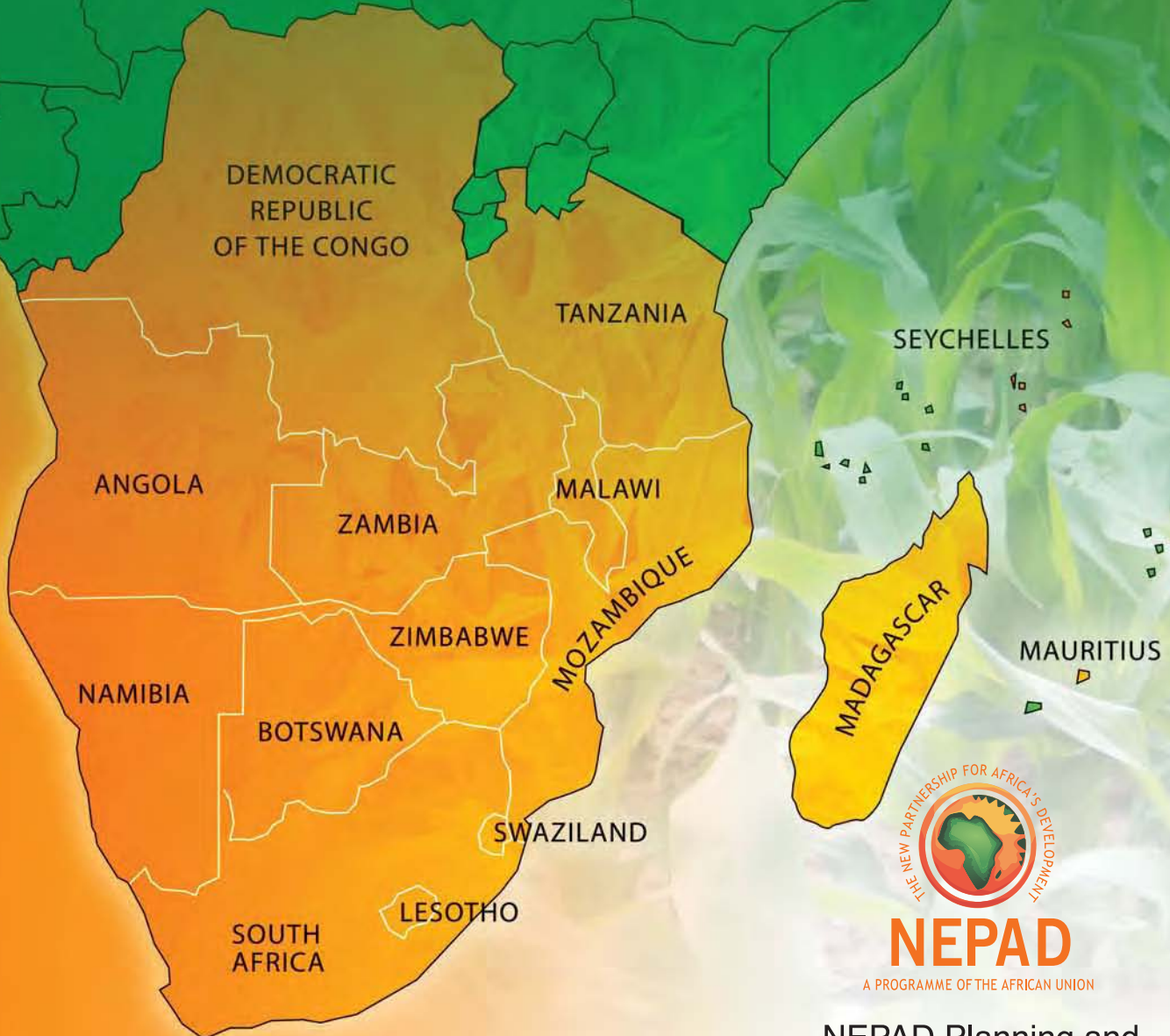


REPORT ON ACTIVITIES OF THE NEPAD AGENCY IN THE
IMPLEMENTATION OF THE
**AFRICA'S SCIENCE & TECHNOLOGY
CONSOLIDATED PLAN OF ACTION
(CPA)**
IN SOUTHERN AFRICA



