



HEALTH RESEARCH AND INNOVATION STRATEGY FOR AFRICA (HRISA)

2018-2030



African Union Development Agency-NEPAD



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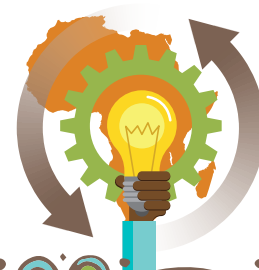
ACKNOWLEDGEMENT

The Health Research and Innovation Strategy for Africa (HRISA) was developed by the African Union Development Agency (AUDA)-NEPAD to support innovation policy directionality and envision an ecosystem that enhances and accelerates timely implementation of the African Union's Africa Health Strategy as part of the Accelerating Excellence in Science in Africa (AESAI) initiative. The AUDA-NEPAD extends sincere gratitude to the African Academy of Sciences (AAS) and the National Institute of Health Research Global Health Research Unit - Tackling Infections to Benefit Africa (TIBA) at the University of Edinburgh for availing the requisite resources to support the production of this strategy document.

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FOREWORD

The aspiration for Agenda 2063 'The Africa We Want' is a prosperous Africa imbued with means and resources to drive its own sustainable development and long-term stewardship of its resources, where African people have a high standard of living, quality of life, sound health and well-being, and assured health security.

Provision of sustainable health security for the African populace requires collation and application of existing knowledge and innovations, as well as the generation through robust research and innovation of new context specific knowledge, technologies, innovations and expertise that can shape evidence-based policy making and inform health interventions/programmes leading to improved healthcare delivery and wellness.

A long term and sustainable resolution of Africa's health challenges rests in African designed and led research, as well as the active participation of African researchers and innovators in local and international health, health system, and medical health technologies innovation ecosystems.

Investing in this technology and innovation development trajectory entails research driven learning and competence building to understand the complexity and dynamics involved in development, adoption and diffusion of technologies and innovations (product, process, organisational and marketing). This requires interdisciplinary research spanning natural and social science, engineering, physical and clinical sciences amongst others.

The deployment of the Health Research and Innovation Strategy for Africa is multi-purpose; it envisions an Africa where African-led research and innovation drives health and wellbeing; contributes to technological learning and industry development; generates potential for value chain upgrading; and contribute to economic development and health security..

The HRISA having is a product of multi-stakeholder efforts and it is structured to serve as a guide for Member States and Regional Economic Communities upon which they can design their strategies to strengthen national health research systems for improved human, economic and social outcomes.

I therefore invite all stakeholders at national, regional, continental and global levels to create the unity of purpose required to achieve the objectives of this strategy as we move towards realising our aspiration of "The Africa We Want!".

Dr. Ibrahim Assane Mayaki



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LIST OF ACRONYMS

AESA	Alliance for Accelerating Excellence in Science in Africa
AI	Artificial Intelligence
ANDI	African Network for Drugs and Diagnostic Innovation
AU	African Union
BRICS	Brazil, Russia, India, China & South Africa
CoE	Centres of Excellence
EDCTP	European and Developing Countries Clinical Trials Partnership
EPRS	Electronic Patient Record System
GDP	Gross Domestic Product
GIS	Geographical Information System
HRISA	Health Research and Innovation Strategy for Africa
HSGOC	Heads of State and Government Orientation Committee
ICTs	Information Communication Technologies
IP	Intellectual Property
IPR	Intellectual Property Rights
M&E	Monitoring and Evaluation
MS	Member States
NCDs	Non- Communicable Diseases
NEPAD	New Economic Partnership for Africa's Development
NGO	Non- Governmental Organisation
NHRS	National Health Research Systems
NIH	USA National Institutes of Health
NTDs	Neglected Tropical Diseases
R&D	Research and Development
RECs	Regional Economic Communities
ROI	Return on Investment
STI	Science, Technology and Innovation
STISA	Science, Technology and Innovation Strategy for Africa
TIBA	Tackling Infections to Benefit Africa
UNFPA	United Nations Population Fund
WHO	World Health Organisation

EXECUTIVE SUMMARY

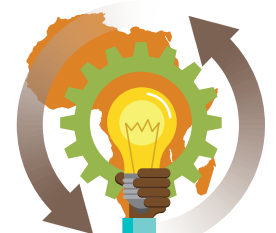
The Africa Health Strategy (2016-2030) adopted in line with the AU Agenda 2063 and SDGs recognises the importance of investment in research and innovation for tackling the challenges that the African continent is grappled with. The AU Specialised Technical Committee on Health, Population and Drug Control (STCHPDC) mandated the African Union Development Agency in collaboration with other interested partners to facilitate the integration of research and innovation in the updated AHS strategy 2016-2030. A need for strengthening scientific research and innovation in the health delivery systems of the continent was identified. It's therefore in-line with the aforementioned background and mandate that the AU DA-NEPAD in collaboration with AU Commission and various stakeholders undertook to develop the Health Research and Innovation Strategy for Africa (HRISA). This strategy is a guide to Member States and RECs on priorities for agenda setting in health research and innovation. The strategy also serves as a framework for stakeholder alignment to Africa's health research and innovation.

A situational analysis conducted indicated a number of gaps in financing health research, health systems, South-South collaborations, human and infrastructure capacity, skills and knowledge management as well as the global recognition of African research and researchers. However, while there are gaps, there are opportunities in integration of emerging technologies, the global interest to strengthening Africa's health systems, the changing disease profile with an increase in non-communicable diseases (NCDs) as well as innovating financing models that were highlighted, which provide a platform for Member States to build on for implementing the strategy. To address these gaps, key strategic objectives that anchor this strategy were developed.

