



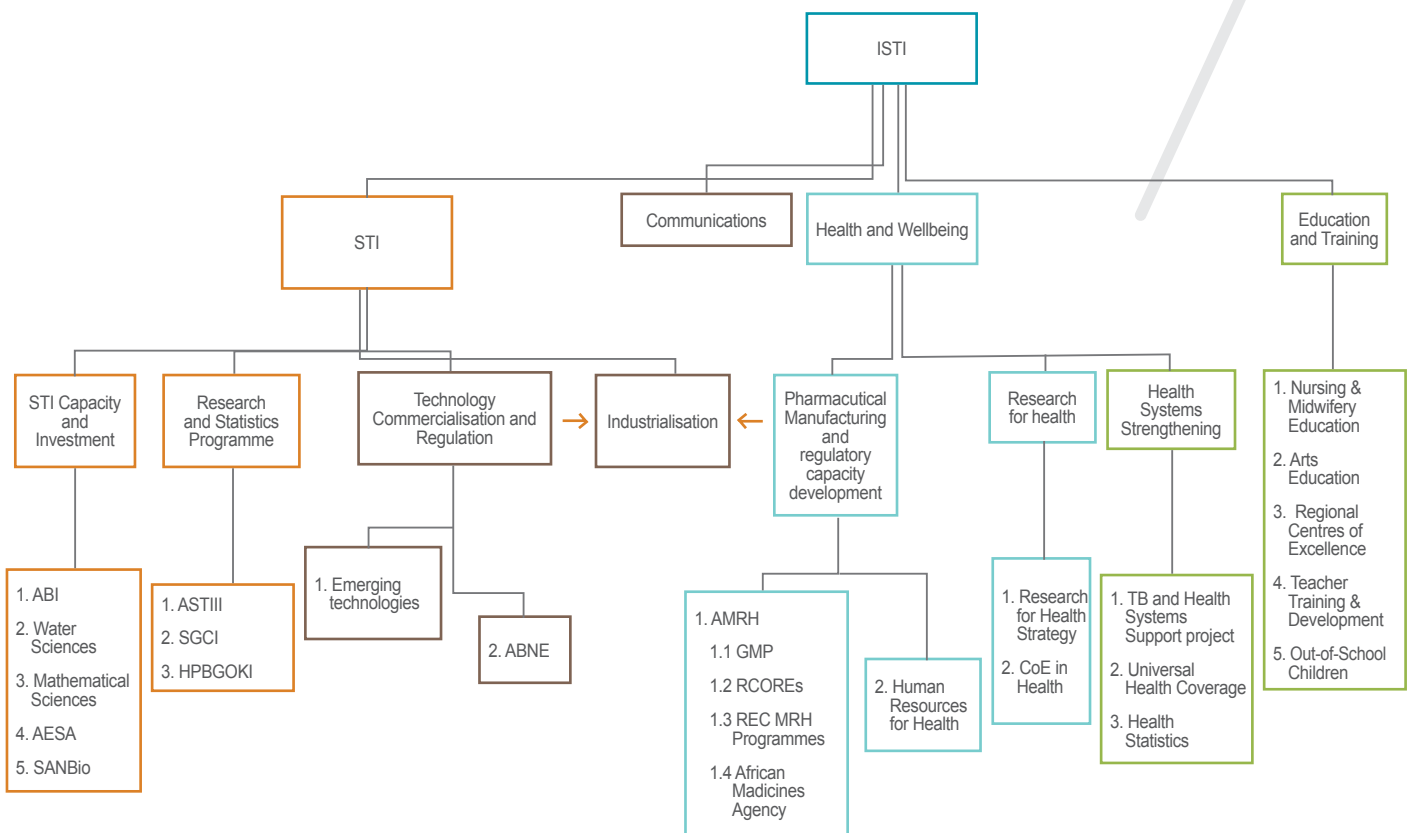
**INDUSTRIALIZATION, SCIENCE,
TECHNOLOGY & INNOVATION (ISTI)**

About NEPAD Industrialization, Science, Technology and Innovation

Industrialization, Science, Technology and Innovation (ISTI) is one of the four (4) investment programmes of the NEPAD Agency addressing new and emerging development trends in Africa, guided by the African Union (AU) mandate. The programme has a footprint across the African continent, implementing various innovative initiatives at national, regional and continental level for the social and economic development of the African people. The work of this unit is driven by both qualitative and quantitative data, particularly in science, health and emerging technologies and works towards harmonisation of national and regional policies to ensure synergies with continental policy frameworks. It also promotes capacity development in the area of industrialisation, science, technology and innovation, as well as research and development (R&D) in Africa.