NEPAD Planning and
Coordinating Agency (NPCA)

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NEPAD Planning and
Coordinating Agency (NPCA)

Table of Contents

1. Background	3
2. Programme 1: AU NEPAD African Biosciences Initiative	3
2.1 Implementation arrangements for NEPAD/ABI	3
2.2 Research and development programmes in SANBio	4
2.2.1 <i>Human capacity development</i>	5
2.2.2 <i>Infrastructure capacity strengthening</i>	5
2.2.3 <i>Networking</i>	5
2.2.4 <i>Gender mainstreaming in SANBio</i>	6
2.2.5 <i>Enhancing visibility of SANBio</i>	6
2.2.6 <i>Broadening partnerships</i>	6
2.2.7 <i>Attracting domestic support</i>	6
3. Programme 2: Strengthening Pharmaceutical Innovation in Africa	7
4. Programme 3: Mobilizing Support for Harmonizing Medicines Registration in Africa: Improving Access to Priority Medicines	7
5. Programme 4: African Science, Technology and Innovation Indicators Initiative	8
6. Programme 5: Building a Sustainable Energy Base	8
7. Programme 6: Securing and Sustaining Water: Building an African Network of Centres of Excellence in Water Sciences and Development	9
8. Programme 7: African Laser Centre	9
9. Programme 8: Establishment of an African Mathematical Institutes Network	10
10. Conclusion	10
Snapshots of ongoing NEPAD Agency/SANBio Projects	11

1. Background

NEPAD Science and Technology Sector has been implementing the “AU/NEPAD Africa’s Science and Technology Consolidated Plan of Action (CPA)” since its endorsement by the African Union Summit of Heads of State and Government in 2006. The implementation is around the three pillars of the CPA, namely (1) knowledge production, (2) capacity building and (3) technological innovation. These programmes have been designed with emphasis on African leadership and ownership as well as building on existing effort and creation of networks of centres of excellence for research and development capacity strengthening. Currently, there are eight programmes that are being implemented on different pillars of the CPA. NEPAD Agency is working on the five clusters of flagship programmes of the CPA which are: 1) Biodiversity, Biotechnology and Indigenous Knowledge, 2) Energy, Water and Desertification, 3) Material Sciences, Manufacturing, Laser Technologies and Post–Harvest Technologies, 4) ICT and Space Sciences, 5) Mathematical Sciences. This report provides a snap-shot view, of the progress that has been made in the implementation of these programmes.

The 14th Ordinary Session of the Assembly of the African Union (AU) held in Addis Ababa, Ethiopia, in February 2010 approved the integration of NEPAD into AU structures and processes.

This included the establishment of the NEPAD Planning and Coordination Agency (NPCA) (NEPAD Agency) as a technical body of the AU to replace the NEPAD Secretariat. The Assembly further mandated the NEPAD Agency to (i) facilitate and coordinate the implementation of continental and regional priority programmes and projects, (ii) mobilise resources and partners in support of their implementation, (iii) conduct and coordinate research and knowledge management, (iv) monitor and evaluate the implementation of programmes and (v) advocate on the AU and NEPAD vision, mission and core values.

This decision has resulted in the restructuring and refocusing within the old NEPAD outfit in order to implement the Assembly’s decision. The major shift in the implementation process is that less emphasis is being put on sectoral approach with strong emphasis being on delivering on strategic objectives of the NEPAD Agency. It is from this evolving positive outlook that this Report is being presented with a focus on the implementation of the CPA.