- i. To strengthen capacity for sustained, integrated, coordinated and collaborative research, innovation and translation for health;
- ii. To develop and implement sustainable mechanisms for investment and financing in research and innovation for health;
- iii. To generate new knowledge aligned to health goals and targets and advocate for its translation into products, services, policies and practices to improve health;
- iv. To strengthen data-sharing platforms and systems to optimise health delivery
- v. To advocate for the adoption of emerging technologies and supporting platforms to improve health;
- vi. To strengthen and harmonise regulatory, ethics and intellectual property systems in order to maximise the benefits from African-led research and innovation for Africa and the global community.
- vii. To maximise the benefits from African-led research and innovation for of Africa and the global community through robust research regulatory and intellectual property systems.

These strategic objectives will be addressed through implementation of key priority interventions which are:

- i. Developing human capacity for sustained health research and innovation
- ii. Developing a conducive environment for research and innovation
- iii. Promoting Sustained Investments and Financing Mechanisms in Research, Development and Innovation for Health
- iv. Supporting the generation of new knowledge and its translation into products, services, policies and practice to improve health



- v. Generating, warehousing, sharing, and utilizing data to inform and guide decision making in terms of health delivery
- vi. Support the development and adoption of emerging and existing technologies to improve health
- vii. Developing and strengthening regulatory systems, Intellectual property and ethics that leverage the benefits of health research

The implementation of the Health Research and Innovation Strategy for Africa will require a collaborative effort among member states, regional economic communities, international organisations, private sector and finally development partners. At continental level, the African Union Commission, AUDA-NEPAD and their partners should lead and support the successful adaptation, implementation, M&E and funding of the strategy in the respective member states. For the successful implementation of the strategy a costed M&E plan and framework will accompany this strategy.

This strategy envisions an Africa where African-led Research and innovation drives health and wellbeing.

Its mission is to facilitate coordinated, sustainable and responsive Health research and innovation that will provide effective interventions for health in Africa.



1 INTRODUCTION



CHAPTER 1. INTRODUCTION

1.1 INTRODUCTION

Agenda 2063- '*The Africa We Want*' aspires for a prosperous Africa imbued with means and resources to drive its own sustainable development and long-term stewardship of its resources, where African people have a high standard of living, quality of life, sound health and well-being, and assured health security. Strong governance and resilient health delivery systems that will attain health security for all African peoples is imperative. Functional and effective health systems are driven by research and innovation that informs result based decision making for interventions to deliver health interventions to scale. This strategy guides the generation of knowledge for the improvement of health. It covers clinical and biomedical research, health systems research, operational research, and behavioural research, health economics research, and epidemiological research, dissemination and implementation science. Innovation is a process through which economic or social value is extracted from knowledge through creating, diffusing, and transforming ideas to produce new or improved products, services, processes, strategies, or capabilities. Research and Innovation enhance the effectiveness and efficiency of health service delivery. In this strategy, we adopt the WHO definition of health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"; thus broadly encompassing notions of curative, rehabilitative, palliative and preventative health, as well as wellness.

1.2 BACKGROUND AND MANDATE

1.2.1 BACKGROUND

The Africa Health Strategy (AHS, 2007-2015) recognized the important role of research and information management for effective and efficient policy interventions and decision making, as well as addressing the major challenges facing the health sector as indicated in Pillar 6 of the strategy. The pillar focused on health information and research building in-line with the Abuja and Accra High Level Ministerial Meetings on Health Research of March and June 2006 respectively. The interventions proposed under Pillar 6 called for the development of a continental position paper on health research in Africa to provide the continent a direction for research and consolidate national and regional health research plans and information systems. However, since the adoption of the African Health Strategy in 2007, the position paper was not developed, except for various ministerial declarations on research for health including the Algiers declaration on Research for Health in the African Region and 'Bamako call' to action on research for health of June and November 2008 respectively.

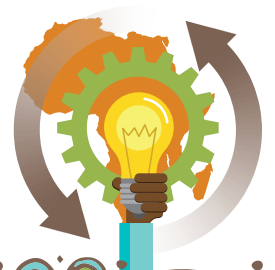
Moreover, in order to deliver on AU Agenda 2063, the Science, Technology and Innovation Strategy for Africa (STISA 2024) identifies research and innovation as enablers for achieving Africa's sustained growth, competitiveness and economic transformation. STISA-2024 calls for continuous embedding of STI in six priority areas namely: eradicating hunger and ensuring nutrition and food security; prevention and control of diseases and ensuring wellbeing; communication (physical and intellectual mobility); protecting our space; living together; and wealth creation. A major recognition in STISA is that the continent needs to apply existing and emerging technologies in order to accelerate Africa's desired transition into an innovation-led, knowledge-based economy.

1.2.2 MANDATE

The Africa Health Strategy (2016-2030) adopted in line with the AU Agenda 2063 and SDGs recognises the importance of investment in research and innovation for tackling the challenges that the African continent is grappled with. The AU Specialised Technical Committee on Health, Population and Drug Control (STCHPDC) mandated the NEPAD Agency in collaboration with other interested partners



to facilitate the integration of research and innovation in the updated AHS strategy 2016-2030. This was in response to the AU Summit of Heads of State of State Decisions Assembly/AU/Dec.553 (XXIV) on Ebola Virus Disease Outbreak in West Africa and Assembly/AU/Dec. 563 (XXIV) Decision on the Report of Heads of State and Government Orientation Committee (HSGOC) on NEPAD - Doc. Assembly/AU/10(XXIV) which called for strengthening scientific research and innovation in the health delivery systems of the continent and directed the NEPAD Agency in partnership with the African Academy of Sciences to establish and operationalize the Alliance for Accelerating Excellence in Science in Africa (AESA) as a platform to stimulate breakthrough innovations in health in order to improve the livelihoods of marginalized and stigmatized communities. It's therefore in-line with the aforementioned background and mandate that the NEPAD Agency as a technical arm of the AU in collaboration with AU Commission and various stakeholders undertook to develop the Health Research and Innovation Strategy for Africa (HRISA). This strategy is a guide to Member States and RECs on priorities for agenda setting in health research and innovation. The strategy also serves as a framework for stakeholder alignment to Africa's health research and innovation.





