



**GOVERNING SCIENCE, TECHNOLOGY AND INNOVATION IN AFRICA**  
Building National and Regional Capacities to  
Develop and Implement Strategies and Policies

## INTRODUCTION

Africa entered this millennium with renewed commitment to banish poverty, achieve sustainable development and integrate itself into the global knowledge economy. Its countries adopted the United Nations Millennium Development Goals (MDGs) in September 2000 and many have designed Poverty Reduction Strategy Papers (PRSPs) or related plans. These national efforts have been complimented by the revitalization of regional integration through the establishment of the African Union (AU) and the New Partnership for Africa's Development (NEPAD). It has become clearer that Africa's socio-economic transformation and development can be attained through collective efforts of its countries and in partnership with the international community. Isolated national actions and conventional development assistance have largely failed to turn the continent's fortunes around.

African countries are increasingly recognizing that they must build science, technology and innovation capacities in order to transform their economies and achieve the MDGs. This recognition is manifested in the various initiatives that they have individually and collectively launched. At the national level a growing number of countries are reviewing and revising, or in some cases designing new, science, technology and innovation strategies and policies.<sup>1</sup> There are regional efforts such as the formulation of a science and technology framework by the Economic Community of West African States (ECOWAS) in 2005 and the adoption of a framework for science, technology and innovation by the Southern African Development Community (SADC). These and other efforts have acquired political support and growing interest of a number of international partners.

The national and regional initiatives are buttressed by the establishment of the African Ministerial Council on Science and Technology (AMCOST) in 2003 as a continental institutional arrangement to promote pan-African activities, including the development of common science, technology and innovation indicators, policies and programmes. AMCOST is a platform established by NEPAD and the AU to enable African political leaders and policy-makers to critically examine emerging science and technology issues/questions and their implications for African development. It makes specific decisions that will promote the application of science and technology to achieve NEPAD goals and MDGs. It provides political and policy leadership to

---

<sup>1</sup> For example Mozambique has prepared a draft science, technology and innovation strategy; Botswana and Nigeria are completing reviews of their science and technology systems; Rwanda and Uganda are working with the World Bank to review and revise their science, technology and innovation strategies and develop related plans; and Angola has approached the United Nations Conference on Trade and Development (UNCTAD) for support to conduct a review of its science and technology institutions, policies and infrastructure.

develop and adopt science, technology and innovation strategies, plans and programmes. It is becoming a platform on which countries exchange information on good practices of science, technology and innovation policy development.

AMCOST has been instrumental at developing what is really Africa's first strategic plan for science and technology. Through consultative processes and activities, 'Africa's Science and Technology Consolidated Plan of Action' was developed and adopted in 2005. The Plan of Action contains clusters of priority programmes and related indicative projects. These are to be implemented over an initial period of 5 years by African countries in partnership with the international community.

One of the clusters of programmes aims at improving policy conditions for scientific research and technological innovation in Africa. It specifically focuses on strengthening capacities to develop indicators and related science, technology and innovation policies and strategies. Research and information gathering, training courses, inter-governmental committee on indicators and surveys, development of an African Science, Technology and Innovation (ASTI) Outlook bi-annual report, and design of national strategies and policies constitute core activities of the programme.

## **1. BACKGROUND**

### **1.1 Science, technology and innovation for sustainable development**

Nations' economic change and sustainable development are to a large measure accounted for by investments in science, technology and innovation. It is not the mere accumulation of physical capital and natural endowment that transform economies and stimulate human development but the ability of countries to produce, harness and wisely use scientific knowledge and related technological innovations. The economic history of the industrialized and Newly Industrializing Countries (NICs) vividly shows that economic improvement in these countries has been a result of the application of knowledge in productive activities.<sup>2</sup> Indeed there is an explicit correlation between a country's scientific and technological capabilities and its economic performance and affluence.

---

<sup>2</sup> Lall, S. (2000) 'Technological Change and Industrialization in the Asian Newly Industrializing Economies: Achievements and Challenges.' In L. Kim and R. Nelson, eds., *Technology, Learning, and Innovation, Experiences of Newly Industrializing Economies*. New York: Cambridge University Press.

