TOWARDS ESTABLISHMENT OF AN AFRICAN CONTINENTAL RESEARCH FOUNDATION (ACRF)

as the framework and operational mechanism for cross-jurisdictional data generation system for use in African sustainable development

An invited presentation

by

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at the

NACI WORKSHOP ON THE AFRICAN CONTINENTAL RESEARCH FOUNDATION

Venue: ZOOM (Virtual Platform)

Date: 2 June 2022

Time: 09:00 - 11:30

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

NACI
NATIONAL ADVISORY COUNCIL ON INNOVATION

HSRC
Human Sciences Research Council

Africa Institute of South Africa
Development Through Knowledge

SECTION A

INTRODUCTION

MY APPROACH TO THIS PRESENTATION

APPRAISAL OF ASPIRATION/TARGETS AND THE CURRENT SITUATION

IDENTIFICATION OF DRIVING INFLUENCES OR TRENDS

ESTIMATION AND ANALYSES OF FUTURE SCENARIOS

IDENTIFICATION OF OPPORTUNITIES TO MITIGATE CONSEQUENCES OF ADVERSE SCENARIO OUTCOMES AND PROMOTION OF POSITIVE OUTCOMES

THE SPECIFIC ASPIRATIONS OF AFRICA'S AGENDA 2063

- A prosperous Africa based on inclusive growth and sustainable development
- An integrated continent, politically united and based on the ideals of Pan-Africanism and the vision of Africa's Renaissance
- An Africa of good governance, democracy, respect for human rights, justice and the rule of law
- A peaceful and secure Africa
- An Africa with a strong cultural identity, common heritage, shared values and ethics
- An Africa whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children
- Africa as a strong, united and influential global player and partner

THE RATIONALE MANDATE FOR DEVELOPMENT AND INFUSION OF STI INTO AFRICAN SOCIO-ECONOMIC DEVELOPMENT EFFORTS

- ADOPTION OF A **10-YEAR SCIENCE, TECHNOLOGY AND INNOVATION STRATEGY FOR AFRICA (STISA-2024)** TO SUPPORT IMPLEMENTATION OF **AU AGENDA 2063** AT THE 23rd ORDINARY SESSION OF AFRICAN UNION HEADS OF STATE AND GOVERNMENT SUMMIT, IN **JUNE 2014**.

- **ROLES FOR STI IN SOCIO-ECONOMIC DEVELOPMENT**

  - Supply of options for sustainable development
  - Production of data for decision support systems
  - Development of human resources and capacity
  - Creation of innovative ideas and products
  - Guardians of rationality and human rights

THE PRIORITY AREAS OF THE SCIENCE, TECHNOLOGY AND INNOVATION STRATEGY FOR AFRICA 2024 (STISA-2024)

S/NO	PRIORITY AREAS	DETAILS
1.	**ERADICATE HUNGER AND ENSURE FOOD AND NUTRITION SECURITY**	• Agriculture/agronomy in terms of cultivation technique, seeds, soil and climate • Industrial chain in terms of conservation and/or transformation and distribution infrastructure and techniques
2.	**PREVENT AND CONTROL DISEASES AND ENSURE WELL-BEING**	• Better understanding of endemic diseases - HIV/AIDS, malaria, hemoglobinopathies • Material and child health • Traditional medicine
4.	**COMMUNICATION (PHYSICAL & INTELLECTUAL MOBILITY)**	• Physical communication in terms of land, air, river and maritime routes equipment and infrastructure and energy • Promoting local materials • Intellectual communication in terms of ICT
5.	**PROTECT OUR SPACE**	• Environmental protection including climate change studies • Biodiversity and atmospheric physics • Space technologies, maritime and sub-marine exploration • Knowledge of water cycle and river systems as well as river basin management
6.	**LIVE TOGETHER—BUILD THE SOCIETY**	• Citizenship, history and shared values • Pan Africanism and regional integration • Governance and democracy, city management, mobility • Urban hydrology and hydraulics • Urban waste management
7.	**CREATE WEALTH**	• Education and human resource development • Exploitation and management of mineral resources, forests, aquatics, marines etc. • Management of water resources

CROSS-CUTTING AND MUTUALLY REINFORCING PILLARS OF STISA-2024

- **BUILDING AND/OR UPGRADING RESEARCH INFRASTRUCTURE**
- **ENHANCING PROFESSIONAL AND TECHNICAL COMPETENCIES**
- **PROMOTING ENTREPRENEURSHIP AND INNOVATION**
- **PROVIDING AN ENABLING ENVIRONMENT FOR STI DEVELOPMENT IN THE AFRICAN CONTINENT**

SECTION B

APPRAISAL OF CURRENT CIRCUMSTANCES:

ADVANCES AND DEFICIENCIES IN AFRICAN RESEARCH CAPACITY

SOME RECENT IMPROVEMENTS IN AFRICAN SOCIO-ECONOMIC CIRCUMSTANCES

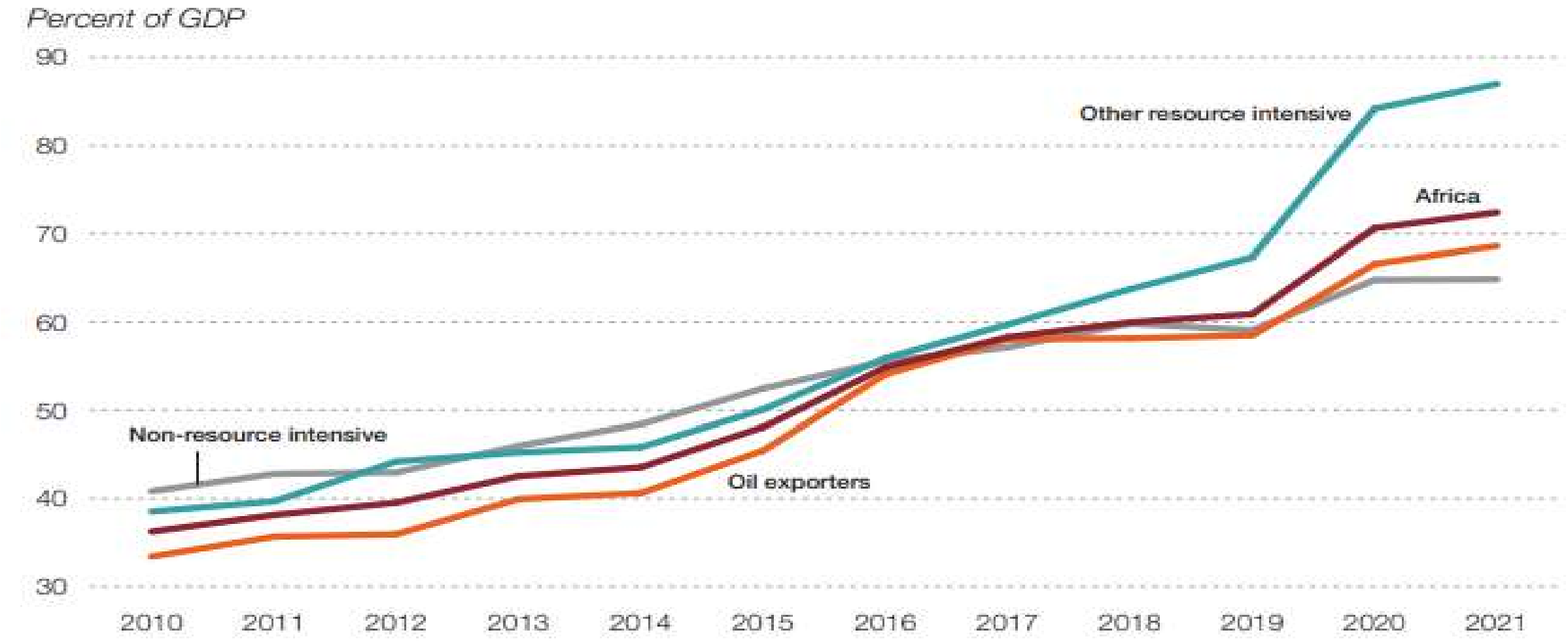
- By the end of the Millennium Development Goals (MDGs) period in 2015, Africa was uplifting at least, 15 million people out of poverty each year.
- The 2012 high-net-worth individuals (HNWI) had increased in Africa by 9.9% relative to the 2011 level (2012 World Wealth Report). The global average was 9.2%.
- Disposable income is also expected to grow in Africa at 5.5% until 2020, discounting swings such as what resulted from COVID-19.
- Investment opportunity in Africa has been estimated at US$350 billion (South African National Business Initiative).
- 20% increase in net enrolment rate in primary education between 2000 and 2015 which was the highest for any global region.
- Significant reduction in under-5 infant mortality but Africa still has the highest level in the world.

AFRICA STILL FACES SIGNIFICANT SOCIO-ECONOMIC CHALLENGES THAT NEED INNOVATION TO ADDRESS

- **Very high population growth rate that generates high youth unemployment. Population is expected to reach 1.704 billion by 2030 from the current 1.3 billion (2017 UN World Population Prospect Report).**
- **Skills deficit and poor social services**
- **Poor access to higher education**
- **Paltry and antiquated manufacturing systems**
- **Inadequate infrastructure**
- **Poor access to project financing**
- **Low research productivity and lack of adequate data for planning and implementation of programs and projects.**

GROSS GOVERNMENT DEBT OF AFRICAN COUNTRIES FROM 2010 TO 2021

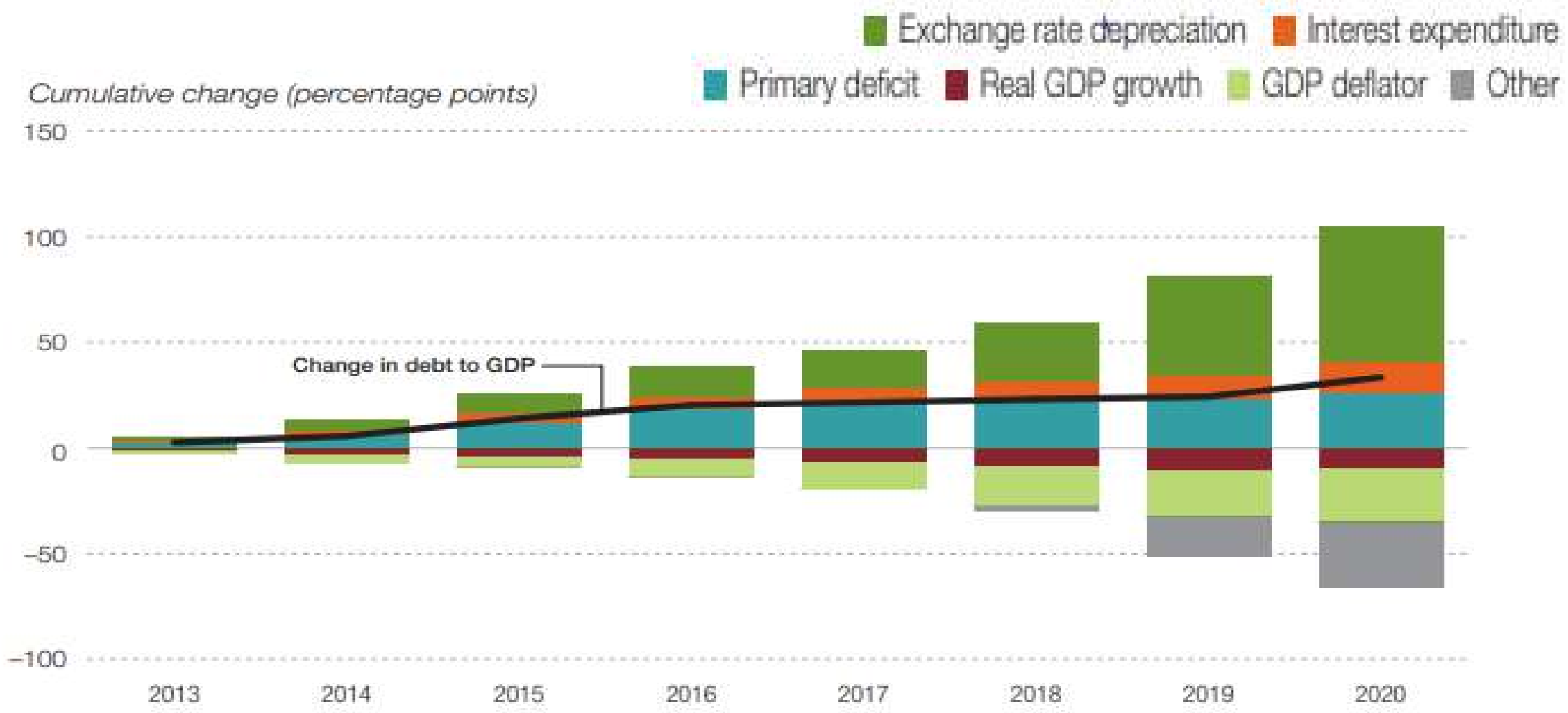
THERE IS NEED TO INTENSIFY STI TO SUPPORT NATIONAL PRODUCTIVITY THAT WILL REDUCE THE DEBT BURDEN ON AFRICAN COUNTRIES



Source: Staff calculations based on IMF World Economic Outlook database.