2 SITUATIONAL ANALYSIS



CHAPTER 2. SITUATIONAL ANALYSIS

A desk review of the health research and innovation status in Africa conducted in 2017 registered a number of key findings highlighted below.

2.1 HEALTH RESEARCH SYSTEMS

National health research systems (NHRS), whose primary purpose is to generate and promote the utilization of high quality scientific knowledge to promote, restore and/or maintain the health of a population have been shown to be inadequate to and in varying extents across the African continent. The functions of the NHRS are governance, creating and sustaining human resources, sustainable financing and knowledge translation. The indicators for health research governance include availability and implementation of a national policy and strategic plan, an agenda, a legislation or law (including ethical standards and guidelines), and a functional ethical review committee to protect the dignity, integrity and safety of research participants. Using the African National Health Research System barometer with four functions and 17 sub-functions developed by WHO African Region, the overall NHRS barometer score for 2014 for the African Region was at 42%, which in 2018 was 61%. The most significant improvements being in developing sustainable research for health as well as producing and using research. This suggests that the NHRS is inadequate to facilitate the generation and utilization of health research on the continent.

2.2 RESEARCH CAPACITY

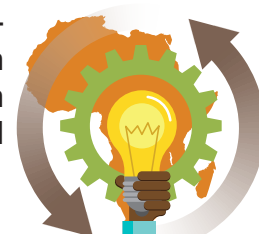
Based on an evaluation of over 3000 research projects conducted by the United States National Institutes of Health (NIH) in its World Report of 2016, in about 900 research organizations, it was apparent that research is happening in a few African countries. Even in countries where research is done, certain institutions dominate for example in South Africa, University of Cape Town, Stellenbosch University, University of KwaZulu Natal, University of Pretoria, and Witwatersrand account for most of the research activities. In Kenya, Uganda and Tanzania, most of the research occurs in less than 3 institutions in each country. There is therefore widespread national and institutional research capacity limitation.

Analysis of the type of research being conducted showed that operational research far out numbers basic research and that basic research is mainly focused on the three major infectious diseases, HIV, TB, and malaria with little work on neglected tropical diseases and non-communicable diseases. This bias in research fields and target diseases compromises African countries capacity to address the burden of neglected tropical diseases and the emerging challenge of non-communicable disease such as cancer, diabetes and cardiovascular disease. Furthermore, a limited number of member states invest the required %GDP into health research.

The inadequate health research systems, limited research capacity, together with low global recognition of African scientists translates to poor research publication capacity where research publications from Africa during the period 2010 to 2014 contributed to less than 0.5% of global publications. The publications also showed low research collaboration among African researchers. South-South collaboration in the same period was at less than 5% whereas that between African researchers and Europe and America was more than 40%. This emphasizes the need to strengthen collaboration in research in Africa in order to collectively solve shared health problems.

Human Resource capacity

Overall, the African continent has experienced teams, young medical and bio-medical professionals keen on boosting research. The motivation of quality research outputs to impact on society and policy is a main driver. African National Health Research System barometer also identifies key constraints such as de-motivated



staff, inadequate mechanisms for career progression and lack of experienced researchers, which may lead to low capacity for research. Additional constraints related to competing interests between conducting research & teaching and limited capacity to train researchers.

Furthermore, it highlights the combination of brain drain across the continent and retirement of competent senior research scientists' impact on maintaining a cohort of competent researchers on the continent. This implies that training and motivation are key areas for consideration by leadership of research institutions and policy makers.

Infrastructure

The lack of infrastructure and equipment are significant constraints to conducting cutting edge R&D biomedical and clinical research as well as to attracting the best minds to specific labs.

2.3 HEALTH RESEARCH FUNDING

Funding for research and development remains below the pledged 1% of GDP by each member state and below the 2% of national health budget for health research. This has left a significant number of health research programs being funded by international organization of which about 10¹ are from Europe and America. The review showed that the funding organizations in turn determine the research agenda setting. This low funding for research also explains why African research have a low publication rate.

2.4 HEALTH INNOVATION AND INTELLECTUAL PROPERTY MANAGEMENT

An important issue relating to health technologies is the inherent value of the technology. An intangible asset that health technology firms hold is intellectual property (IP) in the form of patents, trade secrets and know-how. When comparing patents from the African continent with its Brazil, Russia, India and China (BRIC countries) and developed countries such as Japan, UK and USA, its world share of patents is at 0.2% compared to 0.29% of Brazil, 0.73% of India, 21.77% of Japan and 20.19% of USA. This low contribution rate of Africa's patents in the global landscape is reflective, to some extent of the value and the size of the African health research. An additional concern was the observation despite the high burden of HIV, TB and Malaria in Africa, the continent owns less than 0.2 % of patents in this disease area. Poor funding, lack of a research and an innovation ecosystem were therefore identified as key impediments to Africa's capacity to find solutions to its health challenges.