2. Programme 1: AU/NEPAD African Biosciences Initiative (ABI)

NEPAD/ABI is one of the early initiatives that have allowed Africa to experiment with the implementation of a continent-wide Science Plan entitled “AU/NEPAD Africa’s Science and Technology Consolidated Plan of Action (CPA)”. With initial contribution from the Government of Canada, the implementation of NEPAD/ABI begun even before the CPA was adopted and endorsed by the African Union Summit of Heads of State and Government in 2006. Lessons learnt from the implementation of ABI informed the fine-tuning of the CPA so that implementation of other flagship programmes could be expedited.

2.1 Implementation arrangements for NEPAD/ABI

The NEPAD/ABI is in conformity with the regional networking approach adopted by the African Ministerial Conference on Science and Technology (AMCOST) whereby institutions make their resources available to address common challenges that impinge on the regions in the areas of human health, agricultural productivity, sustainable water resources management, biodiversity management, and sound environmental management. In this regard, four regional networks

have been established on the continent, namely, the Southern Africa Network for Biosciences (SANBio) covering 12 southern African countries, the Biosciences eastern and central Africa Network (BecANet) covering countries in eastern and central Africa, the West Africa Biosciences Network (WABNet) covering the 15 countries of Economic Community of West African States (ECOWAS) region; and the North African Biosciences Network (NABNet) covering six countries in North Africa. A network comprises a hub and nodes spread throughout the region. A Hub is an institution that is involved in cutting edge research and has critical mass of expertise that is actively involved in research and development while Nodes are institutions that are also actively involved in research and have expertise that provide unique skills and research facilities to complement the capacity of the Hub. In SANBio the Council for Scientific and Industrial Research (CSIR) of South Africa hosts the Hub for SANBio, the International Livestock Research Institute (ILRI) hosts the Hub for BecANet, Institut Sénégalais de Recherches Agricoles (ISRA) hosts the Hub for WABNet while the National Research Centre of Egypt hosts the Hub for NABNet.

2.2 Research and development programmes in Southern Africa Network for Biosciences (SANBio)

The Southern Africa Network for Biosciences (SANBio) is currently implementing eight R & D projects in SADC involving the CSIR-Hub and six country Nodes which have been established in different countries in the region. Table 1 gives a summary of the eight projects, the Nodes and the participating countries.

Table 1. SANBio Project and Stakeholder Institutions 2009-2012

	Project	Node/Coordinator	Countries/institutions participating
1	Capacity building in bioinformatics for the Southern African region	University of Mauritius, Mauritius	SADC countries, Finland, Sweden,
2	Capacity building in indigenous knowledge systems	University of North West, RSA	SADC countries
3	Microbicides for HIV infection control	CSIR, RSA	Namibia, Zambia, Lesotho, RSA, Botswana, Malawi, Mozambique, Zimbabwe
4	Mushroom production for food security and health benefits	University of Namibia, Namibia	Angola, Namibia, Mozambique, Malawi, Swaziland, Zambia
5	Fish biodiversity in inland rivers in Southern Africa	Bunda College of Agriculture, Malawi	RSA, Namibia, Angola, Zambia, Malawi, Mozambique
6	Scientific validation of traditional remedies for HIV/AIDS	CSIR, RSA	Namibia, Zambia, Lesotho, RSA, Botswana, Malawi, Mozambique, Swaziland
7	Improving livestock production by controlling livestock diseases	National Institute for Scientific and Industrial Research/ University of Zambia, Zambia	Zambia, Namibia, Zimbabwe, RSA, Malawi
8	Plant genetic resource policies and policy guidelines	SADC Plant Genetic Resources Centre, Zambia	SADC Countries, Nordic countries

Note: Tanzania, Madagascar and DRC are not included in the SANBio activities because they belong to the other ABI Network, BecANet, which has a number of programmes in biosciences in Eastern and Central Africa.

One of the projects expected to give early deliverables is the flagship project on 'scientific validation of traditional remedies for HIV/AIDS'. The project is validating a mixture of four plants (code named SF-2000), a herbal remedy being administered by a herbalist in the region for HIV/AIDS. If funds can be secured the project has this year planned to commission a clinical trial whereby the remedy will be administered as capsules formulated and produced by the network.