The gap between poor and rich countries in terms of real income is largely accounted for by differences in the accumulation and utilization of science and technology. Closing this gap will require deliberate measures to build the scientific and technological capabilities of poor countries. The international community is increasingly recognizing the need for such measures. In September 2000 the United Nations General Assembly adopted the United Nations Millennium Declaration in which world leaders pledged to “halve by the year 2015 the proportion of the world’s people whose income is less than one dollar a day and the proportion of people who suffer from hunger, by the same date.” In particular, they agreed to “take special measures to address the challenges of poverty eradication and sustainable development in Africa, including debt cancellation, improved market access, enhanced Official Development Assistance and increased flows of Foreign Direct Investment, as well as transfers of technology.”<sup>3</sup>

The World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002 also gave more political currency to science and technology. The Plan of Implementation adopted by governments at the WSSD is largely about the role of science and technology in meeting sustainable development goals. Many of its recommendations are about mobilizing and directing science and technology to solve problems associated with energy deficiency, food insecurity, environmental degradation, diseases, water insecurity and many other sustainable development challenges. The Plan calls on the international community to “promote technology development, transfer and diffusion to Africa and further develop technology and knowledge available in African centres of excellence; and support African countries to develop effective science and technology institutions and research activities capable of developing and adapting to world class technologies”.

In September 2005 world leaders, meeting at the United Nations Summit, adopted resolutions on specific actions that must be taken to strengthen scientific and technological capacities of developing countries. Paragraph 60 of the 2005 World Summit (General Assembly) Outcome is dedicated to science and technology for development. The leaders “recognize that science and technology, ..., are vital for the achievement of the development goals and that international support can help developing countries to benefit from technological advancements and enhance their productive capacity.” They committed themselves to assist “developing countries in their efforts to promote and develop national strategies for human resources and science and technology, which are primary drivers of national capacity-building for development.”<sup>4</sup> They also

---

<sup>3</sup>United Nations 2000. *United Nations Millennium Declaration*. New York: United Nations.

<sup>4</sup> United Nations (2005), ‘2005 World Summit Outcome.’ United Nations General Assembly, A/60/L.1

committed themselves to assisting developing countries to implement “policies at the national and international levels to attract both public and private investment, domestic and foreign, that enhances knowledge, transfers technology on mutually agreed terms and raises productivity.”<sup>5</sup>

The challenge that faces that the international community relates to implementing the above resolutions. At the international level there is a need to design a comprehensive programme for building science, technology and innovation capacities of developing countries. A number of international institutions (for example the World Bank, Sida, the International Development Research Centre, the UK Department for International Development, and the United Nations Conference on Trade and Development) are already supporting or planning to support developing countries to develop and implement strategies and plans for science, technology and innovation.

### **1.2 Africa’s Science and Technology Consolidated Plan of Action**

On 30 September 2005 African countries adopted a plan of action for science and technology: Africa’s Science and Technology Consolidated Plan of Action (CPA). The CPA is the product of two years of a participatory, knowledge-intensive and high-level process that was initiated by NEPAD through its African Ministerial Council on Science and Technology (AMCOST). It contains programmes for improving infrastructure and policy conditions as well as strengthening human capacities for scientific and technological development in Africa. These are clustered as: (a) programmes for R&D with emphasis on twelve priority areas to be implemented by networks of centres of excellence, and (b) programmes for building capacity and improving the quality of science, technology and innovation policies.

NEPAD Office of Science and Technology has already launched the implementation of some of the R&D programmes. Specific efforts include the establishment of the network on centres of excellence dedicated to biosciences (life sciences) with four regional hubs in which cutting-edge biotechnology R&D activities are being developed; and the creation of another network of centres for water sciences and technology development. The biosciences network is supported by the Canadian International Development Agency (CIDA) to the tune of CAD\$ 30 million<sup>6</sup> while the water sciences one is supported by the Government of France with a grant of appropriately US\$ 290,000. Other areas receiving support are the strengthening of the NEPAD Office of Science and Technology with a grant of US\$ 1.5 million being finalized with the Bill and Melinda Gates

---

<sup>5</sup> United Nations (2005), ‘2005 World Summit Outcome.’ In paragraph 60(e).

<sup>6</sup> This grant is being used to establish an AU/NEPAD network of centres dedicated to research and innovation in life sciences. Four hubs have been designated and specific research and training projects launched. A significant portion of the grant is being used to upgrade R&D infrastructure.

