TOWARD IMPLEMENTATION OF CHINA-AFRICA FORUM INITIATIVES:

Recommendations of Post-6th FOCAC and OBOR Link-Up Programmes For Africa To Dovetail with Africa 2063 Plans

A Keynote Lecture

by

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EXTENDED ABSTRACT

It has long been recognized that the wealth, health and stealth of countries within any global region, depend on their capacity to develop, advance and apply their intellectual and material resources to provide critical infrastructure, goods and services to their expectant people. Africa's leading socio-economic and political entities under the leadership of the African Union, have collaboratively developed the Africa Agenda 2063 as the continent's development strategy and programmes for domestic engagements and mutually beneficial collaboration with external partners. Agenda 2063 sets forth specific mechanisms for raising the quality of life in Africa through effective programmes on poverty eradication, climate resilience, modernization of agriculture and infrastructure, transformation of cities and settlements into hubs of socio-economic activities, development of a blue ocean economy, building of skilled labour force, high productivity in science and technology, enhanced security and safety, catalysis of African renaissance, and improvement in governance.

In formulating the Africa Agenda 2063 and other socio-economic development plans, stakeholders have recognized the tremendous progress that Africa has made during the past decade on economic development; the serious challenges that still remain; and the opportunities that have emerged for addressing current and prospective challenges. By the end of the Millennium Development Goals (MDGs) period in 2015, Africa was uplifting at least, 15 million people out of poverty each year. In the 2012 World Wealth Report, the number of high-net-worth individuals (HNWI) had increased in Africa by 9.9% relative to the year earlier. This was above the global average growth rate of 9.2%.

Disposable income is also expected to grow in Africa at the current rate of about 5.5% until 2030. The global management consulting firm-Accenture in collaboration with a consortium of international companies (the South African National Business Initiative), has estimated investment opportunities in Africa at US $350 billion in a report entitled *"Re-imaging Africa's Future: a Blueprint for Sustainable Business in Africa".* Sub-Saharan Africa achieved a 20-percent increase in net enrollment rate in primary education between 2000 and 2015 which was the highest recorded in any global region. Under-five infant mortality also decreased significantly although it still remains the highest in the world.

Many challenges still remain, particularly, skills deficit, poor social services, inadequate research productivity, poor access to higher education, paltry manufacturing, high

unemployment rate, inadequate infrastructure and poor access to project financing. These problems are compounded by the very high population growth rate which is expected to raise the continent's population from the current level of 1.3 billion people to 1.704 billion in 2030 as estimated by the UN in its 2017 World Population Prospect Report. Africa is the fastest urbanizing continent in the world but the receiving urban centers lack the infrastructure to cope with the high influx of people. Africa currently has more than 16 urban areas that exceed 2.5 million in population. At the Association of Central Bank Governors Symposium on Financial Inclusion, the then African Development Bank President revealed that inadequate infrastructure was costing Africa about US$40 billion in lost Gross Domestic Product (GDP) each year. PWC estimated that spending in Africa on infrastructure development would grow from US$ 70 billion per year in 2014 to US$ 180 billion per year in 2025.

In an interconnected world in which perturbations and growth in one region affect opportunities in other regions, developments in Africa have implications in other regions and vice-versa. Within the last 25 years, China's emergence as a formidable economic power with diplomatic and trade ties to several African countries and economic blocs at the bilateral and multi-lateral levels, justifies exploration of opportunities for interlinking of major plans and projects. China has risen steadily to its current role as Africa's largest trade partner with US $149.1 billion in bilateral trade and investment of US$ 3.2 billion by Chinese companies in 2016. China's huge investment stock in Africa is justification for the Forum on China-Africa Cooperation (FOCAC) which commenced with the first forum in Beijing in October, 2000.