The other equally important research projects in SANBio network include technology transfer to local communities, especially women and the youths, for producing mushrooms using affordable local resources; and research in aquaculture systems involving use of plastic sheeting as covers to improve productivity of pond environment for increased fish growth.

2.2.1 Human capacity development

On the critical and cross-cutting issue of capacity development, SANBio is building the capacity of African scientists in applied and basic sciences through short- and long-term training as exemplified in the milestones below:

- Short courses (e.g. Project Cycle Management, Intellectual Property Rights, ICT skills and Data Management - 50 participants from the region (2008-2010) have been trained
- Additional 300 participants (including farmers) will be trained in 2010-2012 in mushroom farming.
- 9 Masters students have been trained at University of Pretoria, University of Witwatersrand, North West University, University of Cape Town, and University of KwaZulu Natal,
- 2 PhDs (2006-9) have been trained at University of Pretoria and University of Witwatersrand in drug discovery.
- In 2010-2012 an additional 40 postgraduates (33 MSc's & 7 PhD's) will be trained at University of Mauritius, University of Zambia, Bunda College of Agriculture and University of Cape in Bioinformatics, Fisheries and Medicinal Chemistry.

2.2.2 Infrastructure capacity strengthening

Within SANBio, through support from the Governments of Finland and South Africa, NEPAD is establishing a bioinformatics core facility at the University of Mauritius and an Indigenous Knowledge Systems (IKS) Centre of Excellence at University of North West in South Africa. A mushroom germplasm bank will be established in Swaziland. These centres will enhance capacity building in these domains in Southern Africa.

2.2.3 Networking

Networking is viewed as an essential component for accelerating capacity building and collaborative research efforts among institutions involved in biosciences in Africa. More endowed biosciences institutions are being linked to less endowed ones in all the regions of the continent. Over the years, thematic research teams have been established, such as on improving banana production, validation of herbal remedies, bioinformatics, fisheries and aquaculture, cereal improvement, just to mention a few. A more important development is that thematic networks are now running across regional boundaries. For instance, the trypanosomiasis and tsetse fly research network consists of institutions and researchers in the SANBio and BecANet countries. Networking has provided opportunities for young men and women to access training facilities in other countries and sub-regions. A total of 41 students from post-conflict countries of Democratic Republic of Congo (DRC), Sudan, Congo Brazzaville and Burundi are now training for postgraduate qualifications in Kenya and Uganda. Out of this number 10 students (24%) are from the DRC.

NEPAD/ABI has further forged links with the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), Eastern African Research Network on Biotechnology (BIOEARN), Sustainable Aquaculture Research Network for Sub-Saharan Africa (SARNISSA), Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), African Network for Agriculture, Agroforestry, and Natural Resources Education (ANAFE) and European Audit Research Network (EARNET) in research, development and capacity building. These linkages are aimed at creating synergies by exchanging information, minimizing duplication of efforts and pooling resources together for cost effective implementation of programmes and projects.

2.2.4 Gender mainstreaming in biosciences

Gender mainstreaming continues to be SANBio's priority area. There have been deliberate efforts aimed at ensuring participation of women in governance, research and capacity building activities. Currently, 50% of the staff at the SANBio Secretariat is female. Over 25% of students supported by SANBio are females.

2.2.5 Enhancing visibility of SANBio

SANBio has developed a communication strategy that has been used to implement communication and outreach activities with the aim of producing timely, transparent, accurate and cost-effective communications for informing the science community and beneficiaries. Communication within NEPAD/SANBio has reached diverse stakeholders using different means such as websites, leaflets, brochures, CD-ROMs, newsletter and other publications. SANBio has also implemented other dissemination mechanisms such as regular stakeholder meetings and workshops, exchange visits and attending research and development exhibitions such as the recently held SADC S & T exhibition in Mauritius, with the aim of showcasing SANBio activities and outputs.