Foundation<sup>7</sup>; and approximately US\$ 600,000 from the UK Department for International Development (DFID) to design the African Science and Innovation Facility (ASIF). These efforts will go a long way in stimulating the implementation of the CPA.

The success of the R&D activities will be determined by the extent to which the programmes for improving policy conditions are implemented. In the absence of the right policies for science, technology and innovation, R&D projects are unlikely to make much impact at both national and regional levels. In this regard, AMCOST is giving increasing attention to getting policies right. A high-level process is being launched to engage African presidents on matters pertaining to science, technology and innovation policies. The AU Summit scheduled for January 2007 will be dedicated to theme of scientific research, technology and innovation for socio-economic transformation of Africa. It is anticipated that the Summit will build political support for countries to develop and/or improve their science, technology and innovation policies. As stated earlier a growing number of countries are starting to focus attention on developing policies and related strategies.

## **2. PROGRAMME RATIONALE AND OBJECTIVES**

### **2.1 Rationale**

African countries need to keep under frequent review their national science, technology and innovation systems. They need to develop, monitor and implement policies and strategies for scientific research and technological development. Science, technology and innovation indicators are necessary to enable governments, civil society and international partners to review the systems, support the development of evidence-based policies, and make the necessary institutional adjustments. For example, indicators can be used to monitor whether African countries are meeting the target of increasing their public expenditure on R&D to at least 1% of their national Gross Domestic Product (GDP). They are also useful to gauge enrolment in science and engineering courses, proportion of women engaged in science and engineering activities, and private sector's investment in R&D. On the whole, a set of indicators can be developed to describe the science and innovation system in a country. However, indicators become even more valuable if they support comparisons between and among countries in Africa.

For indicators to be used effectively, they must be embedded in national policy processes, and that requires interaction among policy makers, and between policy-makers and experts. African

---

<sup>7</sup> US\$ 600,000 has already been made available to enable NEPAD Office of Science and Technology to procure and provide to the AU Summit evidence-based advice on health innovation policies, improving regulations for ICTs, and intellectual property protection issues.

countries require capacity to design and adopt indicators, and then to formulate questions and design surveys which yield useful information which can be analysed to produce indicators.

The second conference of AMCOST adopted decisions requiring countries to review and develop science, technology and innovation policies as well as related strategies for policy implementation. AMCOST also resolved to develop and adopt common indicators for benchmarking science, technology and innovation. These would be used to conduct surveys and produce an AIO. The production of indicators and an AIO would be useful in many ways, including the following:

- (a) a body of update data and information would be made available to policy-makers, politicians, businesses and other groups to make better policies on science, technology and innovation. African leaders would be able to get a better sense of the status and nature of science, technology and innovation activities of their countries.
- (b) International donors, development agencies and the United Nations system would have more accurate data and information to inform them to sharply target their support to R&D, and science, technology and innovation activities in Africa.
- (c) AIO would enable African countries to compare their science and innovation systems, share experiences, and increase regional cooperation. It would also improve networking among scientists.
- (d) International agencies such as UNESCO and OECD that collect statistics on R&D would have access to indicators that are authorized by governments.

On the whole, the development of indicators and production of AIO would enable African countries to improve the quality of their national policies and related innovation systems. The countries have committed themselves to “review and where necessary revise national science, technology and innovation policies and related institutional arrangements.”<sup>8</sup> To realize this commitment they require technical expertise and well configured policy processes.

## **2.2 Objectives**

The overall objective of this programme is to support African countries to improve the quality of their science and innovation systems. It will strengthen the continent’s capacities for science, technology and innovation policy development. It is intended to:

---

<sup>8</sup> Paragraph 11 of the Resolutions of the Second African Ministerial Conference on Science and Technology, adopted 30 September 2006 at Dakar, Senegal.

- (a) enable African countries to acquire a better understanding of their national and regional science and innovation systems;
- (b) enhance skills for science, technology and innovation policy review and development;
- (c) promote exchange of experiences, expertise and information for science, technology and innovation policy and systems review and development; and
- (d) strengthen multilateral cooperation in science and technology.