AfDB 2021. Africa Economic Outlook 2021: from Debt Resolution to Growth: the Road ahead for Africa. Page 48.

DECOMPOSITION OF THE DRIVERS OF AFRICA'S DEBT FROM 2013 TO 2030



Source: African Development Bank statistics and the IMF World Economic Outlook database.

AfDB 2021. Africa Economic Outlook 2021: from Debt Resolution to Growth: the Road ahead for Africa. Page 55.

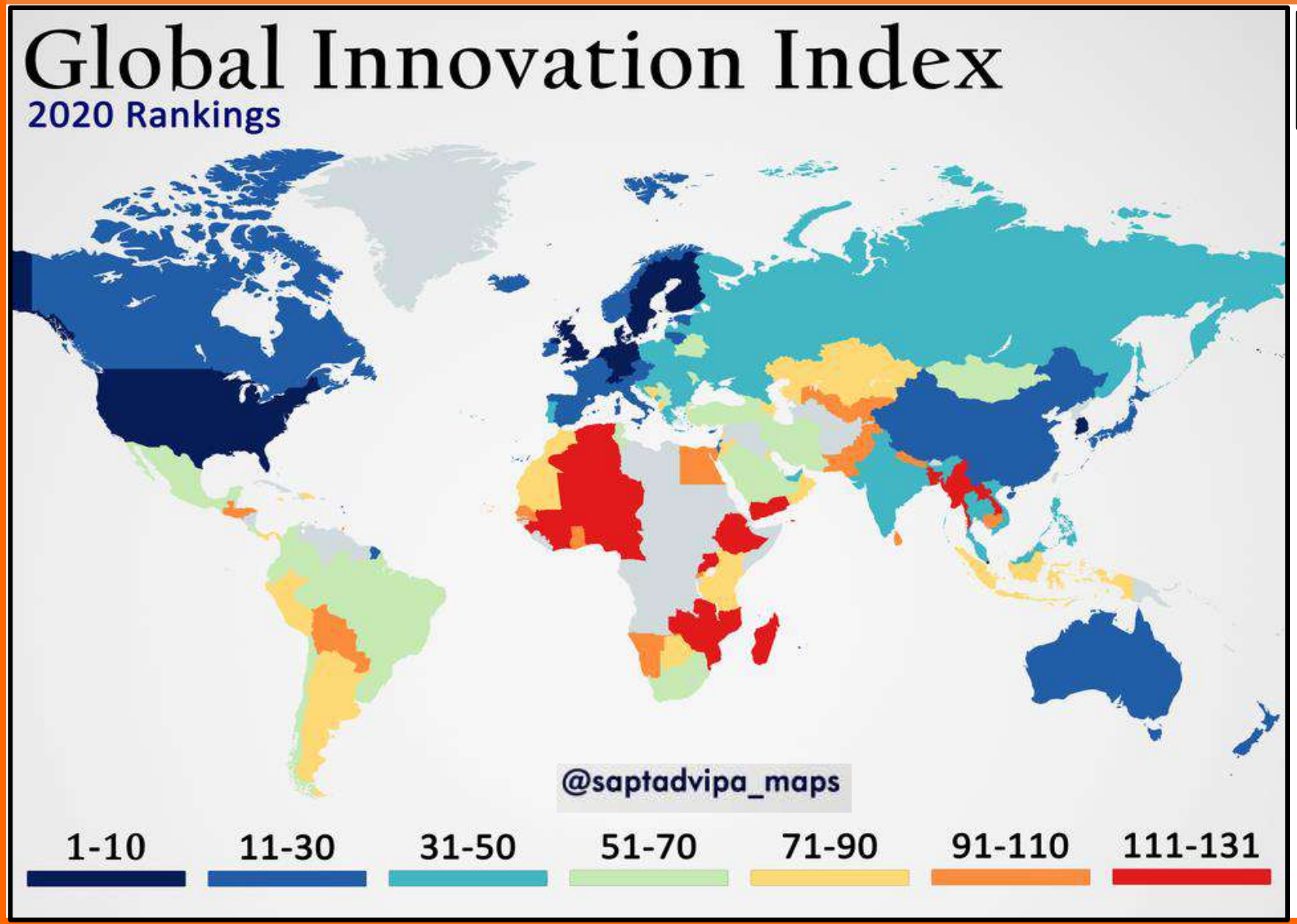
SOVEREIGN CREDIT RATINGS OF SOME SPECIFIC AFRICAN COUNTRIES

Note: Fitch uses a letter system: a country rated AAA has the lowest expectation of default risk, while a country rated RD has defaulted on a payment.

Source: Staff calculations based on Fitch ratings (as of November 2020).

AfDB 2021. Africa Economic Outlook 2021: from Debt Resolution to Growth: the Road ahead for Africa. Page 59.

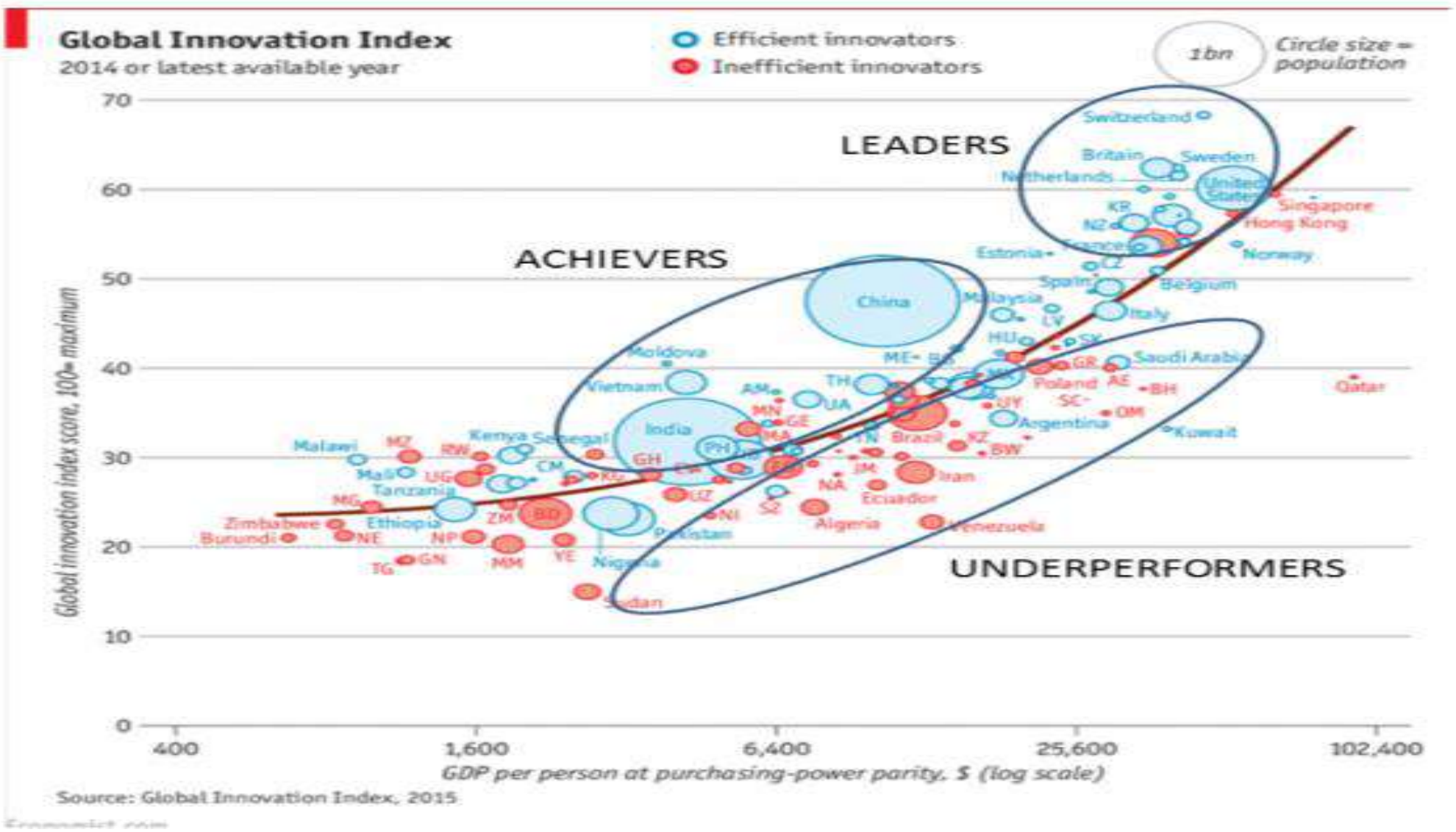
DEFICIENCIES OF THE INNOVATION SYSTEM OF AFRICAN COUNTRIES



COMPONENTS OF GLOBAL INNOVATION INDEX (GII)

- **Institutions**
- **Human Capital and Research**
- **Infrastructure**
- **Market Sophistication**
- **Business Sophistication**

GLOBAL INNOVATION INDEX (2015) AS A POINTER TO THE EFFECTIVENESS OF ENTERPRENEURSHIP PROGRAMS OF VARIOUS COUNTRIES



INADEQUATE RESEARCH AND ITS UPTAKES AS A CONSTRAINT IN AFRICAN SUSTAINABLE DEVELOPMENT (1)

a. Lack of a continental science foundation that would solicit for ideas from the continent's talent base on a continuous basis, to address challenges that still confront the continent.

b. Inadequate or improper configurations of public policy advisory entities and science, technology and innovation agencies at all scales in most African countries.

c. Non-existence of mechanisms and incentives for engagement of the private sector and NGOs in research that would accelerate the continent's socio-economic development.

d. Low density of researchers and analysts in Africa and their isolation from life-changing developments within and outside the continent.

e. Divorce of knowledge systems in general (domestic support) from governance, policy making, large development projects and entrepreneurship programs.