2.2.6 Broadening partnerships

Support provided to SANBio by Canada through CIDA and the Government of South Africa through the DST has been used as seed funding which has attracted additional investment from other partners. Additional support has been provided by the Government of Finland and the European Union. Now that SANBio has been demonstrated to be a successful mechanism for building African research networks, it is expected that more partners will contribute to SANBio.

2.2.7 Attracting domestic support

SANBio has attracted support from African governments in several forms, although the number of countries providing such support has been picking up at a slow rate. All SANBio secretariat and Node office spaces have been provided by African governments. This also includes utilities like electricity, water and security services. Node Secretariats are enjoying duty and tax-waivers provided by some of the governments hosting Secretariats, which culminates into considerable savings on research equipment and consumables. The research projects that have been implemented through SANBio in the national research and tertiary education institutions are supervised by principal investigators who are paid salaries by their own institutions. SANBio contribution has therefore been used to cover operational services for executing research programmes. Direct financial support has also been received from some countries with South Africa leading by providing up to R15 million to SANBio. Other countries that have provided financial support to SANBio include Malawi, Namibia and Zambia.

3. Programme 2: Strengthening Pharmaceutical Innovation in Africa

The NEPAD African Research for Health Initiative (ARHI) is building a programme aimed at strengthening pharmaceutical innovation in Africa. Against the background of recent African and international intergovernmental agreements, Declarations and initiatives - on health research, medicines access and production – a special meeting of the extended technical committee of the Pharmaceutical Manufacturing Plan for Africa was held in Pretoria, South Africa, on February 18-20, 2010. This was in the context of the report of the study, Strengthening Pharmaceutical Innovation in Africa, by NEPAD and the Council on Health Research for Development (COHRED).

The programme is addressing the problems and challenges faced by African countries in their quest to improve access to medicines, research for improved products, and stimulate local production of medicines – in Africa, by African countries. This is in the context of implementing the Africa Health Strategy, the Pharmaceutical Manufacturing Plan for Africa and the Africa's Science and Technology Consolidated Plan of Action.

4. Programme 3: Mobilising Support for Harmonising Medicines Registration in Africa: Improving Access to Priority Medicines

The African Medicines Regulatory Harmonization (AMRH) Initiative was established to assist African countries and regions to respond to the challenges posed by medicines registration – as an important, but neglected area of medicines access. It seeks to support African Regional Economic Communities and countries in harmonising medicines registration using existing political structures and building on existing plans and commitments.

The primary aim of harmonizing medicines registration is to improve public health, by increasing timely access to safe and efficacious medicines of good quality for the treatment of priority diseases. Access will be improved by reducing the time it takes for priority essential medicines to be registered in-country (including the time needed for industry to prepare their registration application/dossier) and so potentially the time taken for essential therapies to reach patients in need (depending on funding, distribution mechanisms etc.). This will include capacity building to ensure transparent, efficient and competent regulatory activities (assessment of registration dossiers and related inspections) that are able to assure the quality, safety and efficacy of registered medicines.

The AMRH initiative was the outcome of -a New Partnership for Africa's Development (NEPAD) and Pan-African Parliament (PAP) consultative meeting in February 2009. The meeting attracted representation from nine of the continent's Regional Economic Communities (RECs) and 40 national medicines regulatory authorities (NMRA). This provided a strong endorsement for the consensus plan that emerged and hence the approach that RECs and NMRAs are now adopting.

Several RECs have already supported harmonization of medicines registration by developing common pharmaceutical policies and operational plans – backed by high-level political commitments and mandates. For example, in East Africa under the provisions of Chapter 21

(Article 118) of the East Africa Community (EAC) treaty, medicines registration harmonization is an explicit policy priority. The United Republic of Tanzania is providing leadership in the East Africa process. Likewise, in Southern Africa, Ministers of Health have approved the Southern African Development Community (SADC) Pharmaceuticals Business Plan, with explicit goals to harmonize medicines registration. NEPAD Agency has negotiated financial support from partners which RECs will be accessing depending on the budgetary requirements.

