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**SCIENCE, TECHNOLOGY AND INNOVATION FOR
INDUSTRIALISATION: ARTICULATING AN AFRICAN UNION
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**SCIENCE, TECHNOLOGY AND INNOVATION FOR INDUSTRIALISATION:
ARTICULATING AN AFRICAN UNION VISION**

SCIENCE, TECHNOLOGY AND INNOVATION FOR INDUSTRIALISATION: ARTICULATING AN AFRICAN UNION VISION

A. INTRODUCTION

1. The Vision of the African Union of peace, integration, prosperity, and peamage in the global community is predicated on Africa's human resources. It is through Africa's systems of education and research that the appropriate human capital will be developed and nurtured in order to provide the know ledge and skills needed for know ledge generation and industrialisation. It is through education and research in the various fields of science and technology that a scientific and technological culture will be created, for critical thinking, innovation and technopreneurship. Such is the culture necessary for sustainable harnessing of local natural resources and international co-operation for laying the foundation for industrialisation and technology transfer.

2. The Department of Human Resources Science and Technology, in the Commission of the African Union is charged with the responsibility to drive continental programmes in science and technology, information and communication technologies, education and human resources and youth. With regard to science and technology, the Department works through a statutory technical committee of African Ministers' Conference on Science and Technology (AMCOST) that provides a platform to allow Ministers to periodically deliberate on policies and programmes relating to science and technology development in Africa. The Department has also instituted a biennial congress of African scientists and policy makers, whose proposals feed into the formulation and review of harmonised continental policy necessary to optimise the utilisation of Africa's human and institutional resources to ensure that science and technology contributes to the attainment of the AU vision.

3. Through these processes, the department, in collaboration with NEPAD office for S&T, has developed Africa's Consolidated Plan of Action for Science and Technology, w hich articulates Africa's priorities in S&T. This document is a basis for defining Africa's vision for Science and Technology for Industrialisation.

B. BACKGROUND

4. In 1991 the African Heads of State and Government adopted the Abuja Treaty establishing the African Economic Community and in 1992/3, in the framework of the Treaty, a draft Protocol on Science and Technology was formulated w ith the follow ing aims among others (a) to strengthen scientific and technological capabilities of Member States through science and technology programmes for development in the different sectors of the economy; (b) to strengthen national, regional and continental institutions and centres responsible for science and technology development w ith a view to enhancing their capability for research on science and technology, and the application of research results to solving Africa's economic and social problems; (c) to set up national policies for the development and application of science and technology w ith a view to

facilitating their integration into national economic and social development plans; and (d) to prepare and implement national strategies for scientific research and technological development programmes to fulfil the needs of the continent.

5. The first African Ministerial Conference for Science and Technology, in November 2003, quickly moved in to define a mechanism to coordinate various science and technology programmes for Africa by recommending the integration of the AUC programmes with the existing S&T initiatives particularly the New Partnership for Africa's Development (NEPAD) programme on S&T into a single new AU/NEPAD policy framework and programme for Africa. In 2005, Africa's Science and Technology Consolidated Plan of Action (CPA) was developed and it was subsequently endorsed through the Executive Council decision EX.CL/Dec.254 (VIII) at the Khartoum Summit of January 2006. The CPA contributes towards achieving the vision of the AU of integration, development and assertion of Africa's position in the global knowledge society, through the development and application of S&T in eradication of poverty, fighting diseases, stemming environmental degradation and improving the global economic competitiveness of the continent.

6. The year 2007 saw science and technology reaching the political climax in Africa, where the African Union Heads of State and Government in the January Summit made a decision Assembly/AU/Dec.161 (VIII) on science and technology. This decision:

- a) WELCOMES AND SUPPORTS the Declaration of 2007 as the launching year of building constituencies and champions for science, technology and innovation in Africa;
- b) STRONGLY URGES Member States to promote Africa's Research and Development (R&D) and develop innovation strategies for wealth creation and economic development by allocating at least 1% of Gross Domestic Product (GDP) of national economies by 2010 as agreed by Khartoum Decision (EX.CL/Dec.254 (VIII));
- c) ALSO SUPPORTS the establishment of a Pan-African Intellectual Property Organization (PAIPO);
- d) ENDORSES the need for South-South and North-South cooperation in science, technology and innovation and to enhance its role in international partnerships.

7. The Commission of the African Union is made up of several Departments charged with responsibilities for driving development in specific sectors. Most of these Departments have developed their programmes and Plans of Actions in line with their mandates. The challenge in the implementation of these isolated and stand-alone departmental programmes is to bring them together, to link various departmental programmes that depend or feed into each other in order to promote synergetic and symmetrical development towards the common goal of achieving the AU vision.

8. The science and technology programmes driven by the Department of Human Resources, Science and Technology require a strong, dynamic and sustainable research enterprise for progress and an industry capable of

translating scientific discoveries into products, services, and processes and other advances. This calls for the definition of a common African industrialisation policy and strategy. This could be done by bringing together the existing initiatives, especially those of the Departments of Human Resources, Science and Technology, Industry and NEPAD through engaging the AMCOST and CAMI.

E SCIENCE AND TECHNOLOGY POLICY FOR AFRICA

9. In face of globalisation and knowledge-based economy, the comparative advantage of using natural resources only as cornerstone for development is no longer sustainable. The African Development Bank during the Bureaux of AMCOST and COMEDAF early this year 2007, convincingly illustrated in their presentation how Africa is not making any meaningful progress and advances by only exploiting its natural resources, as compared to South Korea, China and India that have shifted the construction of their economies where development (industrialisation) is now driven primarily by investing in education, science and technology. The bank pledged to support the Commission of African Union towards its efforts to establish an Education, Science and Technology Trust Fund earmarked for higher education, science and technology development with a view to drive Africa's industrialisation and economic growth.