At the most recent (6^{th}) Summit in Johannesburg, SA in 2015, China pledged support for African development with coverage of industrialization, agricultural modernization, infrastructure development, financial services, green development, trade and investment facilitation, poverty reduction and public welfare, public health, people-to-people exchanges, and peace and security in an effort intended to help Africa overcome challenges in infrastructure development, talent shortage and inadequate financing of projects and programmes. The total commitment of US$ 60 billion in free aid, interest free loans, preferential loans, export credit, extra support for the China-Africa Development Fund, special loan for the development of African small and medium-sized industries, and Production Capacity Cooperation Fund will impact Africa positively if the allocations are used to support appropriate initiatives with the broad categories targeted by the donor/lender.

The China-led Belt and Road Initiative which is also called the One Belt, One Road (OBOR) is a US$ 4-8 trillion programme aimed at bridging the infrastructure gap to accelerate the economic growth of the Asia-Pacific area, Central Europe and Eastern Europe. Currently, it covers about 60 countries, including Oceania and just the fringes of East Africa. Considering the gigantic size of the project which will undoubtedly involve the sourcing of construction and raw materials from Africa, elements of the project should be extended to cover all regions of Africa. Implementation of Africa's plan on infrastructure development would gain from the experience of China and the countries involved in the OBOR project. Among the areas of potential partnership could be training of African artisans on-site in the participating Asian and European countries; research collaboration on environmental impact assessments, material durability analyses, route surveying, and occupational health issues.

The Maritime Silk Road (MSR) of the OBOR initiative which flanks East Africa, can be extended downward to wrap around Tanzania, Mozambique, Swaziland and South Africa; up along Namibia, Angola, Congo, Gabon Cameroon, Nigeria; and all the way to Morroco. The African Development Bank (AfDB) can work out the financial instruments with the Asian Infrastructure Investment Bank that controls lending for the OBOR project to support such an extension. Furthermore, the Africa Institute of South Africa (AISA), a unit of South Africa's Human Sciences Research Council (HSRC), would lead African research institutions on socio-economic aspects of the programme while the Global Institute for Sustainable Development,

Advanced Analyses and Design (GISDAAD) based in Abuja, Nigeria, would collaborate with the University Alliance for the Silk Road which is led China's Xi'an Jiaotong University.

The foregoing recommendations imply that specific initiatives, programmes and projects be properly configured and implemented to satisfy the objectives of FOCAC while meeting the needs of Africa, as well as its constituent jurisdictions (economic blocs, countries and organizations). The provisions of both FOCAC and OBOR bring mutual benefits to both China and Africa. As configured, China's massive development projects and those that are designed for OBOR require massive quantities of raw and semi-processed materials that will be sourced from African countries through industrial processes and services that require skills development, efficient commercial operations and financing. Besides, Chinese investment in Africa are better protected by improvement in the above-mentioned capacities in Africa. The challenge now is to design and implement projects that can produce measurable positive results as regards the objectives of FOCAC and specific resolutions of its 6th Summit; the targets of Africa Agenda 2063 and associated roadmaps; and the national development interests of stakeholder countries in the socio-economic sectors of concern.

The following programmes and projects are hereby, proposed as those that would effectively satisfy the requirements mentioned above. They are further described in the main text of this lecture. They are allocated budgets that would be covered by a fraction of the total US $60 billion FOCAC fund and comprise subprogrammes/subprojects that are listed in the full lecture document. The budget allocations are for a 10-year period to enhance the realization of measurable results. The recommended lead organizations are also stated.