5. Programme 4: African Science, Technology and Innovation Indicators (ASTII) Initiative

Statistics should be considered as an essential public asset in any decision-making process. Likewise, an adequate, African led, system of indicators for Research & Development (R&D) and Innovation is essential in understanding the significance and the development of, and the implementation of Science, Technology and Innovation (STI) policies for the socio-economic transformation of the continent. AMCOST I and II resolved that common indicators be adopted for ST&I in order to benchmark the status of science and technology in the AU members states. Currently, the first phase has been implemented in the following 19 African countries: Algeria, Angola, Burkina Faso, Cameroon, Egypt, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Malawi, Mali, Mozambique, Nigeria, Senegal, South Africa, Tanzania, Uganda, and Zambia. The first phase of the initiative focuses on STI indicators which are well defined, methodologies for their production and provides a basis for international comparison. The indicators expected from the first phase include: (i) R&D expenditures on performance; funding for each sector of the economy; (ii) researchers, technicians, and support staff engaged in R&D, by sector of the economy; (iii) patents and publication by country of origin and (iv) novelty in firms and propensity to innovate. The second phase will consolidate the experience gained in the first phase, expand to all the member states of the African Union and set the pace for the development of African specific STI indicators.

The first phase of the ASTII Initiative benefited from a seed funding of US\$2.9 million from the Swedish International Development Cooperation Agency (Sida) and co-funding by participating countries. Design of the second phase is currently underway with earmarked continued support from Sida.

6. Programme 5: Building a Sustainable Energy Base

The overall objective of the 'Building a Sustainable Energy Base' flagship programme is to enhance Africa's energy security through the generation and application of scientific knowledge and related technological innovations. In general, the flagship programme aims to address the requirements of Agenda 21 pertaining to environmentally sound technologies (ESTs).

A programme on bioenergy is being developed by the NEPAD Agency with the aim of increasing access to energy by rural communities from bioresources. It will concentrate on bioenergy policy, capacity building, bioenergy technology development for small scale communities, and mapping bioenergy resources. Southern African countries have high potential for benefiting from the bioenergy industry but this will have to be developed without compromising food security needs of the region. As for bioethanol, most plants that can be used as feedstock in Africa are in Southern African Development Community (SADC) where active participants include South Africa, Malawi, Swaziland, Mauritius, and Zimbabwe. There are also substantial amounts of sugarcane and a big potential for doubling current production in the region.

7. Programme 6: Securing and Sustaining Water: Building an African Network of Centres of Excellence in Water Sciences and Development

The first AMCOST conference held in Johannesburg in 2003, decided on Water Science and Technology to constitute one of the main flagship programmes of NEPAD. NEPAD has therefore been working with Institut de Recherche pour le Développement (IRD) of France and Water Research Commission (WRC) of South Africa to establish a network of expertise in water sciences and technology. Arising from these consultations the Southern Africa Water Sciences and Technology Network was established in March 2009. The network is currently developing a business plan to start some of its programmatic activities. Founding members include University of Stellenbosch which hosts the hub, Eduardo Mondlane University, University of KwaZulu Natal, CSIR, University of Western Cape, University of Malawi, University of Botswana and University of Zambia. The seed support provided by NEPAD Agency to the network has been further increased by a grant of R3 million from the Republic of South Africa. The Joint Research Centre (JRC) of the EU will also be disbursing about €750,000 to the network as part of the €1.5 million EU grant to support NEPAD centres of excellence in Water sciences. NEPAD Agency and JRC will be finalizing the disbursement once the business plan has been finalized.