10. It is clear for us in Africa that an abundance of natural resources does not necessarily guarantee long-term success and development of our continent unless we take the cue from other industrialising nations that emphasise on continuous innovation in science and technology and improvement in productivity as key development factors. The success of our Regions and Member States depends on their competitive advantage that has to be created through their science, technology and industrial policies and strategies. It is imperative for Africa to institute effective and efficient regional and national innovation systems that focus on (a) promoting development of domestic firms; (b) growing and sustaining "quality" human capital; (c) establishing links between industry, research institutions and academia; and (d) promoting technology transfer.

11. The first African Union Congress of Scientists and Policymakers, in November 2006, highlighted that scientific advances and technological innovations are pillars for Africa to attain its collective vision of economic growth, integration and sustainable development. In order to create new industries, increase international competitiveness and revitalize the economy and society, it is important for the industrial sector (public and private), academic and scientific research institutes to cooperate in science and technology and industrial development and to convert R&D results achieved in universities and national research institutes into practical applications that can stimulate economic growth.

E AFRICA'S SCIENCE AND TECHNOLOGY CONSOLIDATED PLAN OF ACTION - THE KEY TO AFRICA'S INDUSTRIALISATION

12. The CPA was developed through a rigorous and consultative process with all stakeholders in all regions of Africa. It contains Africa's science and technology flagship programmes in the priority areas of policy and research and development (R&D). It articulates Africa's common objectives and commitment to collective

action in order to develop and use science and technology for the social and economic transformation of the continent and its integration into the global economy.

13. The CPA is crafted based on three interrelated conceptual pillars namely capacity building, knowledge production and technological innovation to trigger an avalanche of Africa's industrialisation. It also delineates the roles and responsibilities of key players, the African Union Commission (AUC), NEPAD, Regional Economic Communities (RECs), Member States, private sectors and development partners. The AUC focuses on policy development process while NEPAD coordinates the R&D component in the continent. The Member States and the RECs are the major stakeholders of the CPA and are mandated to champion the implementation of the CPA through integrating it into their regional and national development programmes.

14. The CPA is broadly organized into clusters of priority areas namely:

- (a) Biodiversity, Biotechnology and Indigenous Knowledge.
- (b) Energy, Water and Desertification.
- (c) Material Sciences, Manufacturing, Laser and Post-Harvest Technologies
- (d) Information and Communication Technologies, and Space Science and Technologies.

15. The CPA is built on the basis of contributing towards the African Union vision, by developing and harnessing science and technology leading to the development of African industries that are sustainable, driven and supported by the products of R&D from the implementation of the CPA.

E SCIENCE, TECHNOLOGY AND INNOVATION STRATEGY FOR AFRICA'S INDUSTRIALISATION

16. The challenge in the implementation of our programmes is to link various AUC Departmental programmes that depend or feed into each other in order to promote synergetic and symmetrical development towards the common goal of achieving the AU vision. In science and technology and industry, a more coherent and broader-based forward-looking strategy for industrial development that depends on scientific research and development is much needed for Africa. It should be hinged on existing initiatives with emphasis on needs and priorities of the sectors' contribution to economic development.

17. This requires improvement of legal, institutional and political conditions and instruments and thus create an enabling environment in which the sector could competitively thrive regionally, nationally and continentally. Such a strategy would then be developed taking into account the following elements:

- (i) Define a continental policy framework and response to support science, technology and innovation for Africa's industrialisation.

- (ii) Strengthen the link between industry and research institutions with the primary objective to carry out R&D within the CPA priority areas and roll out the results into the commercial markets.
- (iii) Embark on regional capacity building projects such as infrastructure and development of regional networks of centres of excellence, as they form the hubs and nodes for R&D.
- (iv) Support the creation of technological incubators, technology parks and prototyping activities in our regions and Member States.
- (v) Promote mushrooming of spin-off or start-up companies to exploit and convert R&D results into goods that have social and economic value and bring in our African citizens to own and participate in this development for sustainability. Small- and medium-sized enterprises (SMEs) in particular should be among the reliable players in a market economy. While individually small, in the aggregate these companies provide one of the best hopes for bridging the gap between the basic research and the product development.
- (vi) Establish and promote access to venture capital and support the made-in Africa initiative through the establishment of standardisation, intellectual property rights, quality control and product support mechanisms.
- (vii) Encourage public and private investment into science and technology and innovation programmes and promote Africa's business development process.
- (viii) Support the growing and sustaining of scientific human capital through training researchers and educating the engineers and scientists to keep abreast with the demands of industrialisation on the cutting edge.

F. RECOMMENDATIONS

- The Commission of the African Union should ensure through the Department of Human Resources, Science and Technology, Industry and NEPAD that a strategic link between science and technology and innovation has been created to drive Africa's industrialisation by using the results of R&D.
- There should be inter-Ministerial dialogue between the AMCOST and CAMI to periodically deliberate on this strategic industrialisation link
- The biennial congress of African scientists should be used to engender public participation in science and technology for Africa's industrialisation.
- Industry should be enabled to take up a more pro-active role by working closely with governments in their efforts to build national capacities to harness, apply and develop science and technology for socio-economic development and national economic competitiveness.