2.5 GAPS

The review of Africa Health research and innovation status identified a number of gaps that do not provide an enabling environment to foster progress in healthcare delivery as listed below:

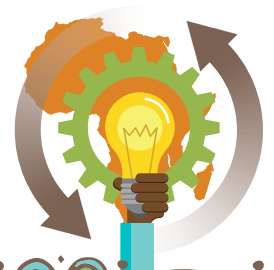
- a) Limited sustainable financing mechanisms for health research in Africa;
- b) Limited participation of the private sector in most of the research projects in Africa;
- c) Inadequate numbers of African scientists leading in research and innovation on the continent;
- d) Limited scale-up of products emerging from research and innovation by African institutions;
- e) Weak Health research systems;
- f) Limited South-South collaboration and coordination between scientists and funding agencies

1 NIH, Wellcome Trust, BMGF, MRC-UK, EDCTP, Institut Pasteur, SRC, EC, and CIHR (World report 2016)

- g) Limited/inadequate knowledge management and innovation dissemination systems to elevate the knowledge outputs of African research
- h) Inadequate intellectual Property management and regulatory frameworks
- i) Limited funding for health research and innovation infrastructure by MS, public and private sector, as well as not- for -profit bodies;
- j) Lack of adaptive and proportionate regulatory systems and Intellectual Property Rights (IPR) systems that support rather than stifle research and innovation;
- k) Inadequate research skills and expertise, as well as institutional capabilities to facilitate expansion of the skills and expertise base required to support a strong health-industry-innovation nexus;
- l) Poor African representation in international research and funding forums where health innovation research agenda setting and decisions on resource allocations are made.

2.6 OPPORTUNITIES

- a) There is a growing global interest in strengthening Africa's health systems. This presents an opportunity to leverage available resources to ground a *research culture* in Africa.
- b) Broad access to mobile technology that could drive growth of innovative e-Health solutions;
- c) Integration of information, communication and technologies into health products development and manufacturing;
- d) Challenging disease patterns including NCDs, rare diseases, NTDs, public health emergencies, and emerging conditions offer an opportunity for innovations of high commercial and public health value;
- e) Establishment of Centres of Competence, Centres of Excellence and regional institutions and other infrastructure investments
- f) The demographic youth bulge and middle class projected in Africa presents both an opportunity and challenge for health solutions in Africa;
- g) *An attractive Return on Investment for Health R&D* exists for Africa given the current portfolio of patents that have been generated for potentially exploitable innovations in diseases common in Africa such as HIV, malaria, TB.





3 VISION, MISSION, GOAL AND OBJECTIVES



CHAPTER 3. VISION, MISSION, GOAL AND OBJECTIVES

3.1 VISION

An Africa where African-led Research and innovation drives health and wellbeing

3.2 MISSION

To facilitate coordinated, sustainable and responsive Health research and innovation that will provide effective interventions for health in Africa.

3.3 GOAL

To promote and increase health research and innovation for improved health and well-being of Africa's Peoples.

3.4 STRATEGIC OBJECTIVES

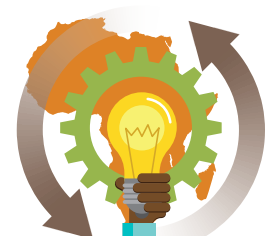
The strategic objectives of this strategy are to:

- i. To strengthen capacity for sustained, integrated, coordinated and collaborative research, innovation and translation for health;
- ii. To develop and implement sustainable mechanisms for investment and financing in research and innovation for health;
- iii. To generate new knowledge aligned to health goals and targets and advocate for its translation into products, services, policies and practices to improve health;
- iv. To strengthen data-sharing platforms and systems to optimise health delivery
- v. To advocate for the adoption of emerging technologies and supporting platforms to improve health;
- vi. To strengthen and harmonise regulatory, ethics and intellectual property systems in order to maximise the benefits from African-led research and innovation for Africa and the global community.

3.5 GUIDING PRINCIPLES

This strategy is underpinned by the following principles:

- i. Health is a human right and therefore all nations have a responsibility to provide the highest possible standard of healthcare;
- ii. Sound decision making in public health policy and practice relies on high quality evidence, which in turn is generated through research and innovation;
- iii. Country ownership is critical for research and innovation to be relevant, effective and sustainable;
- iv. Investing in health research and innovation as a productive sector is important for social and economic development ;
- v. Improved health requires multisectoral approaches, therefore all sectors must be involved in research and innovation for health;
- vi. Research and innovation are critical components for building resilient health systems;





4 PRIORITY INTERVENTIONS



CHAPTER 4. PRIORITY INTERVENTIONS

To achieve the strategic objectives, exploit opportunities and contribute to bridging the health research and innovation gaps on the continent this strategy identifies the seven priority interventions.

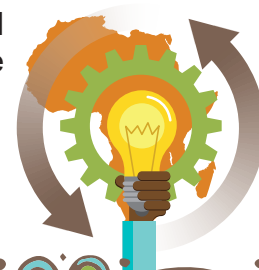
4.1 PRIORITY INTERVENTION 1: DEVELOPING HUMAN CAPACITY FOR SUSTAINED HEALTH RESEARCH AND INNOVATION

Developing human and infrastructural capacity for health research and innovation is critical for the generation and utilization of new knowledge. Many Member State suffer from both a shortage and distribution of researchers within the country. There are also difficulties in training and retention of health researchers. These problems are exacerbated by deficiencies in infrastructure, and technical and managerial skill sets. Therefore, a concerted systematic effort at building the capacity for health research and innovation is essential as the continent strives to achieve SDGs and Agenda 2063 and provide Universal Health Coverage (UHC) for all. The specific interventions for this priority include:

- i. Reviewing, upgrading and implementing of universities/colleges' curricula on health research and innovation;
- ii. Mainstreaming health research and innovation in line with health all policies approach within relevant ministries and departments such as those responsible for health, higher education, agriculture, environment, research, science, technologies and innovation;
- iii. Creation of linkages between the health research and innovation units in the ministries and research institutions (public/ private) in the formulation and addressing of priorities for research and innovation in the national health research agenda and collaborating in information sharing and agenda setting;
- iv. Establishment and strengthening of national health research councils/institutions with clear career development paths, and provision of incentives, that would attract and retain professionals in health research and innovation;
- v. Establish a national research incubation center under relevant ministry for enrolling and developing researchers and innovators as young as high-school student, university student and so on
- vi. Strengthening health research & innovation and training capacity through South-South, North-South collaboration and fostering linkages between researchers, research institutes, industry, and governments as well as regional and global stakeholders.