This work is organised using a matrix of three (3) interconnected intervention areas: (i) Science, Technology and Innovation (STI); (ii) Health and Wellbeing; (iii) Industrialisation; and (iv) Education and Training. Using a multisectoral and interdisciplinary approach, each of the identified intervention areas are responsible for implementing a cluster of programmes related to ISTI in Africa. For an overview of the different clusters and associated programmes implemented under each intervention area, please see the organogram.

Industrial, Science, Technology and Innovation Programme Orientation



(i) Science, Technology and Innovation (STI)

The AU Agenda 2063 recognises science, technology and innovation (STI) as multi-functional tools and enablers for achieving continental development goals. Sustained investment in new technologies and continuous innovation in areas such as agriculture, clean energy, education and health is critical in sustaining Africa's current growth, competitiveness and economic transformation. The NEPAD Agency, through its STI intervention area, implements programmes to build the capacity of AU Member States in STI, including providing technical assistance, creating an enabling policy and regulatory environment for new technologies, and engaging in resource mobilisation – especially in the area of health, agriculture and education to support the vision of the AU Agenda 2063.

The work of the NEPAD Agency in STI is guided by the Science, Technology and Innovation Strategy for Africa (STISA-2024) designed to meet the knowledge, technology and innovation demands in various AU economic and social sector development frameworks. The STISA-2024 aims to accelerate Africa's transition to an innovation-led, knowledge-based economy in line with the AU vision and is a successor of the 2005 Consolidated Plan of Action (CPA). The CPA was established as an instrument for the implementation of the AU Assembly of Heads of State and Government on STI and endorsed for immediate implementation in 2006. The NEPAD Agency has implemented various programmes under its STI intervention to support the implementation of the CPA, and continues to implement programmes to meet the objectives of the STISA-2024; thereby contributing to attaining the goals of the AU Agenda 2063.

(ii) Health and Wellbeing

Health and wellbeing represents an integral goal of the AU Agenda 2063, which emphasises the need to have healthy and well-nourished citizens. In achieving this goal, the AU developed its first African Health Strategy (AHS) 2007–2015. Following an assessment report of AHS 2007–2015, it was recommended that a revised AHS be developed. The NEPAD Agency contributed to the development of the new AHS 2016–2030 by providing technical and financial support. The vision of AHS 2016–2030 is an integrated, inclusive and prosperous Africa, free from its heavy burden of disease, disability and premature death. The NEPAD Agency's Health and Wellbeing intervention area contributes to the vision and goals of the AHS by implementing programmes aimed at strengthening health systems and promoting harmonisation of medical products' regulatory environments to increase access to such products for people in Africa. It also contributes to the development of regulatory capacity in Africa.

AHS 2016–2030 is an overriding document that reinforces existing policy frameworks in health, i.e. the Pharmaceutical Manufacturing Plan for Africa (PMPA). The NEPAD Agency promotes local pharmaceutical industries and local production of medicines, as well as prohibiting Substandard, Spurious, Falsified, Falsely-labelled, Counterfeit (SSFFC) medical products to improve the quality, safety, efficacy of medicines on the continent. Africa has achieved milestones in efforts to roll back Malaria and fight AIDS, however, Tuberculosis (TB) continues to lag behind. Hence, the NEPAD Agency is implementing a programme with its partners to fight TB, thereby contributing to both the Catalytic Framework to end AIDS and TB and eliminate Malaria in Africa by 2030, and the Roadmap for Shared Responsibility and Global Solidarity for AIDS, TB and Malaria in Africa through practical African-sourced solutions. NEPAD Agency is supporting efforts to diversify financing, increase access to medicines, enhance governance in health and promote research for health.