The programme will also contribute to evidence-based science, technology, and innovation policy by making available and promoting the use of accurate and relevant information, and develop common standards for gathering data on such aspects as gender, investment rates, mobility and exchange of information. The objectives will be realized through the implementation of interrelated activities described in the next section.

### **3. ACTIVITIES AND EXPECTED OUTPUTS**

#### **3.1 Development and adoption of science, technology and innovation survey guidelines**

There are a number of manuals used by international organizations such as UNESCO and OECD to conduct science, technology and innovation surveys. These include the OECD ‘Frascati’ Manual for R&D surveys, and the OECD ‘Oslo’ Manual that combines both R&D and innovation. The ‘Oslo’ manual is considered the *de facto* standard. These manuals are designed to permit construction of indicators that are broadly comparable across country jurisdictions using a broad methodological framework that ensures consistency. There is need to determine the applicability of these to the African situations.

NEPAD Office of Science and Technology shall commission a competent institution to review and draw on the two international manuals to prepare a body of guidelines and questionnaire for conducting national surveys. These will cover such aspects as definitions, benchmarks, organization of survey exercises and kinds of actors required.

The guidelines and questionnaire shall then be submitted to an inter-governmental committee on science, technology and innovation indicators.<sup>9</sup> The committee will consider and agree upon common definitions, indicators and methods for conducting STI surveys. It will also establish modalities for integrating STI indicators into the African Peer Review Mechanism (APRM) of

---

<sup>9</sup> The second African Ministerial Conference on Science and Technology decided that an inter-governmental committee to consider and adopt indicators and survey instruments. Terms of reference for the committee are attached to this proposal.

NEPAD. The committee shall adopt standards for quality and harmonization of national surveys. It will be the institutional arrangement to ensure that the following broad tasks can be accomplished.

- (1) develop a common methodology and framework for an AIO,
- (2) ensure the complementarity of science & technology and innovation surveys,
- (3) build a consensus among participating national institutions, on the set of minimum common standards, including the specific set of survey questions required for cross-country comparisons,
- (4) create awareness among users, notably within the policy-making community, of the relevance of these surveys for policy,
- (5) establish a coordination process to carry out these surveys including translations of survey instruments from English to other survey languages, and the joint training activities needed to strengthen cross-national linkages,
- (6) monitor the survey processes across participating countries to assure the quality of data collection, coding and entry activities, data analysis and their use in the preparation of national reports and as inputs into an AIO,
- (7) evaluate the processes with a view to deriving lessons for future surveys,
- (8) develop the channels through which comparative research, analysis and report-writing as inputs to an AIO can be carried out on the basis of data provide by these surveys, and
- (9) provide a forum for the review and dissemination of analytical reports based on these data and open opportunities for dialogue on their use in national and regional policy-making in the area of science, technology and innovation.

### **3.2 Preparation of background studies on experiences and approaches**

There are international experiences on surveying science, technology and innovation surveys. In addition to OECD countries, a number of Asian and Latin American countries have conducted surveys. A few African countries, such as Botswana and Nigeria, are conducting national science and technology systems' reviews. The United Nations Conference on Trade and Development (UNCTAD) has in the past conducted science, technology and innovation policy reviews in Ethiopia and Tanzania. These efforts are likely to offer experiences for most African countries.

Under the programme, the NEPAD Office of Science and Technology will commission a competent research institution to:

- (a) Document as well as provide analyses of experiences of African countries that have conducted or are conducting science, technology and innovation, and/or related, surveys. This will focus on such aspects as the nature of the policy processes, range and roles of various actors, time-frames including what triggered the survey, kinds of outputs, how the surveys have been or may be used in/for policy-making, and kinds of expertise and other resources required for and/or used in the exercise. The study will provide or tease out lessons learnt from the survey initiatives.
- (b) Provide a succinct analysis of international experiences and approaches of OECD, European Union (EU), Andean Pact, Latin America and Asian countries. This study will focus mainly on how regional or multi-country comparative surveys have been organized, conducted, produced, and used. It is also expected to describe whether and how the regions have used 'Oslo' and 'Frascati' manuals to conduct their surveys, and any lessons learnt in using these manuals.

Detailed terms of reference will be developed and appropriate agencies identified to prepare the two studies.