4.2 PRIORITY INTERVENTION 2: DEVELOPING A CONDUCIVE ENVIRONMENT FOR RESEARCH AND INNOVATION

To improve efficiency in scope of health research and innovation, it is imperative that researchers employ interdisciplinary and trans-disciplinary approaches to conducting their research. Co-operation among different actors (funding agencies, research institutions, private sector, regulatory authorities and civil society) is critical in ensuring alignment to national and continental priorities for sustained impact. Co-ordination and collaboration allows for optimal utilisation of limited resources i.e. financial, human and technological. There exists a number of African initiatives such as Alliance for Accelerating Excellence in Science in Africa (AESAs) and others that bring together multidisciplinary stakeholders to advance health research and innovation in the continent. Member States should leverage such continental and regional platforms for effective and efficient implementation of their health research and innovation programs. The following specific interventions are proposed:



- i. Establishment and utilisation of Centres of Excellence (CoE) of integrated health research and innovation at REC level;
- ii. Development and implementation of coherent national research and innovation policies that encourage and foster integrated, co-ordinated and collaborative health research;
- iii. Identifying, strengthening and utilising existing co-ordination platforms for research and innovation at national, regional and continental level;
- iv. Establishment of national mechanisms for co-ordination of funding agencies, researchers and institutions in various health research and innovation priority disciplines;
- v. Creation and implementation of incentive packages (access to funding, training, facilitation in publication, equipment and research facilities) to ensure collaboration;
- vi. Foster inter-institutional collaboration through existing networks and inter-network linkages; research conventions, science fairs, and so on.

4.3 PRIORITY INTERVENTION 3: PROMOTING SUSTAINED INVESTMENTS AND FINANCING MECHANISMS IN RESEARCH, DEVELOPMENT AND INNOVATION FOR HEALTH

Adequate and sustainable financing and investment is critical to having high quality research and innovation in the continent. Financing of health research and innovation refers to the estimation and mobilization of funds from individuals, businesses, the government and donors; accumulation and management of health research and innovation funds. Funding for health research and innovation in MS is comparatively low compared to the burden of health challenges requiring solutions. Additionally, investments by private sector for health research are very limited. Even more disturbing is that for most countries, health research and innovation is mainly funded by external partners outside Africa, which is inadequate, unsustainable and often not targeted at national health research priorities. Therefore, there is urgent need to promote sustained investments and financing mechanisms in research, development and innovation by harnessing domestic as well as external funding through various specific interventions including:

- i. Honouring previous global and continental commitments on the financing of health research and innovation, including contributing 2% of the health budget, and 5% of partner contribution of the health budget, to research and innovation²;
- ii. Purposeful innovative funding such as taxation schemes, trust funds, matching funds, innovative financing mechanisms and bilateral and multilateral funding for innovative research for health development;
- iii. Establishment of National Health Research Fund that will cater for competitive health researches in public and private sectors;
- iv. Establishment of national, regional and continental observatory to track gaps and inequalities in health research and innovation financing With the aim of accelerating achievement of global and continental targets including Agenda 2063 and SDGs.

4.4 PRIORITY INTERVENTION 4: SUPPORTING THE GENERATION OF NEW KNOWLEDGE AND ITS TRANSLATION INTO PRODUCTS, SERVICES, POLICIES AND PRACTICE TO IMPROVE HEALTH

The science, technology and innovation landscapes throughout Africa have improved over the last decade. The drivers of this improvement include growing recognition among policy makers of the importance of STI in social and economic development, increased emphasis to demonstrate impact at scale of STI investments. To sustain this trend, Member States and other health research and innovation stakeholders need to increase investments in strengthening STI capability through,



education, infrastructure and enabling policies and legislation that supports commercialisation of research outputs. The specific interventions for this priority are:

- i. Scaling up the conduct of health research that is responsive to national health priorities and informs policy;
- ii. Establishment and/or utilisation of existing health research innovation hubs at national and regional levels to generate & disseminate research outputs to targeted audiences including policy makers across relevant sectors and foster advancement and commercialisation of innovation products;
- iii. Fostering linkages between academia, government institutions, and industry to allow the translation of research and innovation outputs into commercial products;
- iv. Development and implementation of coherent policies and legislation across health, trade and industry and Science and Technology sectors that support entrepreneurship in health;
- v. Creation of public private partnerships to identify, advance and scale-up commercially viable research outputs for increased impact of health programs.
- vi. Documentation, recognition and safeguarding the intellectual property rights, in innovations, inventions and research

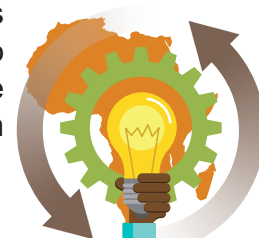
4.5 PRIORITY INTERVENTION 5: GENERATING, WAREHOUSING, SHARING, AND UTILIZING DATA TO INFORM AND GUIDE DECISION MAKING IN TERMS OF HEALTH DELIVERY

Generation, warehousing, and use of appropriate data to inform health policy remains limited. In certain disciplines data exists but is underutilized due to both poor accessibility and lack of tools to extract value from it. Moreover the slow shift from paper-based documentation to electronic records has left large amounts of data inaccessible. A deliberate intervention to invest in tools for data collection, sharing and utilization is needed for African MS to benefit from primary and secondary data analysis for evidence based decision making. The following interventions are proposed:

- i. Introduction or strengthening of digital systems for patient level information and health event reporting like District Health Information Software/system, (DHIS), electronic patient record systems (EPRS), in clinics and hospitals to enable data collection and digital data warehousing;
- ii. Introduction of geospatial tools and remote sensing technologies for health research and targeted interventions, including early warning and response systems,
- iii. Establishment of high performance computing platforms for health data storage and sharing databases development and implementation of training curricula for health informaticians and geographical information systems (GIS) statisticians;
- iv. Development and implementation of technical and regulatory policies for cyber security, data sharing that ensures data security whilst promoting health research and innovation.
- v. Establishment of national, regional and continental observatory and data centres for health research and innovation which will warehouse all relevant data

4.6 PRIORITY INTERVENTION 6: SUPPORT THE DEVELOPMENT AND ADOPTION OF EMERGING AND EXISTING TECHNOLOGIES TO IMPROVE HEALTH

Technological innovation grown exponentially over the past decade. This has created technological opportunities for African countries exploit. With respect to health, the discovery of drugs, diagnostics, vaccines and medical devices have resulted in a global improvement in human health and quality of life. Innovations in



Information Communication Technologies (ICTs), resulting in e-Health solutions, which are enabling rapid and efficient data collection, even in areas with poor road infrastructure. Computing power is enabling the processing of previously difficult to analyse data and extract value important in health intervention approaches that have enabled countries to respond to health challenges. It is therefore important for MS to develop and promote the adoption of health technologies and specific interventions are proposed below:

- i. Development and adoption of new technologies such as geospatial modelling tools for disease epidemiology mapping and modelling for emergency outbreak responses, Artificial Intelligence (AI), 3D printing and additive manufacturing for medical device design and production;
- ii. Development of an ICT architecture that improves health information system including mobile-Health, electronic-Health and tele-Medicine that will engage patients, hospitals and medical personnel in new and efficient ways for improved health outcomes and real time data collection for health research;
- iii. Adoption of 'Omic' technologies for the advancement of health solutions;
- iv. Introduction of Strengthening of the policy and regulatory systems to meet the needs of innovators, industry and societal stakeholders on matters relating to the introduction of emerging technologies for research and health delivery;
- v. Strengthening capacity for medical devices research and applications in the field of prosthetics, surgery tools, and medical wear.

4.7 PRIORITY INTERVENTION 7: DEVELOPING AND STRENGTHENING REGULATORY SYSTEMS, INTELLECTUAL PROPERTY AND ETHICS THAT LEVERAGE THE BENEFITS OF HEALTH RESEARCH

The conduct of credible research and the translation of research findings to impactful healthcare solutions require robust and enabling ethics and regulatory systems. To support health research and innovation, the regulatory framework has to address various aspects of the value chain from the ethical approval process, research protocol review and approval, intellectual property rights framework, health research products registration, and commercialization legal framework. These need to be strong at national, regional and continental levels. Harmonization of the regulatory system and ethics at regional and continental level is also important to facilitate intercountry research and innovation. Some specific interventions are listed below:

- i. Establishment of functional national and institutional ethics as well as regulatory committees that provide timely and efficient review;
- ii. Strengthening and harmonisation of national and regional regulatory systems;
- iii. Adoption of a regional approach to strengthen health research oversight;
- iv. Development and implementation of intellectual property rights policies and legislation that enable that facilitate health research and innovation;
- v. Strengthening capacity of national and regional IP evaluation teams and infrastructure.
- vi. Create an environment that fosters wealth creation through exploitation of IP management systems