INADEQUATE RESEARCH AND ITS UPTAKES AS A CONSTRAINT IN AFRICAN SUSTAINABLE DEVELOPMENT (2)

f. Inadequate networking of knowledge support systems in Africa: academic institutions and centers of excellence, think tanks, professional societies, policy advisory groups, research organizations, venture capitalists and indigenous knowledge systems practitioners.

g. Poor support infrastructure and inadequate promotion schemes for knowledge systems in a continent of Africa's size.

h. Poor linkage between research focus and national socio-economic development plans in ways that cannot produce reliable and appropriate data for the latter for continental initiatives such as pandemics control, African Free Trade Agreement, Agenda 2063, and Climate Change Management.

i. Epileptic system of funding research in Africa (except in South Africa, Mauritius, Egypt and to some extent, Nigeria) while other regions and countries outside Africa have established annual systems that are well coordinated and efficiently implemented.

GLOBAL TOTAL R&D EXPENDITURE AS A % OF TOTAL GDP IN 2011

DATAGRAPHIC COUNTRIES AND CONSUMERS

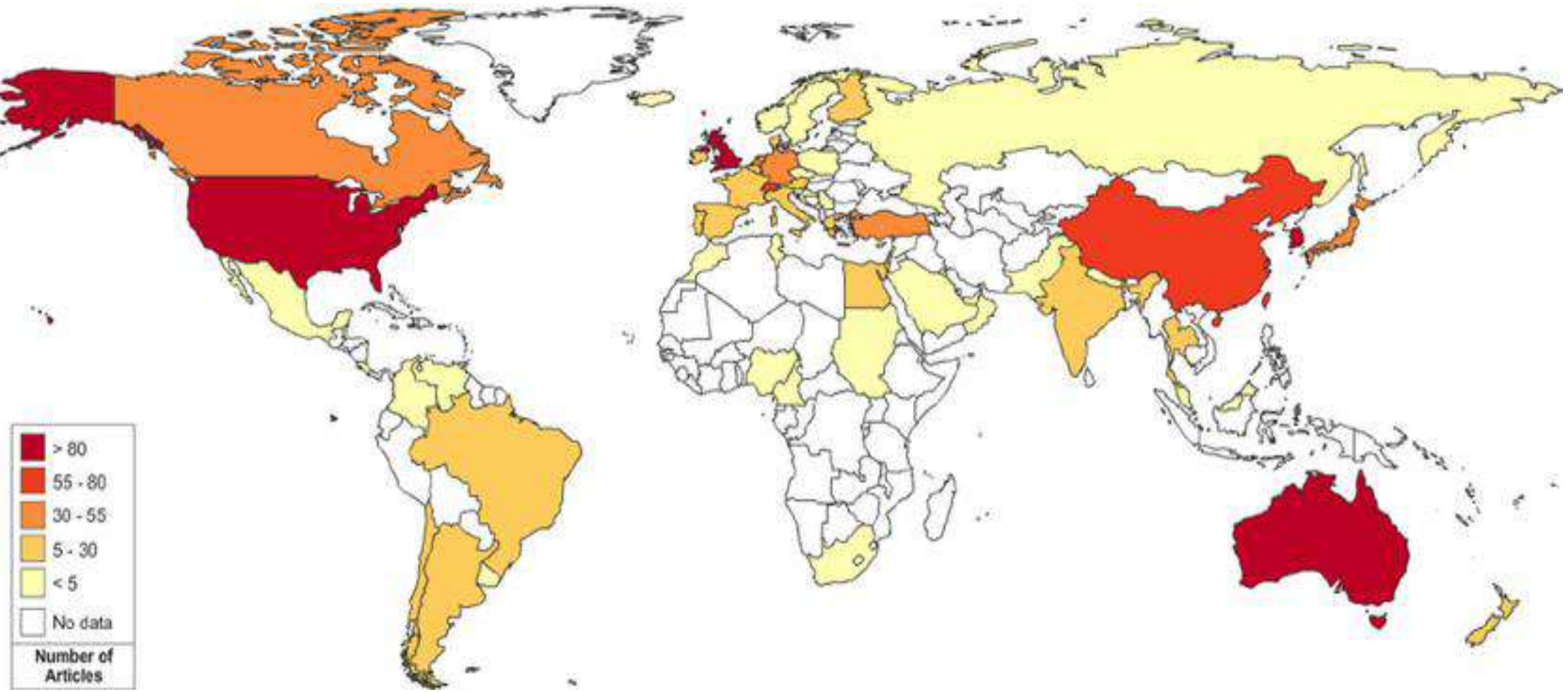
Mapping Global Total R&D Expenditure as a % of Total GDP in 2011

Israel had the highest total expenditure on R&D as a percentage of its total GDP in 2011, at 4.4% of its total GDP. This is because it has a very high number of start-up companies, especially in the field of technology.

South Korea had the biggest increase in the world in total R&D expenditure as a percentage of its total GDP between 2006 and 2011, rising from 3.0% to 3.9%. The vast majority of its total R&D expenditure (71.8%) comes from business enterprise funds, with companies like Samsung investing heavily in technology.

Canada's total R&D expenditure fell from 2.0% of its total GDP in 2006 to 1.7% in 2011, the biggest decrease globally during this period. This was due to R&D spending cuts by several major Canadian companies during this time, such as Nortel Network and Magna International, which were among the top contributors to total R&D expenditure.

THE WORLD MAP OF WORLDWIDE RESEARCH PRODUCTIVITY IN 2009 TO 2013.

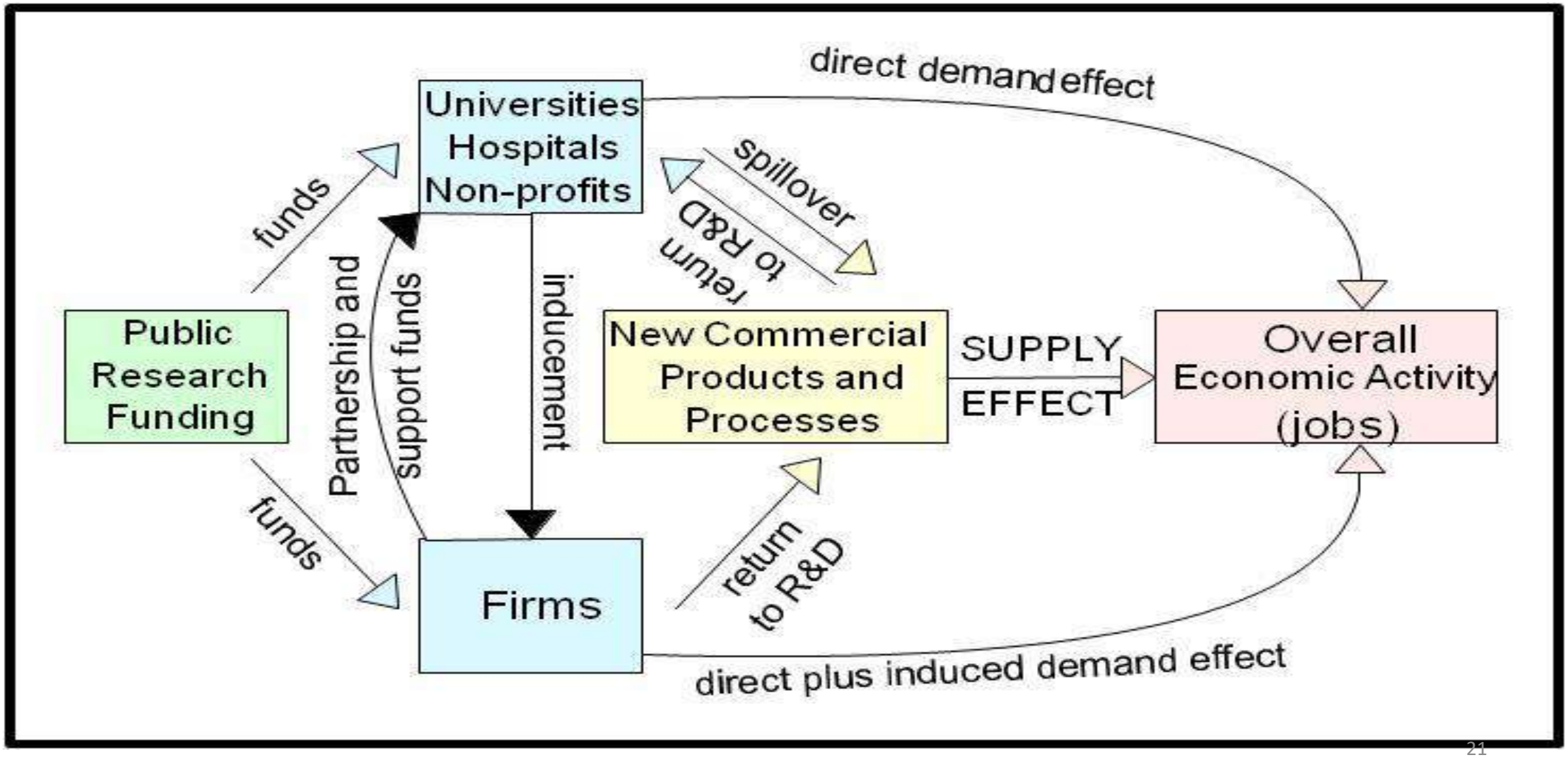


Luo, Xuyao & Liang, Zhimin & Gong, Feng & Bao, Hongwei & Huang, Li & Jia, Zhiwei. (2015). Worldwide productivity in the field of foot and ankle research from 2009-2013- a bibliometric analysis of highly cited journals.