(iii) Industrialisation

Industrialisation is a critical engine for economic growth and development. However, Africa is marginalised for its low level of industrialisation. In 2007, the AU developed an Action Plan for the Accelerated Industrial Development of Africa (AIDA) and one of its main focus areas is human capital development and sustainable STI. The NEPAD Agency is working with AU Member States to mainstream industrialisation into National Development Strategies (NDSs) in various sectors, including agriculture and health. NEPAD Agency engages in resource mobilisation and provides technical assistance in conducting assessments and analyses of the potential benefits as well as risks in the adoption of new and emerging technologies. It is building capacity to ensure that regulatory systems in Africa are improved and harmonised to promote the adoption of emerging technologies.

Innovation is at the centre of industrialisation, and the NEPAD Agency is supporting AU Member States in developing sustainable mechanisms and a culture for financing their own innovation and development. Private-public partnerships are also encouraged in harnessing the potential of new and emerging technologies to accelerate the industrialisation of Africa.

(iv) Education and Training

One of the goals of the AU Agenda 2063 is to establish knowledge societies in Africa driven by skilled human capital. Education is cross-cutting and very important in delivering the necessary human capital to contribute to the realisation of AU Agenda 2063 aspirations, goals and priority areas in education. After the success of the AU Second Decade of Education for Africa (2006–2015), the AU Continental Education Strategy for Africa (CESA) 2016–2025 was developed with the aim of re-orientating Africa's education and training systems to meet the knowledge, competencies, skills, innovation and creativity required to nurture the continent's core values and promote sustainable development at the national, regional and continental levels. In order to realise this in the health sector, there is a need to improve the number and quality of human resources to deliver quality healthcare.

In contributing to the above frameworks, the NEPAD Agency's Education and Training Programme is focused on capacity building and human resource development at country and regional levels through implementation of five projects in the following areas: (i) nursing and midwifery education directed at improving primary healthcare delivery through academic training at postgraduate level in midwifery; (ii) arts education focussed on developing human capabilities in the arts and improving the quality of arts education at primary and secondary school level; (iii) regional centres of excellence that work collaboratively to leverage existing skills and resources across borders and disciplinary areas; (iv) teacher training and development focussing on teacher professional development in mathematics, science and technology education; and (v) out-of-school children focussing on research and policy formulation that assists children who missed out on formal education in Africa.

African Biosafety Network of Expertise (ABNE)

The African Biosafety Network of Expertise (ABNE) is a continent-wide biosafety service and resource network for African regulators and policymakers. ABNE is an African-led and -based initiative conceptualised under the NEPAD Agency's Consolidated Plan of Action (CPA) and is designed to fulfil the recommendations of the 2007 report by the High-Level African Panel on Modern Biotechnology – Freedom to Innovate. The overall goal of ABNE is to support advancement of science and technology for agricultural development in Africa through the establishment of functional biosafety systems.

ABNE offers biosafety capacity building services aimed at empowering African regulators with science-based information. The network draws on available expertise, resources and infrastructure, and develops capacity and linkages with institutions within Africa and globally. It enables African countries to harness modern agricultural biotechnology for improved food security, income and livelihoods, while minimising potential risks to the environment and human health. The programme is designed to provide scientific and technical information, training, education and advisory support on the design and production of guides presenting standard operating procedures and practical biosafety guidelines. ABNE is also involved in facilitating policy dialogue that brings together African regulators, policymakers, scientists, and other relevant stakeholders at national, regional and international levels.

ABNE has been providing expertise to African countries in the effective and safe use of science and biotechnology for agricultural development.



Source: ABNE

Alliance for Accelerating Excellence in Science in Africa (AESAs)

AESA is a Pan-African platform aimed at championing the development of research for health capabilities in line with the AU Science Technology and Innovation Strategy for Africa (STISA-2024). The alliance represents an exciting new model that seeks to support the development of research leadership and promote scientific excellence and innovation to address some of Africa's developmental challenges, i.e. the shortage of researchers to effectively deal with the continent's disease burden. AESA engages state and non-state actors in Africa to mobilise resources and establish mechanisms for ensuring sustainable long-term funding towards building research leadership and promoting scientific excellence and innovation in health.