### **3.3 Establishing national survey teams**

Conducting surveys involves a number of separate tasks that need to be performed at the national level in each participating country. The organization of survey processes thus requires a national coordination in each of the participating countries. In this regard, the programme will support countries to establish national survey teams or committees. The core members of national survey teams are those persons directly involved in carrying out the survey and analyzing the data, drafting national reports and developing input for an AIO. From the analysis of the way science, technology and innovation surveys were organized, close collaboration between the Government Statistical Office and researchers from local universities and public sector research institutes are essential in carrying out these tasks. Each country's national survey team should therefore include

at least two persons from the Government Statistical Office and two or three researchers from universities and public sector research institutes. Its core functions may include the following:

- assemble and hire the team to carry out the survey, analyze data and prepare analytical reports,
- define the supplementary country specific policy-impact questions,
- pre-test the questionnaire at the national level,
- supervise data coding and entry and ensure quality control,
- develop procedures for monitoring, evaluation,
- create an awareness-building and dialogue process within society,
- Develop workshops to stimulate information sharing between knowledge producers and users from among the policy making community,
- prepare inputs for national policy-makers
- prepare inputs for the AIO.

Details on the composition and functions of the national survey teams will be developed and presented to the Inter-governmental Committee on Science, Technology and Innovation Indicators.

In addition to the core members of each national survey team or committee, the committee could serve as a forum to maximize interactions between users and producers of the knowledge to be generated by survey, stimulate greater awareness of the process and its outputs and encourage dialogue between analysts and potential users of their analysis in the policy community.

### **3.4 Training workshops**

A diversity of skills and experiences are required to effectively conduct and use science, technology and innovation surveys. African countries require experts and officials with understanding various concepts and skills to use various methodological approaches. Indeed the quality of the data emerging from these surveys depends upon training. Interviewing, coding and inputting of data are traditionally problematic and these problems are magnified when surveys across countries are meant to be comparable and thus provide policy-relevant benchmarks. It is thus crucial that, in addition to the provision of information, countries' capacity be strengthened through training of officials that are selected and designated to conduct the surveys and produce reports for the AIO.

Under this programme NEPAD will collaborate with competent institutions to organize and provide training workshops on various aspects of science, technology and innovation surveys. Members of the Inter-governmental Committee on Science, Technology and Innovation Indicators will be encouraged to participate in the workshops. Each workshop would include a module designed to build greater awareness of innovation systems, processes and policies. The workshops will be 3-5 days long and primarily deal with policy issues and with the role of surveys in providing data and analysis of relevance to policy-making. Modules aimed at strengthening technical skills needed to carry out the survey such as interviewing techniques and the use of software packages for coding and inputting data.

The training workshops are also intended to provide members of national survey teams with the opportunity to develop a common framework and habits of networking and coordination. Multi-country collaborative arrangements will be established to promote sharing of expertise and experiences.

### **3.5 Pilot surveys**

To ensure manageability of survey processes and enhance opportunities for learning and adaptation, a pilot phase will be launched prior to generalizing surveys across the continent. A maximum of fifteen countries might be considered for the pilot phase.<sup>10</sup> These should be countries that have subscribed to the African Peer Review Mechanism (ARPM) and where there is demonstrated commitment of governments to invest in producing input into AIO and readiness to institute science, technology and innovation policy reforms. Regional representation will also be useful in providing a richer flow of data and a deeper understanding of science and innovation systems across African countries. Criteria for selecting countries that should participate in the pilot phase will be developed and adopted by the Inter-governmental Committee on Science, Technology and Innovation Indicators.

The pilot phase will be carried over 18 months period that includes 6 months of consultation, organization, awareness building, training, sampling and testing. Ten months will then be dedicated to the survey, data coding and entry, and analytical aspects of the process and

---

<sup>10</sup> It is recommended that three countries from each of the five geopolitical regions or blocs of Africa participate in the pilot phase. Some of the countries would conduct R&D surveys while others would focus on innovation ones. A total of 23 African countries have signed the ARPM and several including Kenya, Rwanda and Ghana have completed first national reviews. Nigeria, Mozambique and South Africa have launched their reviews.

completion of the first set of national and comparative studies. The pilot phase will conclude with an overall evaluation of the process prior to launching a second round of surveys.