SECTION C

AFRICA'S RESEARCH ECOSYSTEM NEEDS

THE WEB OF INTERACTIONS OF NECESSARY ECONOMIC DEVELOPMENT ACTIVITIES



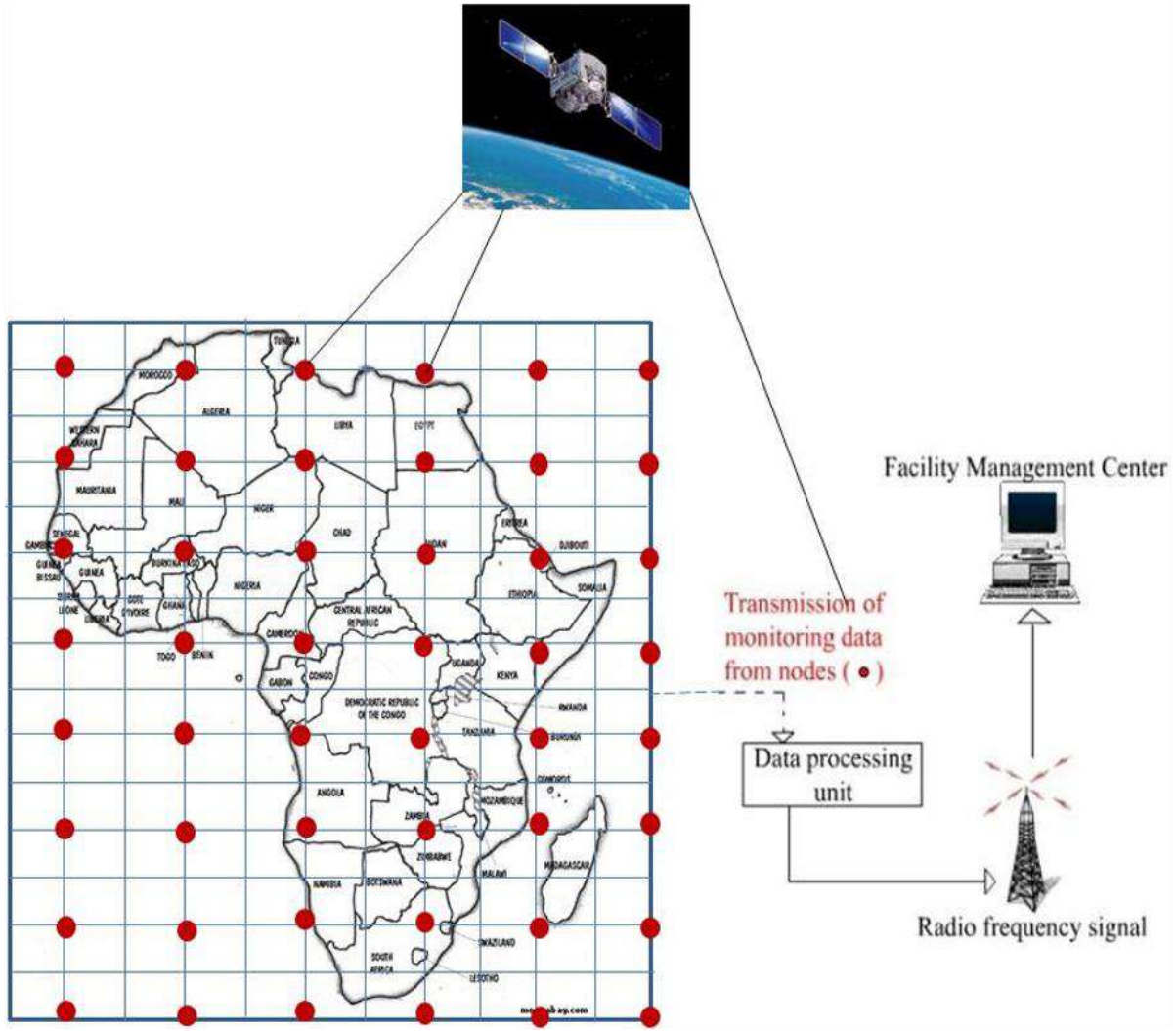
RISK MANAGEMENT AND ECONOMIC DEVELOPMENT FACTORS THAT NEED DATA

- **Risk Management Scenario**
  - Spatial and temporal scale of the problem
  - Risk reduction objective
  - List of identified options
  - Screening factors and constraints
  - Decision maker
  - Prospective implementer of selected options
- **Options Performance Information**
  - Chance of success of an option within a given constraint
  - Chance of success of composite options within a given constraint (including synergistic and antagonistic effects)

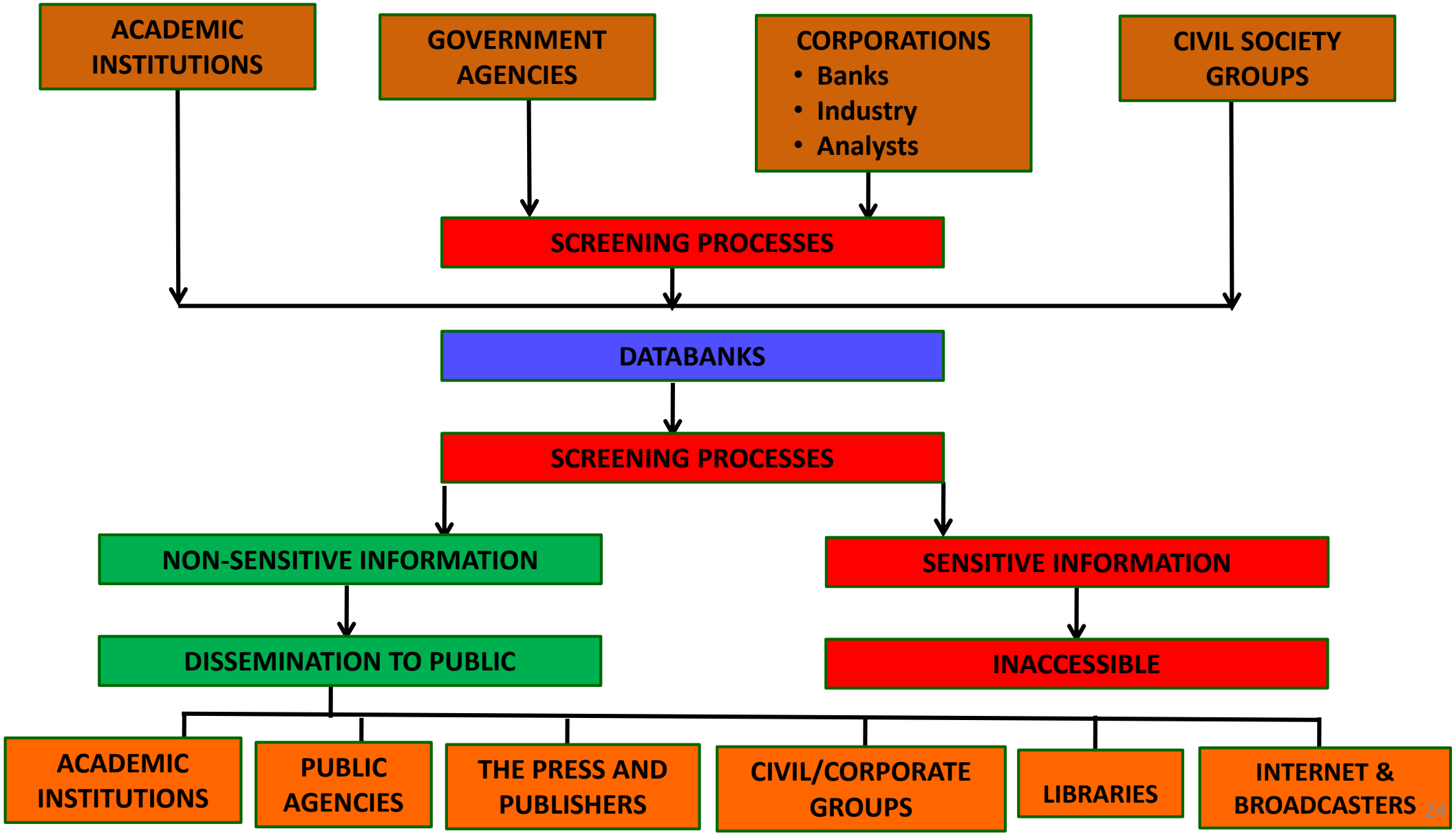
EXISTING DATA THAT ARE GIVEN VARIOUS SPATIO-TEMPORAL COORDINATES NEED TO BE INTERLINKED WITH MORE RECENT DATA THAT CAN BE GENERATED BY SATELLITES AND TRANSFERRED BY BOTH SATELLITE AND CABLE COMMUNICATION SYSTEMS

LOOKING AT AFRICA'S RELATIVE SIZE

(Source: Amsterdamcg,2013)



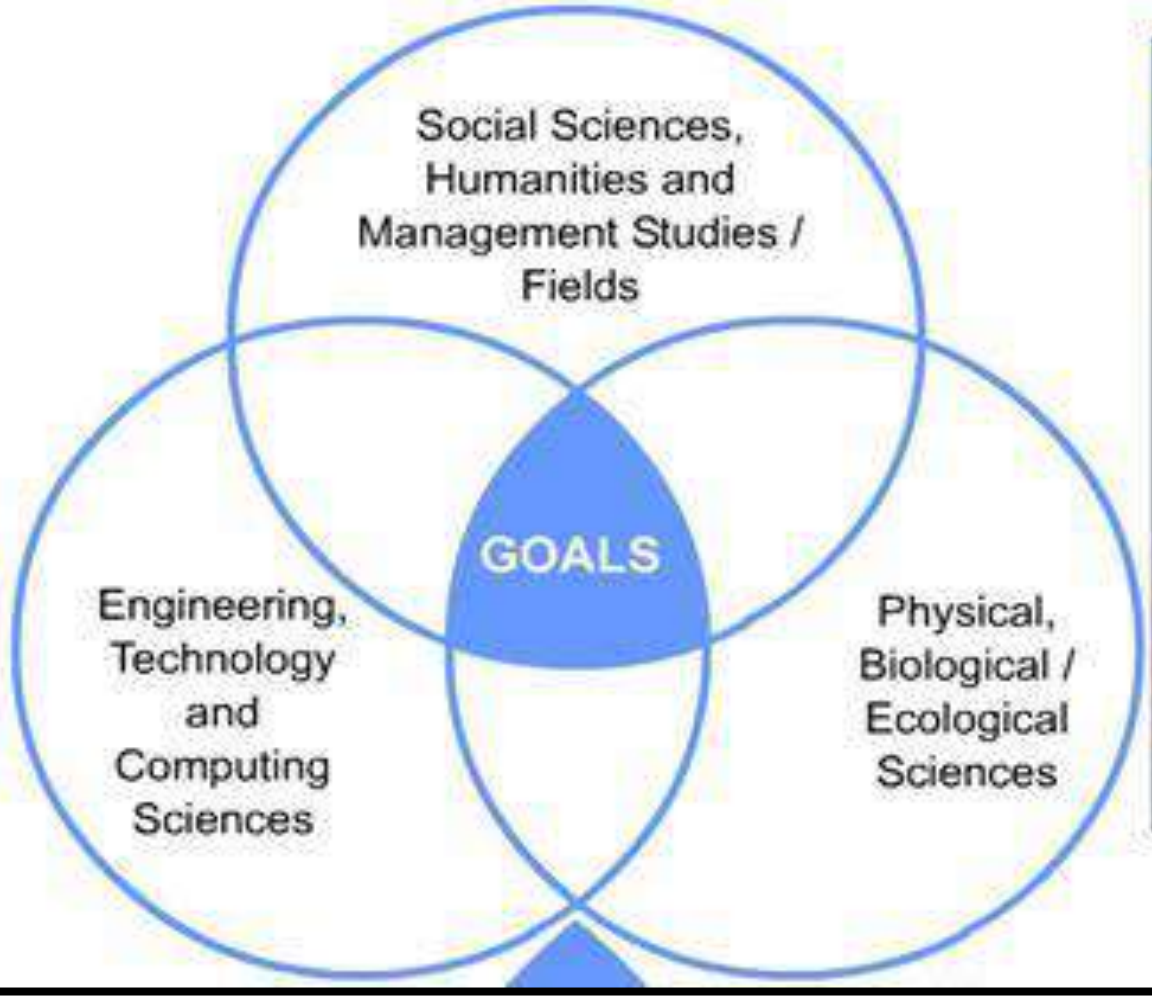
CONFIGURATION OF INFORMATION GENERATION, STORAGE AND ACCESS SYSTEMS NECESSARY FOR AFRICAN SUSTAINABLE DEVELOPMENT



SOURCE DISCIPLINES FOR DATA AND TECHNIQUES THAT ARE NEEDED FOR SUSTAINABLE DEVELOPMENT

Building Capacity Through:

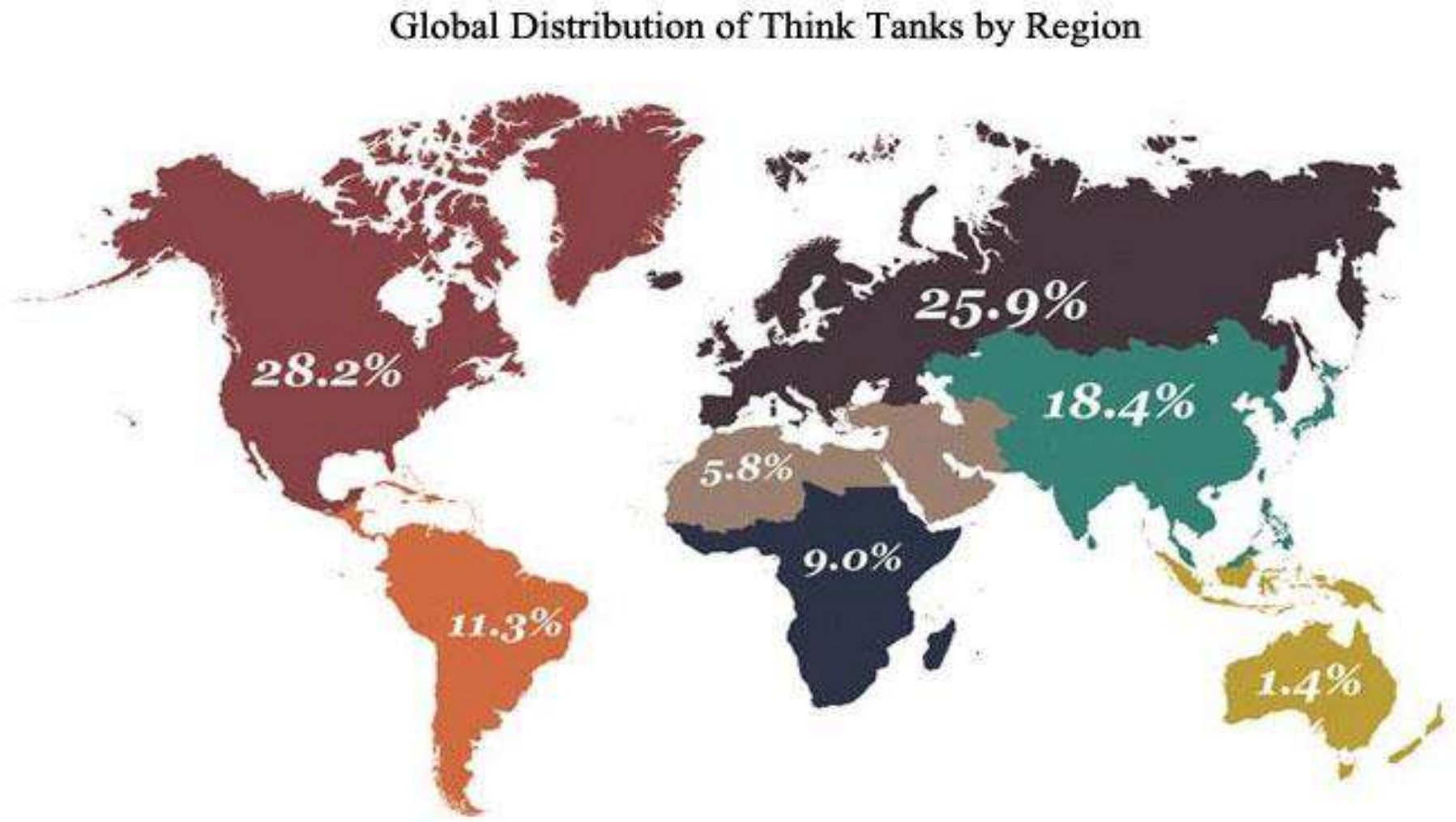
- Regulations
- Policies
- Technical Guidance Systems
- Education and Training
- Enforcement and Incentives



Categories of Implementable Options

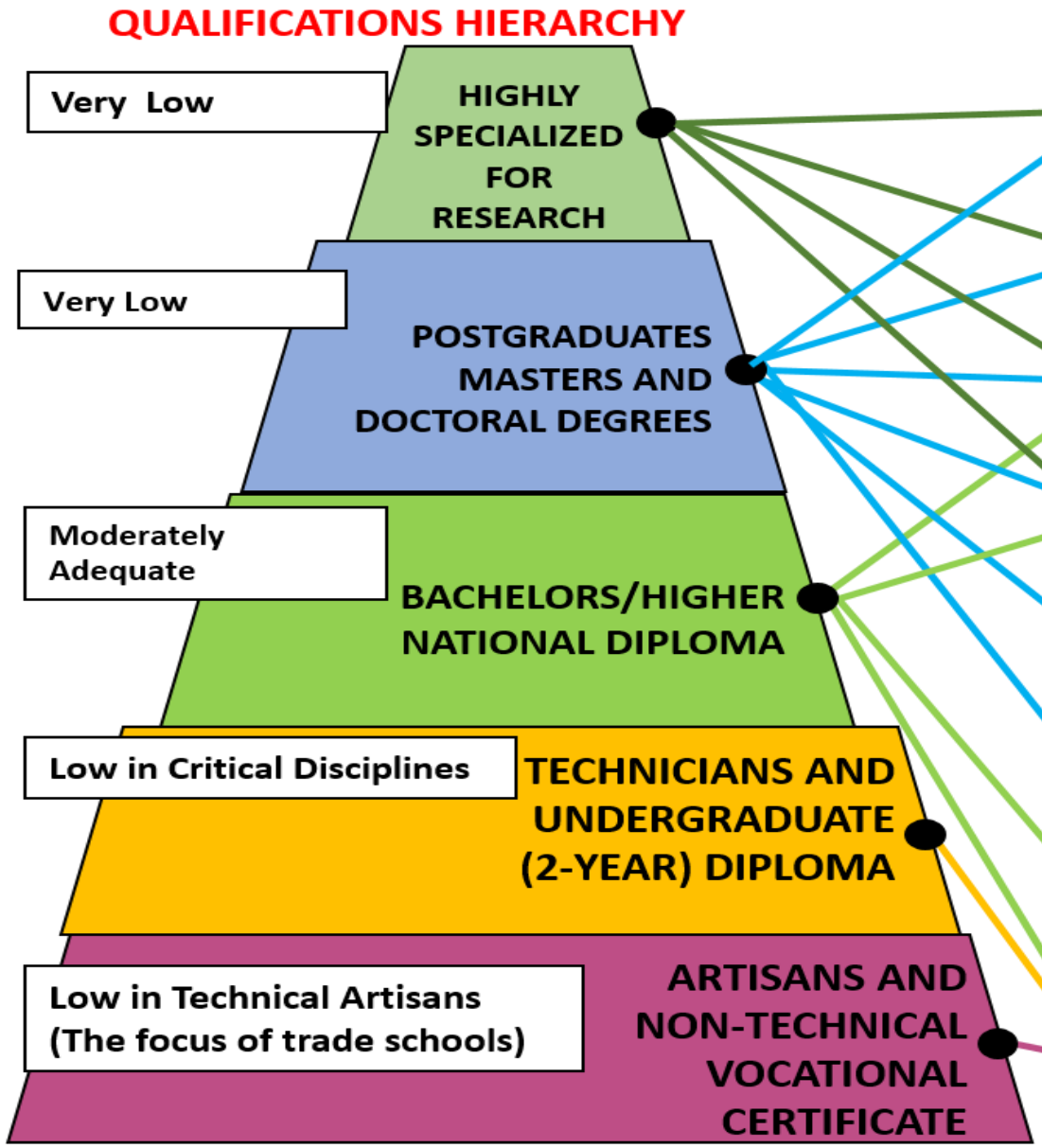
- Market Incentives
- Risk Communication
- Technology Development and Deployment
- Public Education
- Cooperation/Conflict Resolution Agreements
- Regulatory Enforcement
- Management System Implementation

GLOBAL DISTRIBUTION OF THINK-TANKS BY REGION, 2015



(Source: University of Pennsylvania survey highlights important role think, 2015 Global Go To Think Tank Index)

THE NECESSARY S&T SKILLS STRUCTURE OF EACH AFRICAN COUNTRY



NECESSARY DEVELOPMENTS

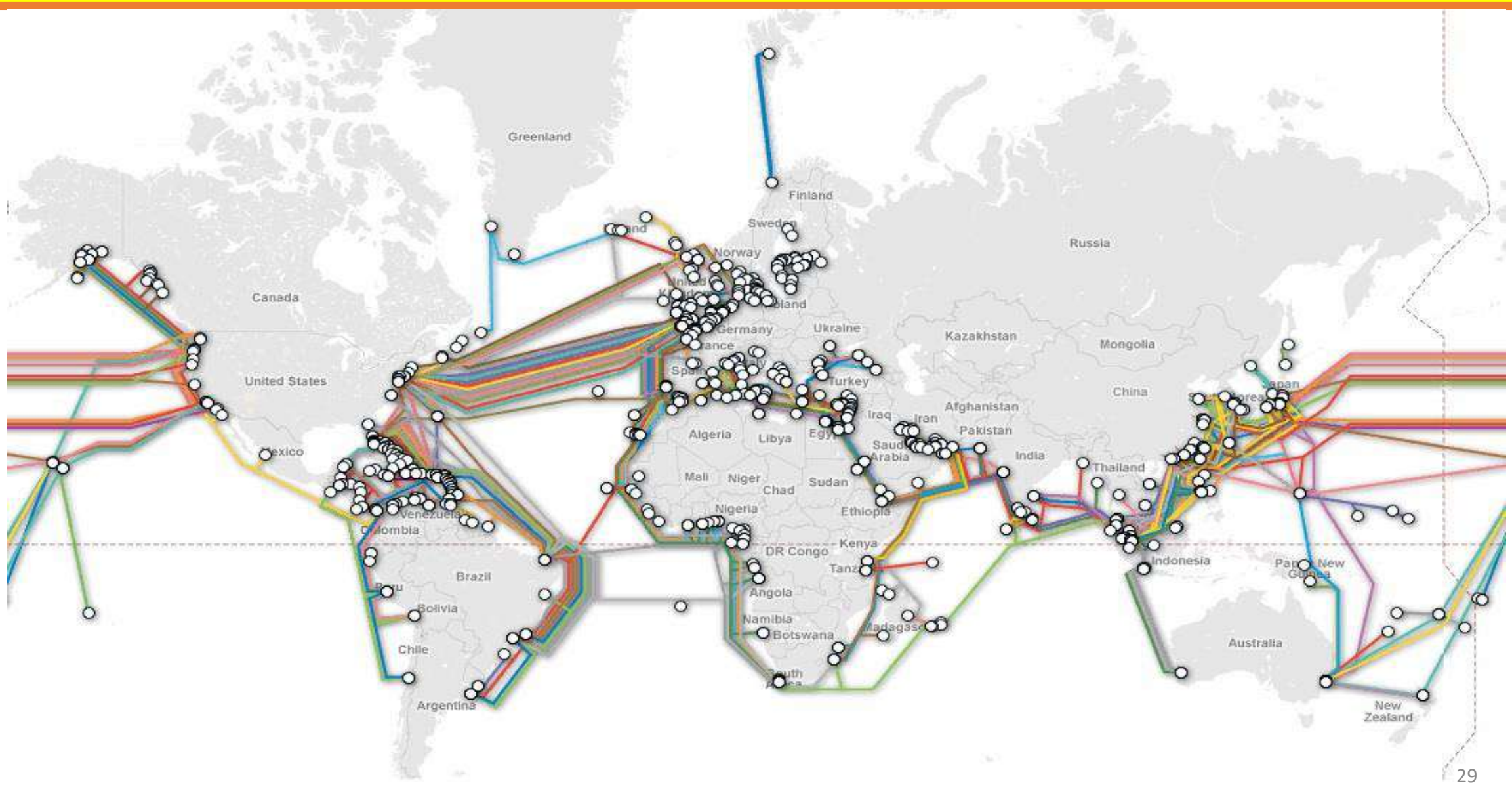
- Reduce Waiting /Processing Periods for Critical Foreign Personnel at Department of Labour to Support National Initiatives and Projects
- Expansion of National Research Foundation Grants Programme on Key National Issues
- Evolution of an Innovation Hub in the Country to Support Advanced Research
- Increase in Collaborative Research Centers and Incubation Parks in the Country
- Operation of Thesis Writing Camps to Support Completion of Post-Graduate Degrees by Candidates
- Operation of In-Service/Part-Time/Distance Postgraduate Programmes for Regular Employees
- Transfer of Successful Graduates of 2-Year Colleges to 4-Year Degree Programmes in Universities
- Increase in Small and Medium-Scale Businesses (SMEs) with Funding from Financial Institutions to Expand Opportunities for Artisans and Others