8. Programme 7: African Laser Centre

The African Laser Centre (ALC) is a virtual network centre. It has been structured such that it is a virtual network which is open to all African research institutes that engage in laser based research. The ALC originated from a program that the CSIR NLC started in 2001 to develop a research collaboration network across the African continent that would involve laser, optics and spectroscopy researchers. The membership of the ALC is open to research institutions engaged in laser related research. These institutes are situated anywhere in Africa and are represented on the ALC by a person nominated by that institution. At present, the ALC has approximately 31 member institutions. The following SADC countries are participating on the network: South Africa, Zambia, Namibia, Lesotho and Zimbabwe. The ALC has a Board of Directors whose mandate is to provide an independent oversight on the management of this organization for the benefit of the stakeholders.

The areas of research supported by the ALC are photonics based, and links to various research fields such as photo biology, electronics, semi conductor physics, fiber devices, photo sensors, opto-electronics, solid state physics, material science, laser spectroscopy, non-linear optics, lasers and laser technology, and Lidar and atmospheric remote sensing. These research fields have application which is relevant to Africa's economic development.

The ALC's Educational Programme aims to improve skills of young researchers and/or technicians who are involved in laser science and technology in various institutes on the African continent. This programme focuses mainly on three broad areas, namely, 1) Young researcher and technician training schools, 2) Scholarships and, 3) Conferences/workshops/ symposia etc.

The major challenge with the ALC is that since its inception in 2002, it has been single-handedly supported by Republic of South Africa. The NEPAD Agency will in its new outfit work with the management of the network in order to broaden the support base for this important initiative.

9. Programme 8: Establishment of an African Mathematical Institutes Network (AMI-Net)

The African Institute of Mathematical Sciences (AIMS) is a pan-African centre for postgraduate training and research located in Cape Town, South Africa. It opened in September 2003 (See www.aims.ac.za). AIMS was presented as a NEPAD identified Centre of Excellence at the first AMCOST meeting in Johannesburg in November 2003.

AIMS recruits outstanding graduates from all over Africa for a unique, intensive nine-month postgraduate diploma course preparing them for research and lecturing careers. The AIMS course teaches advanced skills useful across all of the quantitative sciences, such as mathematical methods, computation, approximation and modelling; it provides an exposure to many cutting edge disciplines, especially those of special relevance to Africa and Africa's development. AIMS graduates have an excellent record of proceeding to top research programmes within Africa and abroad.

Between 2003 and 2009 AIMS has graduated a total of 264 African students from all regions of the continent. Eighty six- (33%) of these students are from the SADC region. Fifty three students are currently at AIMS from 20 different African countries. The quality of the students has grown strongly, with over six applications currently received for each available place.

Over the past three years, AIMS and its partners across Africa have developed a proposal to set up AMI-Net. Following a call for proposals, a series of site visits have been held, with full business plans developed for AMI-Net nodes in Ghana, Madagascar, Sudan and Uganda. Nodes are also being explored in other countries, including Botswana, Egypt and Ethiopia. Each identified site has excellent human and natural resources, and good prospects of developing into a Centre of Excellence. NEPAD Agency is currently working with AMiNet to access a grant of several millions from the Government of Canada.

10. Conclusion

Science and Technology for economic transformation is high on the agenda of the African leadership. The collective vision for S&T and articulation of its implementation is contained in the CPA. Implementation of the CPA is a collective effort starting from country-level through to continental level. Regional networks of centres of excellence have already started yielding benefits.