There are three (3) main programmes under AESA: Developing Excellence in Leadership, Training and Science (DELTAS), the Grand Challenges Programme and Good Financial Grant Practices Programme (GFGP). These programmes are designed to accelerate African-led development of world-class researchers and research leaders in Africa, inspire innovation to address and significantly impact major health problems on the continent, and development of a pan-African standard for GFGP. Furthermore, AESA is designing programmes to fund African research and supports the next generation of outstanding African researchers who will contribute to solving some of Africa's greatest health and development challenges.

AESA funds and manages science programmes, works in partnership with stakeholders to develop health research strategies, and monitors investments in science on behalf of African and global partners. AESA provides a vital platform for managing Africa-focused research programmes and is an autonomous think tank designed to support African scientists to have greater control in directing the African continent's science.



African Medicines Regulatory Harmonisation (AMRH) Initiative



Source: AMRH

The AMRH initiative is a programme of the AU implemented as part of the Pharmaceutical Manufacturing Plan for Africa (PMPA). The programme started in 2009 as a response to addressing challenges faced by National Medicine Regulatory Authorities (NMRAs) in Africa, which include weak or non-coherent legislative frameworks, sluggish medicine registration processes and subsequent delayed approval decision, inefficiency and limited technical capacity, among others. The work of AMRH is guided by four (4) focus areas: (i) policy alignment; (ii) regional integration and harmonisation; (iii) human and institutional capacity development; and (iv) enabling environment for co-ordination, partnership and resource mobilisation.

The programme is supporting Medicines Regulatory Harmonization (MRH) programmes at regional level with regional economic communities (RECs), and is working with regional organisations (ROs) and industry players to strengthen health systems. It is also supporting Good Manufacturing Practices (GMP) and has designated 11 Regional Centres of Regulatory Excellence (RCOREs), as well as established a pool of regulatory experts. The AU Model Law on Medical Products Regulation was endorsed by the AU Heads of State and Government and the AMRH programme is now focusing on supporting its implementation by AU Member States at national level. Building on these milestones, the new AMRH Strategic Plan (2016–2020) defines the strategic direction for the Medicines Harmonisation Agenda in Africa and provides direction to advance the development of the pharmaceutical sector, as well as guidance in monitoring, evaluation and impact assessment.

African Science, Technology and Innovation Indicators (ASTII) Initiative

The African Science, Technology and Innovation Indicators (ASTII) initiative was launched in 2007 to build the capacity of African Union (AU) Member States to collect and analyse science, technology and innovation (STI) indicators to support prudent policy formulation and research agendas that address economic and social challenges. The programme is aimed at addressing weak measurement systems in the design, formulation and implementation of effective STI policies in Africa. The implementation of **ASTII Phase I and II** focused on data collection and built the capacity of 35 AU Member States to collect data on research and development (R&D) and 11 AU Member States to collect data on innovation. This has improved the capacity of these countries to collect data and stimulate learning about R&D and innovation in Africa. In addition, two African Innovation Outlooks (AIO) were published, as well as policy briefs and research papers that have contributed to improved human capacity on STI indicators in Africa.

The implementation of **ASTII Phase III** began in 2016 to build on the achievements of **ASTII Phase I and II** by focusing more on data analysis and utilisation of STI indicators. **ASTII Phase III** is building the capacity of AU Member States to analyse their own data to reflect Africa's development context. In addition, a web-based data platform for STI indicators will be developed to create a central home for STI data at the continental level. **ASTII Phase III** is also reconfigured into the Science, Technology and Innovation Strategy for Africa (STISA-2024) flagship programme to address the salient message of innovation-led and knowledge-based African economies. The emphasis of **ASTII Phase III** is on development of tools and indicators for STISA-2024 that measure the potential and performance of National Systems of Innovation (NSIs). The initiative shall also integrate and use African platforms to disseminate indicators on STI, health and education.



Source: ASTII

Healthy Pregnancy, Birth, Growth and Development Knowledge Integration (HPBGDki)

The overall goal of the Healthy Pregnancy, Birth, Growth and Development Knowledge Integration (HPBGDki) project is to analyse and get insights from existing datasets on maternal and child health across the African continent. The development of Africa is dependent on two things, technology and data, and the project aims to leverage these two to improve the quality of decisions around grant making and strategy development in the health sector, as well as R&D. The HPBGDki project focuses on bridging the gap between biological and scientific data and connecting this knowledge using existing data.