THE TRANSITION TO INDUSTRY 4.0

SUBMARINE CABLES WITH BROADBAND INTERNET CAPACITY

(note limited lines around Africa)

(Source: Primedica Inc. 2018)



EXAMPLES OF DATA/INFORMATION COMMUNICATION SATELLITES WITH SIGNIFICANT FOCUS ON AFRICA

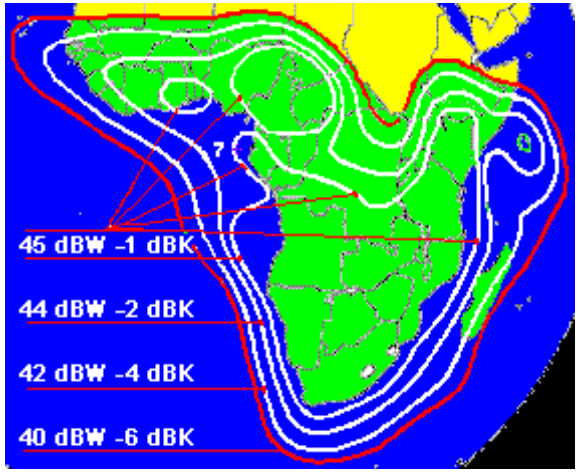
BENTLEY TELECOM EUTELSAT W3A

Bentley Telecom Eutelsat W3A

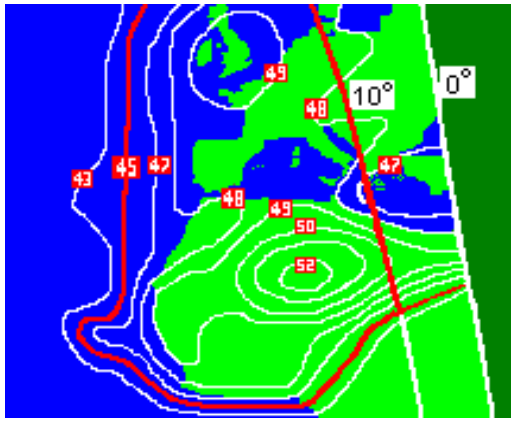
Eutelsat W3A (7 deg east) broadband internet via satellite coverage using **the new Hughes HX** and LinkStar DVB-S2 and iDirect technologies. The Hughes HX, introduced in March 2008, represents a significant step forwards. Various grades of service plus special quality of service controls and advanced proprietary TCP/IP compression to give faster downloads compared with unprocessed feeds, plus customer access to traffic monitoring system.

Click here to email: **sales@bentleywalker.com** or phone now 00 44 239 246 3943 (ref:satsig)

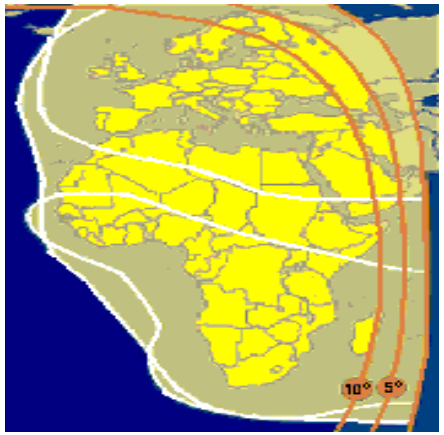
Also iDirect STAR COM service in North East Africa



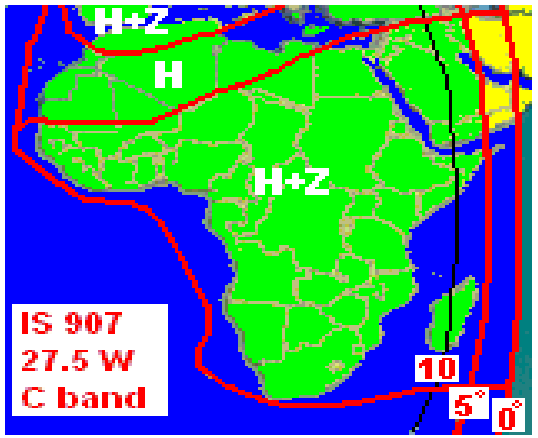
Mid Africa and South Africa coverage Direct connection provider.



Customer VSAT dishes are typically 1.2m diameter with up to 61 PCs connected



All Africa, Middle East and Europe.
C band on 1.8m dish



PanAmSat 1R at 45 west is also available and provides good coverage of North West Africa.

SECTION D

THE PROPOSED AFRICAN CONTINENTAL RESEARCH FOUNDATION (ACRF)

OBJECTIVES OF THE AFRICAN CONTINENTAL RESEARCH FOUNDATION (1)

1. To support and manage extramural research programs and projects for production of information including data and analytical and support utilities such as methodologies, models, systems, standards and protocols.

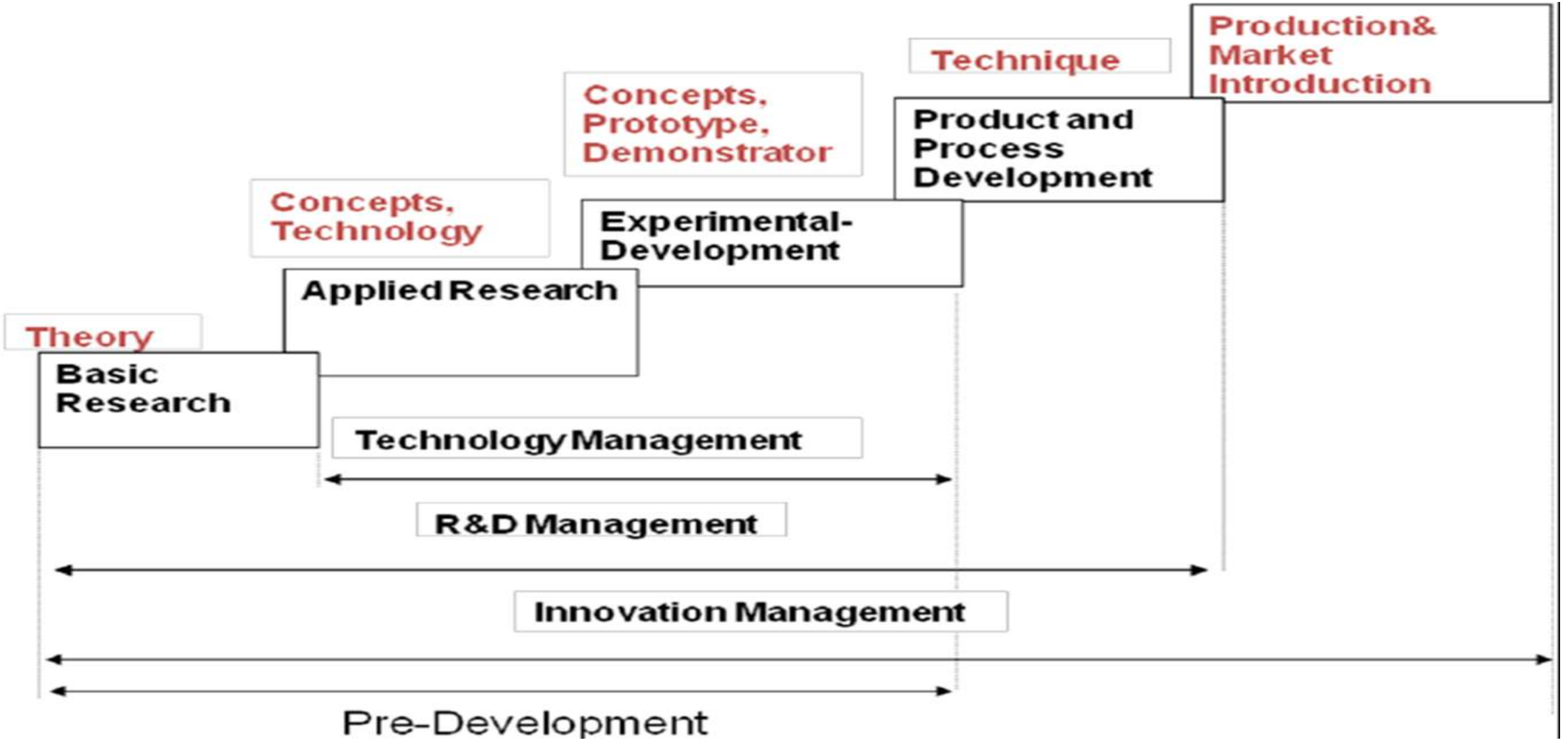
2. To devise mechanisms for systematic plugging of data gaps on Spatio-temporal parameters, including variables, that continue to impede efficient and cost-effective planning and implementation of projects and programs in Africa.

3. To provide opportunity for engagement of African experts and development of African talent (in Africa and the diaspora) on issues that can be addressed through research knowledge enfranchisement and deployment.

OBJECTIVES OF THE AFRICAN CONTINENTAL RESEARCH FOUNDATION (2)

4. To foster and catalyze the emergence and engagement of a set of robust think-tanks, look-out panels and scholarly institutes in debates, appraisals and framing of critical issues to improve Africa's intellectual system.
5. To catalyze science, technology and innovation (STI)-based African entrepreneurship through research promotion and bridging the existing research support/affordability gaps between the relatively rich and poor African countries.
6. To canvas for research endowment funds from national governments, corporate organizations and other partners to create the African Knowledge Systems Support Endowment Fund (AKSSEF) at AfDB.
7. To collaborate with relevant units of the African Union AUDA-NEPAD and many other entities such as African Regional Blocs and specialized agencies to advance Africa through research, development and diffusion of knowledge.

STEPS FROM BASIC RESEARCH TO ENTREPRENEURSHIP



SOURCE: www.playsocial.co/diagram-life-cycle-of-innovation.html

THE PROPOSED CONFIGURATION OF THE AFRICAN CONTINENTAL RESAERCH FOUNDATION

ACRF will be a dynamic organization in the mode of the European Science Foundation with some operation elements adapted from those of the US National Science Foundation and South Africa's National Research Foundation (NRF). ACRF will comprise nine Directorates, namely:

- Central Administration
- Basic Research, Applied Research and Entrepreneurship Directorate
- Indigenous Knowledge Systems Directorate
- Regional Industrial Park Support Directorate
- Science Diplomacy and International Engagement, Directorate
- Award Administration, Directorate
- Capacity-Building, Training and Conferencing Directorate
- Publication Language Translations Directorate
- Internal Audit and Quality Control Directorate

THE PROPOSED PERSONNEL STRUCTURE OF THE AFRICAN CONTINENTAL RESAERCH FOUNDATION

- Board of Trustees (BoT): 5-year term for each member
- Director-General
- Deputy Director-General and Head of Central Administration Directorate
- Directors of various Directorates
- Program Managers under different Directorates
- Regional Liaison Directors in each Regional Bloc of Africa

- Initial ACRF headquarters in South Africa (Pretoria) or any of the following cities: Abuja, Addis Ababa, Abidjan, Nairobi and Cairo.
- All personnel of ACRF at and above the rank of Program Manager will serve 2-5 year terms.