- Support for 6 Regional Specialized Industrial Parks**:** US$ 5.0 billion (10 years) **Lead:** NEPAD, Pretoria, South Africa AUC, Addis Ababa, Ethiopia
- Establishment of African Continental Research Foundation (ACRF)**:** US$ 5.0 billion (10 years) **Lead:** *National Research Foundation (NRF)-South Africa* and regional centers
- African R&D Output Commercialization Initiative (ARDOCI)**:** US$ 2.5 billion (10 years) **Lead:** *African Assoc. for R&D Products Commercialization (AARDPC), Abuja, Nigeria*
- Creation of a Direct-lending African Education & Innovation Bank (AEIB)**:** US$ 5.0 billion (to negotiate 3% interest) (10 years loan program) **Lead:** *United Bank for Africa*
- Increased Capitalization of African Commercial Banks for Diversified Portfolio Lending**:** US$ 5.0 billion (10 years loan support no interest) **Lead:** *African Development Bank (AfDB), Abidjan, Cote D' Ivoire*
- Support for National Science & Technology Advisory Boards & Professional Societies**:** US$ 200 million (10 years) **Lead**: *ICSU Africa & African Academy of Sciences (AAS)*
- Initiation of a China-Africa Entrepreneurship Support Programme Programs**:** US$ 4.0 billion (10 years) **Lead:** *United Bank for Africa*
- Africa Think-Tank, Heritage and Skills Support Programme**:** US$ 3.0 billion (10 years) **Lead:** *Africa Institute of South Africa, (AISA), HSRC, Pretoria, SA*

Thus, out of the total amount of US$ 60 billion committed by China to the FOCAC programme, this recommendation covers US$ 29.7 billion which is 49.5% of the funds pledged by China. It is conceivable that the remainder of the funds would be used by China to cover auxiliary projects and others that it is operating domestically in support of mutually beneficial programmes. For example, among such programmes listed in Chinese President Xi Jinping's 6th FOCAC Summit announcement of aid to Africa are US$ 5 billion in additional China-Africa Development Fund; US$ 5 billion in Special Loan for Development of Africa SMEs; and US$ 10 billion for the China-Africa Production Capacity Cooperation Fund.

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Prof. Inyang is currently the Chairman, Global Education and Infrastructure Services (GEISE) LLC, the Global Integrated University System (GIUS) Initiative and the former Vice Chancellor of the Botswana International University of Science and technology (BIUST), Palapye and served from 2001 to 2013 as the Duke Energy Distinguished Professor of Environmental Engineering and Science, University of North Carolina, Charlotte, USA; Prof. Inyang has made more than two decades of technical and policy contributions to regional and global sustainable development as an educator/administrator, researcher, expeditionist, government official and corporate leader. He is a former President of the African University of Science and Technology, Abuja, Nigeria and Founding Director of the Global Institute for Energy and Environmental Systems (GIEES) at the University of North Carolina-Charlotte. In 2008, he was a finalist for the position of United Nations Under Secretary-General and Rector of United Nations University in Tokyo. He was the President of the International Society for Environmental Geotechnology (ISEG) and leads the Global Alliance for Disaster Reduction (GADR). In 2008, he was selected as a Technical Judge of the US Nuclear Regulatory Commission. From 1997 to 2001, he was the Chair of the Environmental Engineering Committee of the United States Environmental Protection Agency's Science Advisory Board, and also served on the Effluent Guidelines Committee of the National Council for Environmental Policy and Technology. Prior to his position at the University of North Carolina-Charlotte, he was DuPont Professor/University Distinguished Professor at the University of Massachusetts, where he helped establish the Graduate School of Marine Science and Technology of the University System, while serving as the Founding Director of the Lowell-based Center for Environmental Engineering, Science and Technology (1995 - 2000). He taught previously at Purdue University, George Washington University and the University of Wisconsin-Platteville where he started his academic career 22 years ago. He has helped establish research institutes and operate educational programs in Brazil, Japan, Korea, India, Canada, Nigeria, Ghana, United Arab Emirates and China at where he has been an Honorary Professor/Concurrent Professor (CUMT and Nanjing University) since 2004 and 1999, respectively.