5 IMPLEMENTATION APPROACH



CHAPTER 5.0 IMPLEMENTATION APPROACH

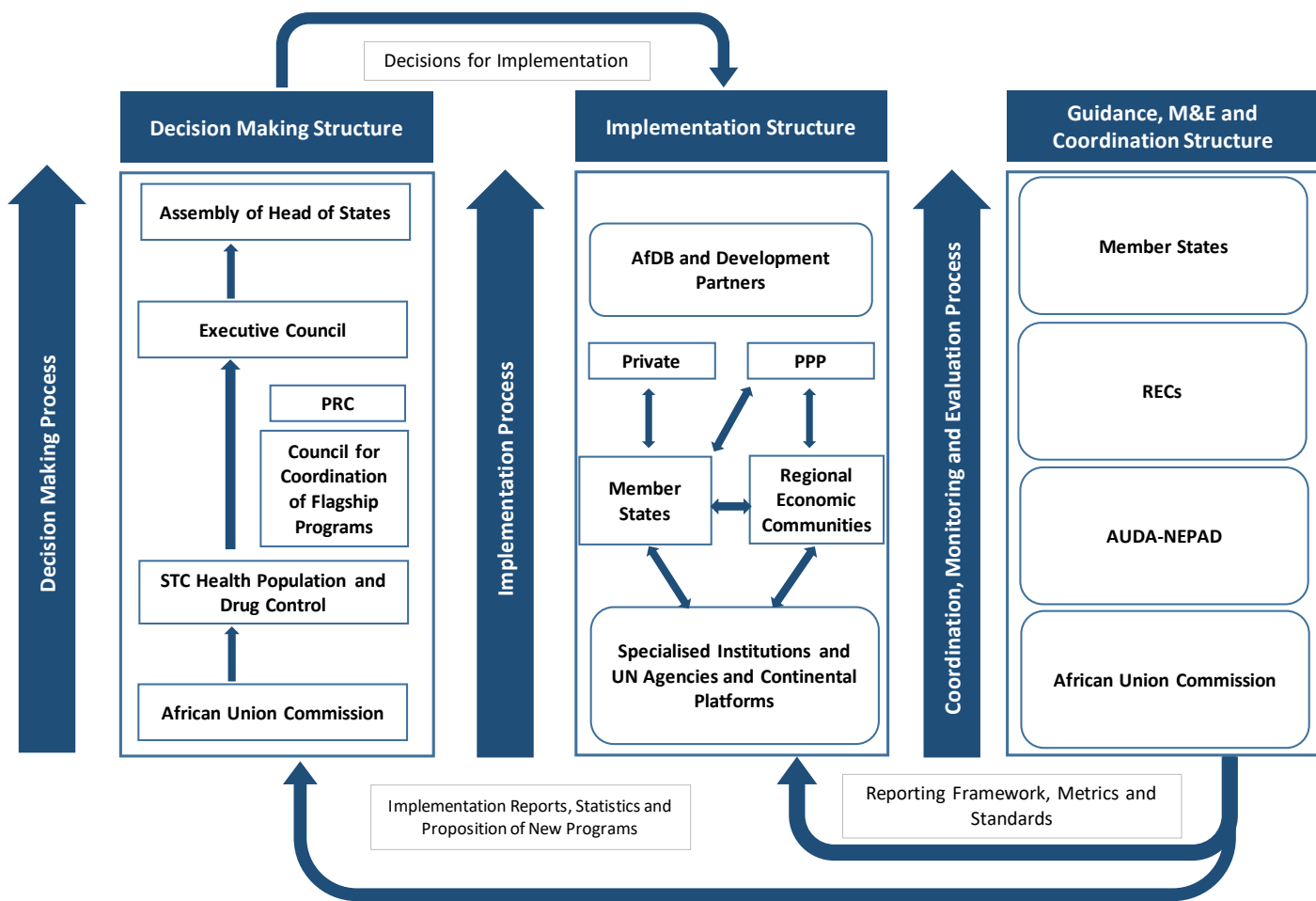


Fig. 1 Implementation approach

Countries will align their National Health Research strategies and plans in line with this Health Research and Innovation Strategy and with the commitments made on related issues by African Heads of State and Government, AU Specialized Technical Committees. This may include a gap analysis and priority setting, costing against different resource scenarios, creating synergies across relevant ministries and harnessing existing regional and continental efforts. Ministers of Health will drive efforts to strengthen research for health innovation advocacy, governance and leadership, accountability for resource and budget allocation while creating the necessary regulatory and legislative environment for private sector and other actors to invest. For each priority intervention proposed in this strategy, Member States and RECs may be guided by the implementation approach illustrated in figure 2 below.

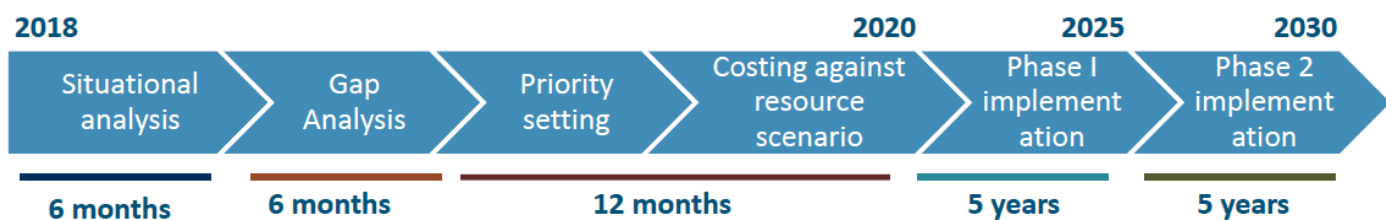


Fig. 2 Implementation process

5.1 CONSIDERATIONS FOR INTERVENTIONS

More specific intervention areas that Member States may need to consider in implementing this strategy include;

5.1.1 CONSENSUS BUILDING

- i. Building the necessary buy-in or demand from stakeholders;
- ii. Enhancing the public's trust in local innovations, medical interventions and healthcare delivery especially during epidemics and disasters;

5.1.2 MAINSTREAMING HEALTH RESEARCH AND INNOVATION

- i. Take a systematic approach to health systems strengthening including supporting institutional, industrial and organisational linkages.
- ii. Facilitate ground-breaking biomedical and social sciences research drawing from local and global health perspectives;
- iii. Focus more on long term research needs and approaches;

5.1.3 FOSTERING PARTNERSHIPS

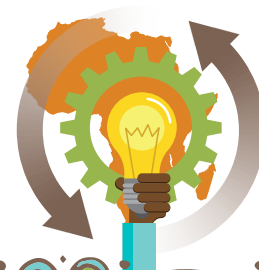
- i. Leverage the diverse private and public sectors to innovate for better health security and universal health coverage;
- ii. Engaging proactively with industry, academia, regulatory and standards bodies to identify emerging business models for small to medium enterprises;

5.1.4 PROMOTING COMMERCIALISATION

- i. Stimulate entrepreneurship by creating an enabling environment for commercialization of research and innovation products;
- ii. Utilise different business models to support innovation ecosystems and value chains;
- iii. Create Innovative funding mechanisms and policies that encourage commercialisation of research outputs that venture capitalists and mainstream funders do not have a risk appetite for;

5.1.5 ENABLING POLICIES

- i. Use public procurement policies to support the local health industry;
- ii. Developing policies that enable coherence and are responsive to dynamic nature of health research and innovation;
- iii. Strengthen Intellectual Property policies and build capacity in this area.



5.2 INSTITUTIONAL ROLES AND RESPONSIBILITIES

The roles and responsibilities of various stakeholders involved in the implementation of this strategy is shown in table below:

Institution	Adoption	Harmonization	Coordination	Implementation	Monitoring & Evaluation	Funding	Advisory
Assembly	✓						
Executive	✓						
AUC		✓	✓		✓		
AUDA-NEPAD		✓	✓	✓	✓		
RECs		✓	✓	✓	✓		
Member States				✓	✓	✓	
Private Sector						✓	
Development Partners				✓		✓	✓
UN Agencies & other International Organizations						✓	✓
Specialized Institutions				✓			✓

Table 1 Mapping of Roles and Responsibilities of HRISA Implementation

6 MONITORING AND EVALUATION



CHAPTER 6: MONITORING AND EVALUATION

The purpose of monitoring and evaluation is to foster a culture of accountability, transparency, ownership, and responsiveness. In order to achieve the overall goal of the HRISA 2018-2030, Monitoring and Evaluation is critical for tracking progress and inform policy decisions. The AUDA-NEPAD Agency in consultation with stakeholders, will develop a costed M&E plan and framework to accompany the strategy. This ensures that the strategic objectives of the HRISA 2018-2030 strategy are adopted and implemented by member states. The M&E plan will detail the core indicators, their definitions, data sources, data collection tools, data flow mechanisms and reporting timelines.