THE PROPOSED COVERAGE OF OPERATIONS OF THE AFRICAN CONTINENTAL RESEARCH FOUNDATION

ACRF will operate several research support programs within its Directorates. Examples of such critical programs are itemized below.

- Funding of Fundamental (discovery-oriented), Applied and Technology, and Social Science/Policy Research in various economic sectors.
- Funding operations of the African Business Innovation Research (ABIR) program to provide data and systems for operation of STI-supported socio-economic system.
- Disbursement of the African Laboratory Facility Improvement Grant (ALFIG).
- Disbursement of the African Library and Information Technology Implementation Grants (ALITIG).
- Support of the African Post-Doctoral and Student Research Fellowship Grants (ASRFG).
- Support of Women in Science, Humanities and Engineering (WinSHE) program.
- Service as the Data Repository on African Sustainable Development Issues (DRASPI).
- Operation of the African Diaspora Partnership Program (ADPP).
- Funding of the African Research Exchange Program (AREP).

THE PROPOSED OPERATIONAL PROCESSES OF THE AFRICAN CONTINENTAL RESEARCH FOUNDATION

- Operations in the 5 official languages of Africa: English, French, Portuguese, Arabic and Spanish.
- Annual compilation and framing of research issues and questions by ACRF panels convened to identify them through reviews.
- among focus of the reviews will be needs in such areas as Agenda 2063, STISA-2024, SDGs-2030, etc.
- Use of forums such as the African Science Forum to enable robust discussions
- Development and wide distribution of request for proposals for 2-5 year sponsored research on issues annually.
- Oversight of the research performed by principal investigators and their research teams at academic institutions, public agencies, corporations and civil society organizations.
- Organization of results dissemination and uptake forums with policymakers, field practitioners, venture capitalists/industrialists and standards organizations.

THE PROPOSED FUNDING MECHANISM OF THE AFRICAN CONTINENTAL RESEARCH FOUNDATION

- Creation of the African Knowledge Systems Support Endowment Fund (AKSSEF) at AfDB.
- The AfDB will disburse the total amount of funds needed annually to operate, to ACRF for management using its processes.
- The annual funds will comprise the following components:
  - Research and program support grants disbursements
  - ACRF physical infrastructure and equipment
  - Operations including staff salaries and benefits

SECTION E

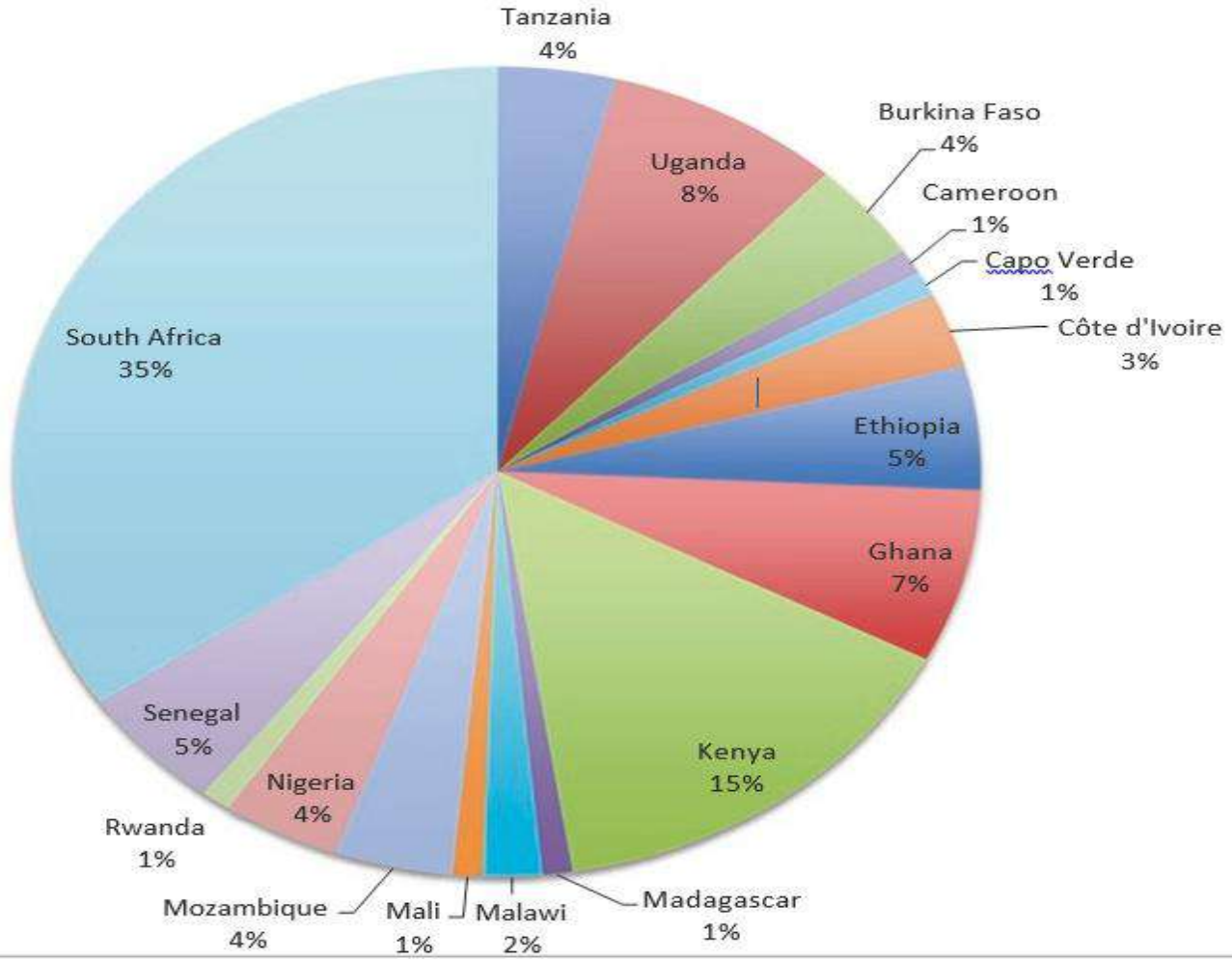
STEPS TO ESTABLSIHMENT OF THE ACRF

RATIONALE FOR LEADERSHIP OF THE ACRF ESTABLISHMENT PROCESS BY SOUTH AFRICA (NACI/DSI/AISA-HSRC)

South Africa needs to lead the process of establishment of ACRF for the following reasons:

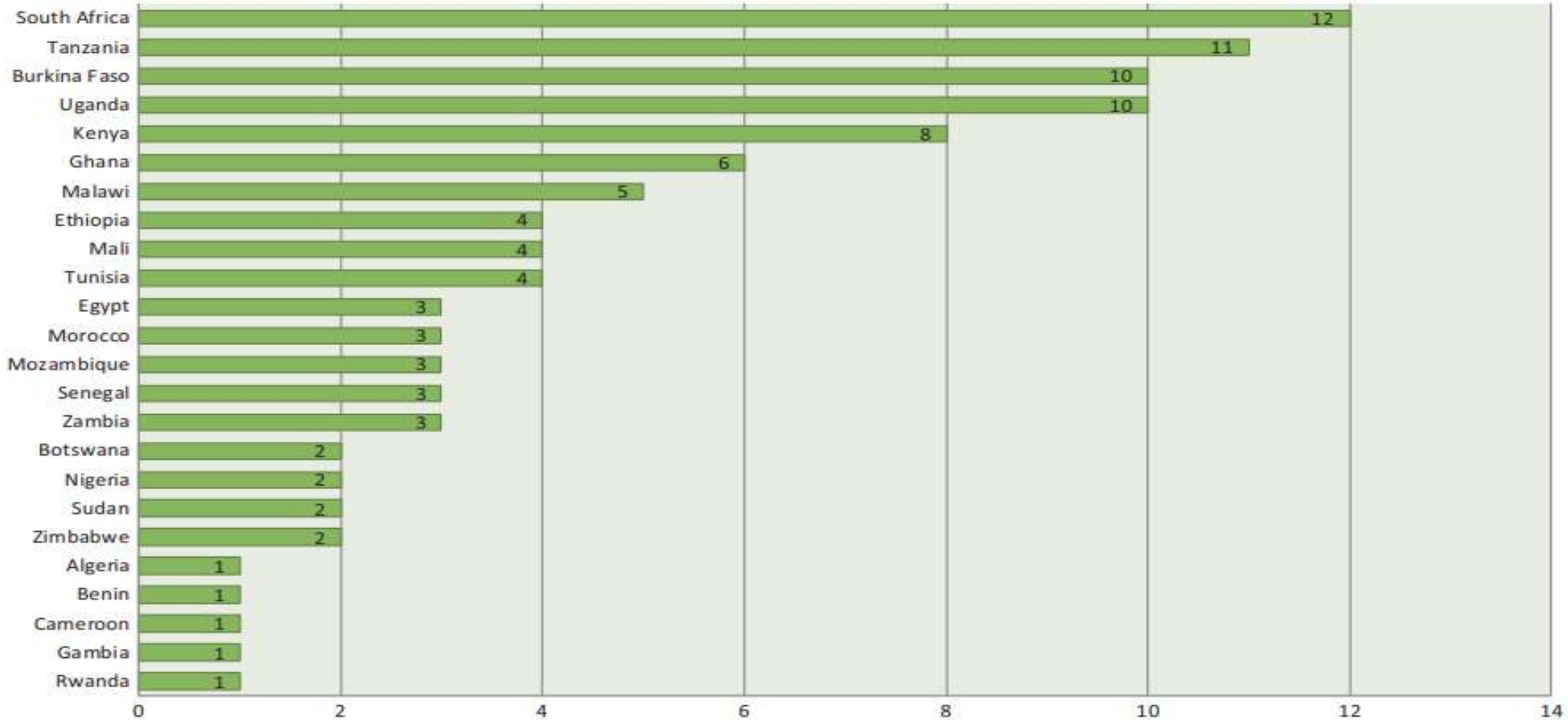
1. Through the 2018 Draft White Paper on Science, Technology and Innovation developed by South Africa's DSI to support her National Development Plan (NDP) 2030, South Africa has endorsed a Pan-African STI agenda.
2. Initial forums in which this framework was first introduced by Prof. Hilary I. Inyang were hosted by the South African government entities (DST and AISA) in collaboration with the International Council for Science Regional Office for Africa in Pretoria in 2011.
3. South Africa has the most advanced and effective research grant-making and supervision agency (the National Research Foundation) in Africa presently.
4. South Africa is in consortia with many research-minded organizations outside Africa that can be engaged diplomatically to provide assistance to Africa with respect to the creation of the endowment fund.

PARTICIPATION OF SUB-SAHARAN AFRICAN COUNTRIES IN EU'S HORIZON 2020 RESEARCH PROGRAM THAT ADDRESSES EXCELLENCE IN SCIENCE, INDUSTRIAL LEADERSHIP AND SOCIETAL CHALLENGES



eCorda (2016) in Kraemer-Mbula, E., Vaitsas, C. and Essegbey, G. O. 2018. The Dynamics of EU-Africa Research and Innovation Cooperation Programmes. Chapter 3 of AFRICA-EUROPE RESEARCH AND INNOVATION COOPERATION: Global Challenges Bi-regional Responses. Edited by: Andrew Cherry, James Haselip, Gerard Ralphs and Isabella E. Wagner. Palgrave Macmillan, Cham – Switzerland. Pages 39-62.