Prof. Hilary was the first black person to be endowed as a distinguished professor in environmental engineering in the United States, as well as the first African immigrant to Chair a Committee of the congressionally mandated national science advisory body of a US agency. During his career in academe, the private sector and government, he has developed innovative materials, systems (including GEORAD Barrier Concept) and performance estimation tools for long-term (100-10,000 years) containment of contaminants and suppression of dust to reduce environmental and health risks in climatic zones, ranging from the hot/humid tropic to the frigid Arctic. He has led/performed research expeditions to Jiangsu Province of China on mining subsidence and erosion; Siberia (Russia) on oil spills; Niger Delta of Nigeria on oil spills; Alaska on Permafrost degradation due to global climate change; and Minas Gerais region of Brazil on fugitive dust emission studies. Hilary is a prolific developer of analytical frameworks, quantitative models and field-relevant data that have been used by agencies, researchers, private firms and students worldwide. He pioneered the incorporation of fundamental chemo dynamic mechanisms into contaminant leachability models for estimating emission source terms for materials under scenarios in which they are subjected to both load and environmental stresses. His models and experimental data on physic-chemical interactions between natural/synthetic polymers and lateritic soils have provided rational bases for aqueous polymer application in dust control to safeguard human health in many countries. Among the several national and international environmental and economic development programmes that he has contributed to are the Nigerian Governments' programmes on oil spills management; environmental hazards control in Africa; science and technology development in Africa; and research support.

He has authored/co-authored more than 260 research articles, book chapters, federal design manuals and the textbook, Geoenvironmental Engineering: principles and applications, published by Marcel Dekker (ISBN: 0-8247-0045-7). His research and professional focus are on contaminant leaching and dusting from materials, containment systems and materials for barriers, energy systems and geohazards. He was the Editor-in-Chief of the Journal of Energy Engineering of the American Society of Civil Engineers (ASCE), an associate editor/editorial board member of 27 refereed international journals and contributing editor of three books, including the United Nations Encyclopedia of Life Support Systems (Environmental Monitoring Section). Professor Inyang has served on more than 100 technical and policy panels of governments and professional societies, and has given more than 130 invited speeches and presentations on a variety of technical and policy issues at many institutions and agencies in several countries, including the Goldberg-Zoino Lecture at MIT (1994), the AMOCO Foundation Lecture at Iowa State university (1996), the ALCOA Endowed Lecture at Carnegie-Mellon University (2002), and addresses at the Parliament of Switzerland in Bern (2001) and Nigerian Senate Environmental Committee (2008). He has chaired/co-chaired international conferences in Korea, Japan, Turkey, the United States, Brazil, Finland, Canada, Slovenia, Ghana, China and Nigeria. Professor Inyang holds a Ph.D. with a double major in Geotechnical Engineering and Materials, and a minor in Mineral Resources from Iowa State University, Ames, Iowa; an M.S. and B.S. in Civil Engineering from North Dakota State University, Fargo, North Dakota; and a B.Sc. (Honors) in Geology from the University of Calabar, Nigeria.

He has served as principal investigator, co-principal investigator and implementation leader on 40 projects. His research has been sponsored by NOAA, FHWA, USDOE, USDOD, USNRC, DuPont Corporation, Sandia National Laboratory, Duke Energy Corporation and the National Science Foundation. For his research contributions to advances in geoenvironmental science and engineering, professional practice in many countries, and public policies on energy and environmental issues, he has received several professional honors, including selection as a Fellow of the Geological Society of London, the 1999 Chancellor's Medal for Distinguished Public Service of the University of Massachusetts, Lowell; 2001 Swiss Forum Fellow selection by the American Association for the Advancement of Science ; the 1996 US National Research Council Young Investigator Selection; 1992 Eisenhower-Jennings Randolph Award of the International Public Works Federation/World Affairs Institute that was instituted to honor the international achievements of former U.S. President Dwight D. Eisenhower; the 1991 American Association for the Advancement of Science/USEPA Environmental Science and Engineering Fellowship; and election (by eminence) as a Board-Certified Member (BCEEM) of the American Academy of Environmental Engineers (2006). On October 2, 2002, he was honored in Washington, DC at a ceremony organized by the US Government to honor 10 environmental scientists for technical contributions to the United States through the USEPA. He is the winner of the 2013 Nigerian National Order of Merit, NNOM (Academic Prize) for Engineering and Technology; and the 2015 Education Leadership Award given by the Global Advisory Council of World Education Congress, Mumbai, India. He is the member of the African Academy of Sciences.