i.e. Agriculture, Health, Energy& ICT.)
- Introduction to the Production of GBOARD data
- Using micro data for econometric modeling

Thematic Area 4: Strengthening National Innovation Systems

- Support for NISs reviews
- Comparative studies on NISs
- Promoting exchange of information on NISs
- Support for innovation policy development

Thematic Area 5: Policy Studies

- Support for thematic studies on specific STI issues
- Technology Assessment Studies
- Case studies on innovation

Thematic Area 6: Policy Outreach and Advocacy

- Production and dissemination of policy-briefs and newsletters
- Regional consultations and technical workshops

2. Projects in need of funding

The list of programmes and projects in the matrix below were recommended by the AOSTI inter-governmental meeting. These projects were selected to serve as the backbone for the development of the full AOSTI programme of work for the next five years. These programmes are sources of inputs for the monitoring and valuation of STISA-24.

In such a short time of about three years, AOSTI has optimally positioned itself in the STI space at the continental, regional economic communities and national levels as well as within the international community settings.

The value of AOSTI has been illustrated by an increased number of visits or hits to the AOSTI website. Visitors have downloaded AOSTI products or requested services.

The new STI strategy for African (STISA-24) has entrusted AOSTI with leading its monitoring and Evaluation component. Regions such as ECOWAS and CEMAC have selected AOSTI to undertake their specific projects. At national levels, countries are calling on the AOSTI expertise to undertake work on STI indicators or policy related matters. International organizations are requesting AOSTI products or services for their entry points in STI undertakings in Africa, and examples of such abound. One may refer to the various requests which have been made from UNESCO, UNU-MERIT, OECD, ISESCO, The Global Research Council (GRC), the Association of Commonwealth Universities, to mention but a few examples.

By and large, the AOSTI has achieved confidence in delivering relevant STI contents to stakeholders. These assets need to be strengthened in order to achieve the AOSTI's vision of providing evidence in support of STI policy making for Africa's socio-economic development

Programme	Project Identification (Objectives)	Costs
<i>Developing and Managing Science, Technology and Innovation (STI) Indicators</i>	To produce and generate STI indicators and African STI Outlook Series	230,000
	To produce S&T and Innovation Indicators by economic sector (i.e. Agriculture, Health, Energy& ICT)	600,000
	To implement the STI Information system for Africa and users workshops R&D studies	750,000
	To collate and analyse budget appropriations or outlays on R&D (GBAORD) and impact on STI policy	100,000
	To build capacity in econometric modelling in using STI micro data	100,000
	Monitoring and Evaluation STISA-24	220,000
	<i>Subtotal</i>	<i>2,000,000</i>
<i>Strengthening</i>	To support national R&D and Innovation Surveys	550,000

<i>National innovation Systems</i>	To support reviews of National Innovation System (NIS)	100,000
	To undertake comparative studies on NISs	100,000
	To promote exchange of information on NISs	50,000
	To support innovation policy development	50,000
	<i>Subtotal</i>	<i>850,000</i>
<i>Building capacity in STI policy</i>	To convene an annual workshop on Design and evaluation of Innovation Policy in African countries (or Annual conference of African Observatories of STI)	150,000
	To undertake policy outreach and advocacy	100,000
	<i>Subtotal</i>	<i>250,000</i>
Grand Total		3,100,000

CONCLUSION

The implementation of AOSTI over the last three years has shown that there is a consensus on the importance of this technical body within the African STI community. The creation of AOSTI is therefore a major step towards evidence-based policy making.

It also follows that it is up to policy makers to rise to the challenge and provide the necessary conditions for the Observatory to ensure its regional character taking into account its mission and current environment. For the aforementioned to take shape, policy makers should ensure and sustain the provision of skills, including new skills and resources to enable the structure to continue fulfilling its mission.

AOSTI is certainly an ambitious project, but it is a “*must have in Africa*” in view of the roles that STI play for socio-economic development of the continent.