RESPONSE OF AFRICAN COUNTRIES TO EU'S SEVENTH FRAMEWORK PROGRAMME EP7 COORDINATED AFRICA CALL OF 2010 FOR RESEARCH PARTICIPATION IN THE PROGRAM THAT TARGETED COOPERATION, IDEAS, PEOPLE, CAPACITIES AND NUCLEAR RESEARCH



Kraemer-Mbula, E., Vaitsas, C. and Essegbey, G. O. 2018. The Dynamics of EU-Africa Research and Innovation Cooperation Programmes. Chapter 3 of AFRICA-EUROPE RESEARCH AND INNOVATION COOPERATION: Global Challenges Bi-regional Responses. Edited by: Andrew Cherry, James Haselip, Gerard Ralphs and Isabella E. Wagner. Palgrave Macmillan, Cham – Switzerland. Pages 39-62.

NECESSARY STAKEHOLDER ENGAGEMENT ON THE ESTABLISHMENT OF THE ACRF (1)

- **Bodies under the African Union Commission (AUC)** (*e.g. the African Scientific Research and Innovation Council (ASRIC), African Observatory of Science, Technology and Innovation (AOSTI), African Ministerial Council on Science and Technology (AMCOST), Pan-African University (PAU) Systems, and regional and international research organizations, the AU specialized Technical Committee (STC) in charge of Education, Science and Technology, and the AUDA-NEPAD*).
- **Other International Agencies** (*e.g. UNESCO Regional Bureau for Africa, UNDP-Africa Regional Office, UNECA-Addis Ababa, and African Parliament*).
- **Educational Consortia** (*e.g. African Association of Universities, Association of Medical Schools, COVIDSET and African Association of Private Universities*).
- **Professional Honor Societies** (*e.g. African Academy of Sciences, International Science Council, Academy of Science of the Developing World*).

NECESSARY STAKEHOLDER ENGAGEMENT ON THE ESTABLISHMENT OF THE ACRF (2)

- **Leading Institutes and Think-Tanks** (*e.g. African Development Bank Institute, World Bank Institute, African-Caribbean Network for Science and Technology and African Capacity Building Foundation*).
- **Business Sector Analytical Organizations** (*e.g. NEPAD Business Council, Commonwealth Business Council, and African Chambers of Commerce*).
- **Resource Mobilization Organizations** (*e.g. African Development Bank, International foundations and funding agencies, major African commercial banks, major firms with commercial interests in Africa*).
- **The Press and Other Information Dissemination Organizations** (*e.g. The Economist Magazine, Africa Now Magazine, Cable News Network, ALJAZEERA, Chronicles of Higher Education*).

NEXT STEPS ON THE ESTABLISHMENT OF THE ACRF (1)

- Initial engagement meeting between Prof. Hilary I. Inyang and Dr. Thokozani Simelane of AISA/HSRC and Dr. Mlungisi Cele of NACI/DSI with facilitation by Ms. Thina Litshani and development of the ACRF Concept Note (May, 2022).
- Organization of a Webinar on June 2, 2022 by DSI for initial engagement of key stakeholders. Among other elements, the webinar will feature a PowerPoint presentation by Prof. Hilary I. Inyang on the "Rationale, Utility and Possible Configuration of ACRF" with moderation of discussions by Prof. Siphamandla Zondi of the University of Johannesburg (June, 2022).
- Set-up of the Planning Secretariat and Team jointly by DSI and AISA and production of organizational branding and operational documents (July, 2022).

NEXT STEPS ON THE ESTABLISHMENT OF THE ACRF (2)

- Engagement of stakeholders by NACI/DSI and AISA/HSRC and formation of both the High-Level Diplomatic Advisory Committee (HL-DAC) and the Scientific Steering Committee (SS-COM) (July – December, 2022).
- Development of the Strategic Plan that is tied to SDGs-2030, Africa Agenda 2063, STISA 2024 and initiatives of African Regional Blocs and other stakeholder organizations (January – June, 2023).
- Engagement in funding solicitations, MOUs, organizational endowment activities (January – December, 2023).
- Establishment (legally and logistically) of ACRF at the selected headquarters and regional offices and hiring and training of staff (July – December, 2023).
- Beginning of full operations of ACRF with the inaugural "Request for Research and Program Proposals" (January 1, 2024).

SECTION F

PROPOSED ACRF PERFORMANCE EVALUATION PROCESSES

PROSPECTIVE CATEGORIES AND LEVELS OF ACRF PERFORMANCE EVALUATION

A. Program and Directorate Level Evaluations

B. ACRF Organizational Internal Audits

C. ACRF Organizational External Audits

D. ACRF Organizational Evaluations tied to Oversight by its Board of Trustees

E. Other Ad-hoc Evaluations that May be Done by Sponsors of Specific Programs as well as Contributors to the Endowment

POSSIBLE KEY PERFORMANCE INDICATORS (KPIs) FOR USE BY ACRF EVALUATORS TO TRACK ANNUAL PERFORMANCE PROGRESS OF THE ORGANIZATION.

1. (NATIONAL COMPETITIVENESS IN THE INTERNATIONAL ARENA (NCIA-SCORES))

KPI		SIGNIFICANCE AND APPLICATION	SCORE (10 is the highest)									
			1	2	3	4	5	6	7	8	9	10
A.	NATIONAL COMPETITIVENESS IN THE INTERNATIONAL ARENA (NCIA-SCORES)											
A.1	NATIONAL COMPETITIVENESS INDEX RANK	This enables the productivity of Africa through the help of STI to be assessed relative tothe rank of other regions.										
A.2	GLOBAL INNOVATION INDEXRANK	This is a measure of the stealth: the region's ability to use STI to address challenges and improve quality of life.										
A.3	GLOBAL MANUFACTURING INDEX RANK	This is a measure of the capacity of the region to produce goods to serve the economy locally and externally with attendant jobs and wealth creation.										

POSSIBLE KEY PERFORMANCE INDICATORS (KPIs) FOR USE BY ACRF EVALUATORS TO TRACK ANNUAL PERFORMANCE PROGRESS OF THE ORGANIZATION.

2. (SATISFACTION OF NATIONAL DOMESTIC SOCIO-ECONOMIC OBJECTIVES (SNDS-SCORE))

KPI		SIGNIFICANCE AND APPLICATION	SCORE (10 is the highest)									
			1	2	3	4	5	6	7	8	9	10
B.	**SATISFACTION OF NATIONAL DOMESTIC SOCIO-ECONOMIC OBJECTIVES (SNDS-SCORE)**											
B.1	NO OF STI-FOCUSED BUSINESSES CREATED	This measures the utility of STI to economic development of the region through creation of enterprises.										
B.2	NO OF JOBS CREATED ANNUALLY BY STI RELATED FIRMS	This directly measures wealth distribution and contributionof STI to social stability.										
B.3	ESTIMATED MONETARY CONTRIBUTION OFSTI TO NATIONAL ECONOMY	This measures the extent to which STI justifies investmentthrough payback.										
B.4	TOTAL R&D PERSONNEL IN THECOUNTRY (UNESCO)	This measures the diffusion of STI into the professional stockof the country.										
B.5	NUMBER OF FOREIGN RAW MATERIALS REPLACED BY LOCAL MATERIALS	This is an indicator of the use of STI to reduce production costs for region's industries.										
B.6	NUMBER OF PRODUCTS REMOVED FROM IMPORT LISTS DUETO LOCAL PRODUCTION	This is an indicator of impact of STI on industrial growth of the region with benefits to the economy.										

POSSIBLE KEY PERFORMANCE INDICATORS (KPIs) FOR USE BY ACRF EVALUATORS TO TRACK ANNUAL PERFORMANCE PROGRESS OF THE ORGANIZATION.

3. PRODUCTIVITY IN SCIENCE, TECHNOLOGY AND INNOVATION (PSTI-SCORE))

KPI		SIGNIFICANCE AND APPLICATION	SCORE (10 is the highest)									
			1	2	3	4	5	6	7	8	9	10
C.	PRODUCTIVITY IN SCIENCE, TECHNOLOGY AND INNOVATION (PSTI-SCORE)											
C.1	TOTAL NUMBER OF PATENT APPLICATION	This measures the inventiveness of the region derived from catalyzing activities of ACRF.										
C.2	TOTAL NUMBER OF RESEARCH ARTICLES PUBLISHED IN INTERNATIONAL JOURNALS	This measures the intellectual contributions of the region's researchers through discoveries and formulationsof new approach.										
C.3	TOTAL NUMBER OF COMPLETED STI PROJECTS	This is a measure of the contributions of the region's STI to the economic development of the region.										
C.4	TOTAL NUMBER OF ARTISANS, TECHNICIANS, SCIENTISTS AND ENGINEERS TRAINED	This is a measure of STI Workforce improvement and expansion to provide skilled workers for the region's Industrialization (e.g. 4IR).										

CONCLUSION!!

Indeed as Dr. Martial De-Paul Ikounga, the then AU Commissioner for Human Resources, Science and Technology, commented in his foreword for STISA-2024, ***"mobilization of domestic excellence and financial resources, and leveraging on external support and collaboration is vital for the successful implementation of STISA-2024. Strategic partnerships levels are essential for jointly solving global challenges. We have to forge strong partnerships, driven by our shared values and policy objectives and deliver impact on the ground".***

The above-enumerated objectives and tasks constitute the pathway to improvement of the quality of life in Africa where population is increasing in leaps and bounds and with greater competition for resources, threaten to revive conflicts that had been dormant for decades. Research that can expand the economy and opportunities for African jurisdictional units at various scales is a critical means of staying afloat with competition from other regions that have experienced socio-economic difficulties in the past.

THANK YOU!!

INTRODUCTION TO THE SPEAKER: Prof. Hilary I. Inyang

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Prof. Hilary I. Inyang, a Visiting International Research Fellow of the Africa Institute of South Africa (AISA), is a world-renowned researcher, expeditionist and educator in the areas of environmental science and engineering, geohazards, energy systems and international development. He is a member of the Education Caucus of the United Nations Commission on Sustainable Development and served for two terms (1997-2001) as Chair of the Science Advisory Board (Engineering Committee) of USEPA in Washington DC, USA. He is a former Duke Energy Distinguished Professor and Director of the Global Institute of Energy and Environmental Systems of the University of North Carolina, Charlotte, USA: former DuPont Professor of Environmental Engineering and Science and Director of CEEST, University of Massachusetts, Lowell, USA, former President of the African University of Science and Technology, Abuja, Nigeria, and former Vice Chancellor of the Botswana International University of Science and Technology. He chaired the Steering Committee of the Africa Science Plans under the auspices of the International Council for Science, UNESCO and the United Nations Economic Commission for Africa. Currently, he is a UNESCO Consultant on Water Security and Visiting Professor at the Indian Institute of Technology, Bombay (IIT-B), Mumbai, India. He has authored several research proposals and won research grants from several agencies including the US National Research Foundation, Sandia National Laboratories (USA), General Electric Corporation, US Environmental Protection Agency, and the African Development Bank. He has won more than 20 professional prizes and is a former AAAS/USEPA Environmental Science and Engineering Fellow, US National Research Council Young Investigator and Eisenhower/Randolph Fellow. He has authored about 275 publications and served on 29 journal editorial boards. He won the 2013 Nigerian National Order of Merit (NNOM) in science and technology and is a Fellow of both the African Academy of Science and the Geological Society of London. He is also a Proost Poet.