The programme shall contribute to the development of a NEPAD Knowledge Ecosystem (Data Lake) that will aggregate the existing data on maternal and child health in Africa and use it to determine and refine intervention areas based on data and indicators. This approach shall contribute to improved decision-making around grant making, development of strategies that are country and area specific, as well as guide R&D efforts towards investigating the challenges of maternal and child health care.

Currently, 90 percent of the stunting burden lies in 39 countries, with the majority on the African continent. Until we have adequate data that informs decision-making, interventions to address this challenge and others in the health sector will remain elusive. In order to amass adequate data, the project shall engage in data collection on the most critical first 1 000 days of a child's development. The complete data intend to trace neurocognitive and/or physical growth outcomes from conception to fetal growth and development, all the way to post-natal growth. This approach is key because it forms a complete cycle of the data knowledge that can then be effectively utilised to influence policy decisions, delivery and implementation of maternal and child healthcare in Africa. The project is funded by the Bill and Melinda Gates Foundation (BMGF) and shall involve scientists from across the African continent.



Nursing and Midwifery Education in Africa



Source: Nursing and Midwifery Education



The Nursing and Midwifery Education in Africa Project is an effort designed to respond to the concerns and pledges raised by the Heads of State and Government of the AU in Kampala, Uganda, in 2010. The project recognises nurses as the backbone of health service delivery in Africa, and the quality of care is often dependent on the quality of nurses and midwives working in single-discipline clinics and other services. The major aim of this project is to increase the number and enhance the quality of graduate students in nursing and midwifery education for healthcare services in Africa.

While a number of African universities participate in partnerships with other universities on nursing and midwifery education, these relationships are mainly north-south in nature. This project's strategic approach aims to strengthen and develop collaboration on nursing and midwifery education in Africa on the premise of a south-south basis using a multi-country partnership model for nursing and midwifery postgraduate education development in Africa. As a result, the project involves a consortium of universities in Southern African countries and it is envisaged that this consortium will work with tertiary institutions across Africa as the project scales up. African academics, research institutes and the general public need to join hands in giving the nursing and midwifery profession the attention it deserves and promote integrated systems that promote social development in Africa.

The focus of this project is on healthcare resources and human development. It addresses the aspect of capacity building and resource development in the nursing and midwifery professions in African countries. This approach on human capacity building in healthcare will make a major contribution to the long-term development of Africa.

Southern African Network for Biosciences (SANBio)

The SANBio is a platform that was established in 2005 to provide access to world-class laboratories for African and international scientists conducting research on African biosciences challenges. The work of SANBio focuses on four (4) main areas: agriculture, health, nutrition and livestock, and is guided by three (3) main programme focus areas: research, development and innovation, strengthening human capacity development infrastructure and policy support, enabling environment and financial sustainability. SANBio operates with a multi-country, regional approach, with all project efforts involving at least three countries since so many development problems transcend borders. SANBio is one of the five (5) networks under the NEPAD Agency's African Biosciences Initiative (ABI) in Africa and is covering SADC by working to address key biosciences issues in the region.

Network operations are facilitated by the SANBio Hub, which hosts the secretariat on behalf of all the stakeholders and provides financial management and operational support to the project. The SANBio Hub also ensures that there are structures and systems in place that support the transparent and independent review of network proposals and progress. The work of SANBio is guided by five (5) strategic objectives that focus on (i) practical, development-oriented research; (ii) boosting Southern African biosciences research capacity; (iii) pursuing sustainable programme support; (iv) strengthening the network and networking; and (v) demonstrating results and impact.



Source: SANBio

Southern Africa Tuberculosis and Health Systems Support Project

The Southern Africa Tuberculosis and Health Systems Support Project is a sub-regional project with the aim of strengthening the health sector's response to Tuberculosis and occupational lung diseases in the mines. The project mainly targets mining communities, regions with high burdens of TB or HIV/AIDS, transport corridors and cross-border areas, and the primary beneficiaries are TB-affected individuals and households. The project is funded by the World Bank (WB), while NEPAD Agency and East, Central and Southern Africa Health Community (ECSA-HC) collaborate to provide technical support to participating countries. The project is implemented in four Southern African Development Community (SADC) Member States: Lesotho, Malawi, Mozambique and Zambia. The project aims to tailor investments to the epidemiological context in each country and promote health systems approaches that maximise the impact of investments and reap potential synergies.