APPENDIX: AOSTI STAFF PROFILES

- 1. Dr. Philippe KuhutamaMawoko.** Dr Mawoko is the Interim Director of the African Observatory for STI within the African Union Commission. Currently, Dr Mawoko serves as a Member of the Advisory Board of the United Nations University Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT). Over the last ten years at NEPAD, Dr Mawoko coordinated the African Science, Technology & Innovation Indicators Initiative (ASTII) and the African Mathematical Institutes Network for the Office of Science and Technology (OST) of the AU-NEPAD Planning & Coordinating Agency (NPCA). Prior to joining OST, Dr Mawoko worked as a Programme Manager in the NEPAD e-Africa Commission. Former Minister of Post and Telecommunications in the Democratic Republic of Congo (DRC), Dr Mawoko led the initial policy reform in the post and telecommunication sector in the DRC. He served as senior consultant, forecasting new telecommunication products and services in the marketing division of Telkom South Africa. He worked as a Senior Manager in charge of the Management of Information system (MIS) section in the electronic division of Nedcor Bank in South Africa. Dr Mawoko holds a Ph.D. in Mathematics from the University of Salzburg in Austria (1988). He lectured Mathematics and Statistics in several universities including the University of Zimbabwe in Harare, the University of Lesotho in Roma and the University of Kinshasa in the DR Congo. He published widely, and continues to contribute in several market demand research projects, ICT and STI. **Contact:** mawokop@africa-union.org; pmawoko@gmail.com
- 2. Dr. Almamy Konté.** Dr Konté is a Senior Expert in Innovation Policy at the African Observatory for Science, Technology and Innovation (AOSTI). Dr Konté has a PhD in Physics and was the Director of Technological Research in the Ministry of Scientific Research in Senegal. Besides this function, which he has held since May 2006, he is appointed in February 2009 as lecturer and researcher in the Faculty of Science and Technology at the Cheikh Anta Diop University in Dakar. Dr Konté was previously a lecturer and researcher at the Unit for Training and Research in Applied Science and Technology, where he was Head of Information Technology from 2001 to 2005. Within the scope of his research work, Dr Konté was Associate Researcher in the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy, from 2001 to 2009. From 2007 to 2009, Dr Konte was the coordinator of the National Steering Committee for the development of the Science and Technology Park, within the framework of the technical assistance given to Senegal and Ghana by the United Nations. As the main Senegalese representative in the ASTII (African Science, Technology and Innovation Indicators) programme since 2007, Dr Konté was responsible for the data produced by Senegal. As a result of his interest in STI indicators and the work he has undertaken on innovation in the informal sector, his name was put forward in November 2011 as member of the Steering Advisory Committee of CESTII (Centre for Science, Technology and Innovation Indicators) of South Africa. **Contact:** kontea@africa-union.org;

3. **Dr. Biliric Vroh.** DrVroh is Senior Expert, Science and Technology Policy at the African Observatory for STI (AOSTI). Prior to joining AOSTI, DrVroh was Breeder and head of a research for development program for West and Central Africa at the International Institute of Tropical Agriculture (IITA). Holder of a PhD (1999) in Agronomic Sciences and Bio engineering from the University of Liege, Belgium (Gembloux Agro-Bio Tech), he worked as a Molecular Geneticist and Project Lead in the USA at the University of Illinois Urbana-Champaign, University of Missouri Columbia and Cornell University in the area of biotechnology, genomics, genetic diversity and genetic improvement of crop species. He has led and coordinated several international projects including the Generation Challenge Programme (GCP) for IITA and the Harvest Plus Challenge Programme (biofortification of food crops) engaging several countries in Africa, Latin America and the international research centers of the CGIAR group in the food security and food quality areas. DrVroh is presently an expert advisor of the International Foundation for Science (IFS, Sweden). He has conducted several capacity building workshops and mentored students as supervisor of B.Sc., M.Sc. and PhD programmes in connection with various Universities. DrVroh has published several papers in peer reviewed journals including Science, Nature Genetics, The Plant Cell, Bioinformatics, Plant Physiology, Transgenic Plant Journal, Plant pathology, Theoretical and Applied Genetics, Crop Sciences, Plant breeding, African Journal of Biotechnology etc., and has presented his research works at several national and international conferences. **Contact: vrohb@africa-union.org**

4. **Mr. Johnstone Kimanzi Kang'otole.** Mr. Johnstone Kimanzi is the Finance & Administration Expert of the African Observatory for Science, Technology and Innovation. He holds a Master of Commerce in Accounting from Strathmore University and a Bachelor of Commerce- Accounting from the University of Nairobi (2nd class Honours Upper Division) and is a member of the Institute of Certified Public Accountants of Kenya (ICPAK). He has over 13 years of working experience in accounting and finance. Prior to joining the African Observatory for Science Technology and Innovation, he worked at United Nation World Food Programme. His main functions and activities at AOSTI include financial management, accounting, Budgeting, payroll processing, administration and the preparation of financial reports. **Contact : kang'otolej@africa-union.org**