### **3.6 Second round of surveys**

The evaluation of the pilot phase will be used to make modifications to the survey instruments, methodology and process as a whole. Any modifications will then be considered and ratified by the Inter-governmental Committee on Science, Technology and Innovation Indicators. Emphasis will be placed on improving the quality and relevance of the surveys as well as ensuring cost effectiveness of the national process.

The second round of surveys will involve other countries (those countries that participated in the pilot phase will be encouraged to revise their surveys), selected again based on criteria adopted by the Inter-governmental Committee on Science, Technology and Innovation Indicators. Each of the participating countries will again be required to assemble a survey team that will then be trained (activity 3.4). Training material will have been reviewed and modified based on evaluation of the pilot phase.

### **3.7 Synthesis and experience sharing workshop**

The two phases—pilot and second—of the surveys will generate national reports/inputs for the AIO. To provide comprehensive comparisons and synthesis of the national surveys, a continental workshop will be organized. The workshop will also give countries an opportunity to share their experiences from conducting the surveys, compare the science and innovation systems, and develop an agreed upon framework/outline for the AIO. It will be organized as a meeting of the Inter-governmental Committee on Science, Technology and Innovation Indicators in order for its outcomes to have political legitimacy and governmental authority. The workshop is expected to generate consensus on elements or components of national surveys that should form integral parts of the AIO.

### **3.8 Production of the first African Innovation Outlook (AIO)**

One of the main outputs of the programme will be the AIO that will be produced from national surveys. The AIO will be a comprehensive comparative analysis of science, technology and innovation systems of African countries. NEPAD Office of Science and Technology will bring

together a group of experts, mainly from the national survey teams, to draft chapters of the AIO. The group will use the framework agreed on at the continental workshop (activity 3.7). A draft AIO will then be circulated to all countries and various institutions as well as experts for review. An independent panel will be established to review the draft AIO. The panel will assess the quality and relevance, and making specific recommendations for improving AIO. Comments and suggestions from this review process will be considered and those relevant will be incorporated.

### **3.9 Publication and dissemination of the AIO**

The final version of the AIO will be copy edited, printed in English and French, and then disseminated widely to relevant government institutes, academic bodies, donors, private sector and civil society groups. It will be formally launched at a conference of AMCOST in 2009. The conference will consider the report's recommendations and make decisions on how to implement them. Countries will be encouraged to hold national events to launch and adopt the report's recommendations. Such events will give policy-makers an opportunity to inform the public how the country intends to implement recommendations.

### **3.10 Public Media Sessions and Outreach**

To build a broad-based process and constituency for the AIO, NEPAD Office of Science and Technology will work with such special science media institutes as SciDev.Net. In particular, it will organize consultative sessions on the AIO and may develop packages of information on AIO e.g. press kits to be used by the media. It will seek to work with TV and radio stations on the continent to organize public briefing sessions during national surveys and meeting of the Inter-governmental Committee on Science, Technology and Innovation Indicators.

## **4. EXPECTED OUTPUTS AND FOLLOW-UP**

The main product of the proposed programme will be the AIO. The Outlook will be an authoritative source of data on the comparative analysis on and status of science, technology and innovation in Africa. It will be used by African governments to individually and collectively make policies for the advancement of science and technology. Other outputs expected from the programme are: (a) at least 50 African government officials and researchers trained/skilled to undertake science, technology and innovation surveys, (b) increased regional cooperation among African countries on matters of science, technology and innovation policy development, and (c)

the programme will also build better understanding of specific interventions that are required of African governments and the international community in order to improve the development and application of science and technology in Africa. It will stimulate or encourage African countries to keep the state of science, technology and innovation activities under constant review. The AIO will be formally launched in 2009 at the fourth conference of AMCOST.

This programme will constitute the first major African politically authorized effort to generate a comprehensive comparative survey of science, technology and innovation in Africa. Its success will determine or influence future surveys and assessments. NEPAD and the AU Commission will build on the first AIO to launch subsequent ones on biennial basis. To ensure that subsequent AIOs are of high quality, an external review of this two years' programme will be undertaken. It will be commissioned NEPAD and Sida/SAREC. Its findings will be used in developing follow-up activities. It is recommended that follow-up activities be integrated into the funding stream of the proposed African Science and Innovation Facility (ASIF). ASIF is envisaged to be a mechanism for mobilizing African and international resources for the implementation of AU/NEPAD programmes for science, technology and innovation.