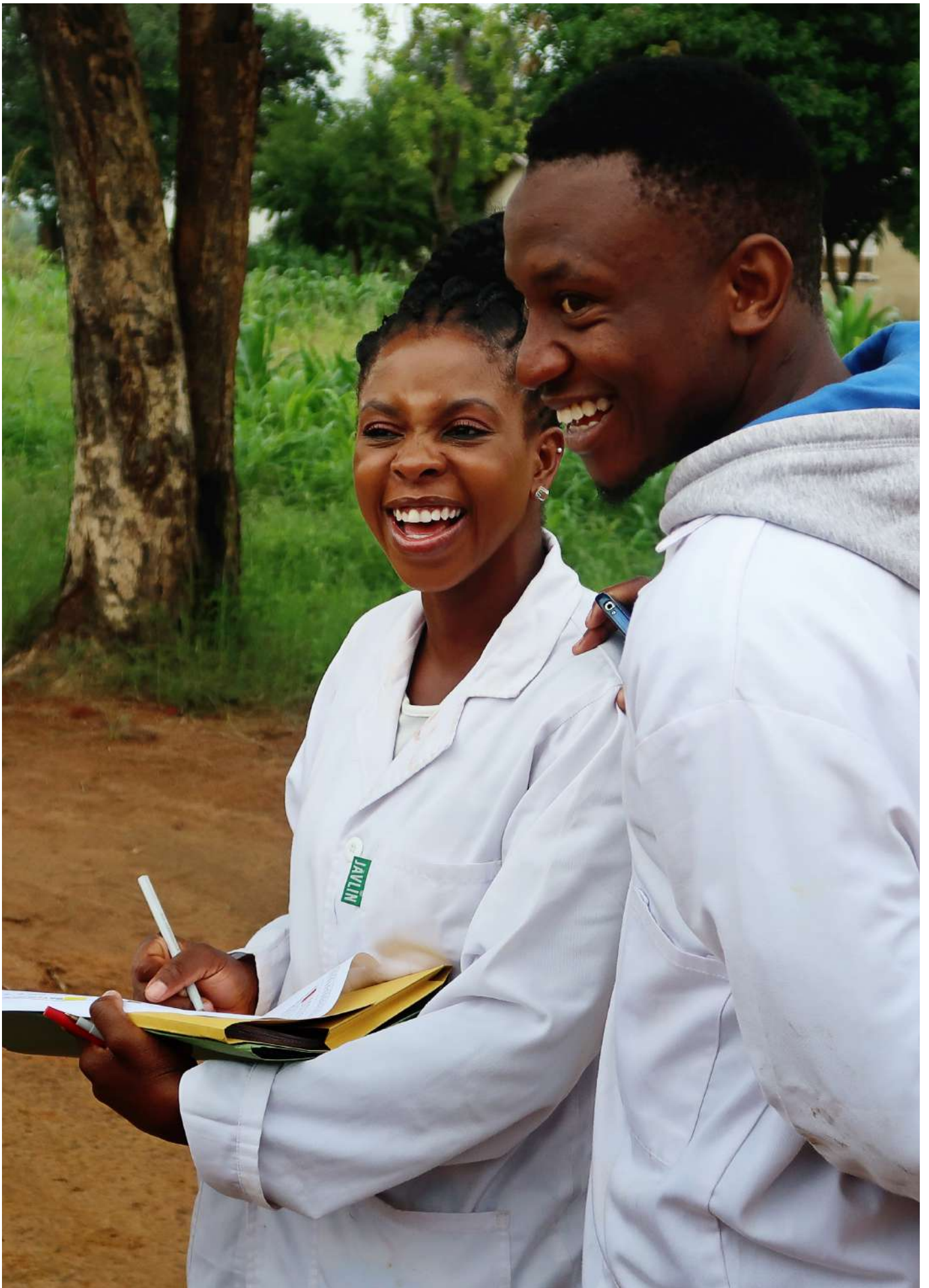
Data will be systematically collected and reported on at 5-year intervals preceding a 2-year adoption period where a baseline of indicators will be established. The continuous process of examining the delivery of results will be carried out during the execution of the strategy with the intention of correcting deviation from objectives of the strategy at continental level. This will help with assessing adoption, implementation and utility of the HRISA 2018-2030. It will also help with sharing best practices across national, regional and continental levels.

This strategy will succeed under the following conditions:

- i. Ownership of the strategy and the M&E system by Member States and RECs;
- ii. Continuous monitoring of the strategy- through systematic collection of data and periodic reporting;
- iii. Periodic Program Evaluation which will include baseline evaluations, mid-term evaluations end of term evaluation and process evaluations depending on need for results;
- iv. Communication and Documentation (Continuous engagement among AU Member States, RECS, Partners and any other stakeholders) and Capacity strengthening for M&E for staff.

Furthermore, as stipulated in the AHS 2016-2030, this strategy will leverage on platforms such as the African Peer Review Mechanism, the Africa Health stats and status reports reviewed through relevant AU specialised Technical Committees and other Organs of the AU. Ultimately, these will enable both the AU and NEPAD Agency to assess performance to guide decision making.









**OUR JOURNEY TOWARDS THE AFRICA
OF 2063 HAS STARTED...**

Agenda
2063

The Africa we Want