The overall objectives of the project are to: (i) improve coverage and quality of key TB control and occupational lung disease services in targeted geographic areas of the participating countries; and (ii) strengthen regional capacity to manage the burden of TB and occupational diseases. The project also comes at a critical juncture in TB control efforts and will contribute to the AU Catalytic Framework to End AIDS, TB and Eliminate Malaria in Africa by 2030, SADC Declaration on TB in the Mining Sector, and the WHO's End TB Strategy by 2030.

The project will support a paradigm shift in how the sub-region prevents and treats TB by: (i) introducing a multisectoral platform for regionally co-ordinated actions led by ministries of health; (ii) supporting the implementation of the latest WHO TB Strategy, including the 90-90-90 targets, by strengthening both demand- and supply-side interventions for effective management of TB and other communicable diseases; and (iii) improving use of the latest diagnostic methods for TB and occupational lung diseases. The project is premised on strengthening three (3) main components as follows: (i) developing innovative prevention, detection and treatment of TB; (ii) improving regional capacity for disease surveillance, diagnostics, and management of TB and occupational lung diseases; and (iii) improving regional learning and innovation, and project management.



Science Granting Councils Initiative in Sub-Saharan Africa (SGCI)

The Science Granting Councils (SGCs) initiative is aimed at strengthening the capacity of SGCs to support research and evidence-based policies for socio-economic development in Africa. The initiative supports national level SGCs to design and monitor research programmes, and formulate and implement policies based on the use of robust STI indicators. The SGCI aims to integrate STI, health and education indicators to develop a data set that will form part of a Knowledge Ecosystem. This approach shall ensure the transition of the role of SGCs in Africa from the periphery of decision-making on STI investment to occupying a more central position.

Most African countries have STI policies, but implementation has been a challenge due to limited resources and capacity. According to a report by the Centre for Research on Evaluation, Science and Technology (CREST), SGCs in Africa face challenges that affect their role in specific areas, i.e. grant making procedures; peer review and evaluation procedures; management of science and technology international agreements; science, technology and innovation policy analysis; research, development and innovation priority setting, and basics of research and development management. Furthermore, SGCs operate in an uncondusive environment where R&D is poorly co-ordinated, funded and managed, and funding is dominated by international partners.

The SGC initiative was formed to respond to the challenges identified under the CREST report and to strengthen the role of SGCs as champions of indicators in public policymaking. The initiative is guided by four (4) main objectives:

1. To strengthen the ability of SGCs to develop, collect, analyse and disseminate indicators relevant to STI policy associated instruments
2. To strengthen the capacity of SGCs to develop and use indicators for assessing STI policy relevance and advocating for increased R&D investments
3. To strengthen the capacity of SGCs to design and monitor research programmes by developing a guide to best practices
4. To strengthen the ability of SGCs to champion the appreciation and use of STI indicators in policy formulation and decision-making.



NEPAD Water Centres of Excellence (WCoE)

In 2006, the NEPAD Water Centres of Excellence (WCoE) was mandated by the African Ministers responsible for Science and Technology and Water (AMCOST and AMCOW) to assist African governments in establishing sound scientific researched policy. The programme is currently implemented in Southern and Western African regions through the NEPAD Southern African Network of Centres of Excellence (SANWATCE) and the NEPAD Western African Network of Centres of Excellence (WANWATCe) respectively.

The programme aims to contribute to improved human and environmental wellbeing through research and development in water and sanitation. WCoE works mainly at policy level in four (4) main areas: (i) improve conservation and effective use of the continents water resources; (ii) improve the quality and quantity of water available to rural and urban households; (iii) strengthen national and regional capacities towards water resources management and reduce the impact of water-related disasters; and (iv) enlarge the range of technologies for water supply and to improve access to affordable quality water.



Source: WCoE



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