## **5. IMPLEMENTATION STRATEGY AND INSTITUTIONAL ARRANGEMENTS**

This programme is being designed in such away as to be implemented through existing regional institutions that bring their best intellectual, administrative and infrastructure. Its success will depend on the voluntary participation and contributions of different national survey teams, government departments and relevant research institutions. The main objective of institutional networking or partnership approach is to benefit from the synergy of information exchange, the richness of diversity and shared resources.

To ensure that the STI indicators and information gathering as well as collation, compilation and validation are standardized, it is proposed that a virtual observatory be created in NEPAD Office of Science and Technology. This body would also provide the locus of networking all designated national survey teams. The proposed observatory will be the African equivalent to coordinating bodies such as the OECD Directorate for Science, Technology and Industry, managing expert committees from African countries and producing manuals, the AIO, and providing capacity building. It will coordinate the timely collection of data and it will organize relevant workshops, etc. It will identify and acquire the existing primary data internationally and develop the relevant indicators (i.e. bibliometrics, patents, trade and educational statistics et cetera).

To mobilize and use African and international expertise, NEPAD Office of Science and Technology will invite a number leading institutes to participate in the project. The Office intends to invite institutions such as the African Technology Policy Studies Network (ATPS), Wits University (South Africa), Lund University (Sweden), Centre for International Development at Harvard University (USA), Science Policy Research Unit (SPRU) and Institute for Development Studies (IDS) at Sussex University, the African Centre for Technology Studies (ACTS), United Nations University (UNU), and others to participate in the implementation of the proposed programme. They will be encouraged to bring their existing intellectual and financial resources to support the implementation of the programme in such ways as reviewing background studies, providing expertise to train African officials on science and innovation policy issues, and being sources of major texts on science, technology and innovation policy studies. A programme technical advisory group comprising of these and other selected institutions may be established. The committee would be responsible for review the technical quality of the programme's outputs. It would also advise NEPAD Office of Science and Technology on the programme.

The NEPAD Office of Science and Technology as a virtual observatory will also work and coordinate input from such as the multilateral organizations OECD, Eurostat and the UNESCO Institute for Statistics, various national survey teams and donor agencies having special interest in STI indicators. For there to be a dialogue about indicator development with UN organizations, Eurostat, the OECD, and national organizations outside of Africa, there must be a single African voice for the development and application of indicators of science, technology and innovation activities. The observatory will provide this voice.

The implementation of the programme will be largely guided by decisions of the Inter-governmental Committee on Science, Technology and Innovation Indicators. NEPAD Office of Science and Technology will ensure that the proposed activities evolve in such a way as to be easily modified or adjusted to reflect needs of the countries. The Office of Science and Technology is responsible for coordinating the development and implementation of science and technology related programmes. It has developed projects jointly with other NEPAD initiatives or offices. Examples include the AU/NEPAD African Biosciences Network that has been developed jointly with the NEPAD Comprehensive African Agricultural Development Programme (CAADP). This Network has four hubs dedicated to scientific research on specific African agricultural priorities. The initial CAD\$ 30 million funding for the Network was made available by CIDA. Other examples of cross-sectoral collaboration is the African water sciences and technology development network that is being designed together with the NEPAD Infrastructure Office and the health innovation policy studies work that are being carried out with the NEPAD

Health Desk. The health innovation policy studies are being funded from the US\$ 600,000 grant from the Gates Foundation. The Foundation is considering another proposal to support the development of regional health technologies procurement strategies and regulatory frameworks.

### Time-frame/work-plan

Activity	Duration							
	(Quarter from start of the project)							
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 5	Qtr 6	Qtr 7	Qtr 8
<b>Development and adoption of science, technology and innovation survey guidelines</b>								
<b>Preparation of background studies on experiences and approaches</b>								
<b>Establishing national survey teams</b>								
<b>Conducting training workshops</b>								
<b>Conducting pilot surveys</b>								
<b>Conduct second round surveys</b>								
<b>Production of the first African Innovation Outlook (AIO)</b>								
<b>Publication and dissemination of the AIO</b>								
<b>Conducting public media sessions and outreach</b>								