Snapshots of ongoing NEPAD Agency/SANBio Projects

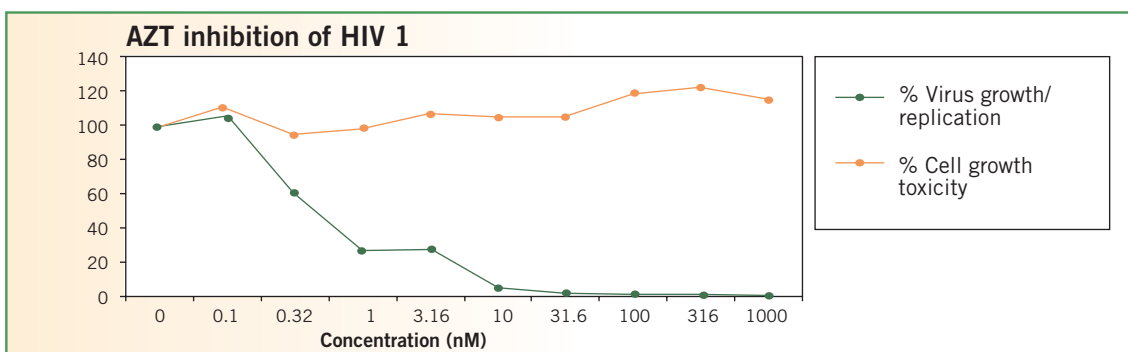
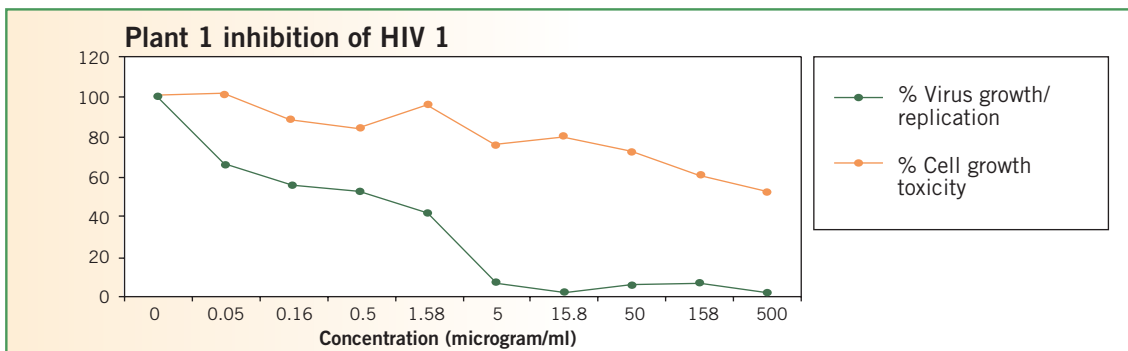
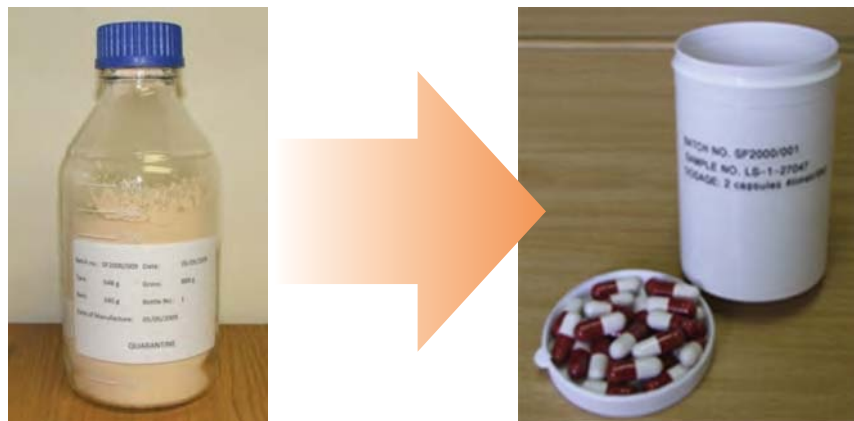
1. On farm applied research on improving fish production from small-scale ponds

Dowa District in Central Malawi



2. SF- 2000 Herbal remedy formulation for HIV/AIDS formulation to under go clinical trial in 2010

CSIR-Biosciences and MRC, RSA



3. Capacity Building in Bioinformatics – Training Courses



University of Mauritius



University of Pretoria

4 Promoting mushroom farming for poverty alleviation and health benefits

Henties Bay, Namibia





science
& technology

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Science and Technology
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