

Changing minds and promoting the social-biophysical interface



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Presentation layout

A brief overview of Mozambique, EMU and FAEF

The global picture of African universities

What you dont see or not publicized

Changing context...changing minds

Final remarks



Mozambique – a rising star



- Population of 28 million
- GDP about USD 14 Billion
- GDP growth of about 4% (2017)
- 80% live in rural areas
- Agriculture is the main livelihood (70%)

BUT RURAL AREAS CONTINUE TO LAG BEHIND URBAN AREAS, WHERE ECONOMIC AND SOCIAL PROGRESS IS LARGELY CONCENTRATED



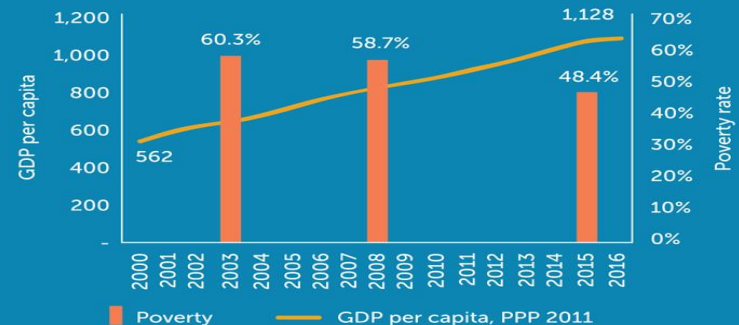
Since the early 2000s, nearly...

8 out of 10
poor people are in rural areas

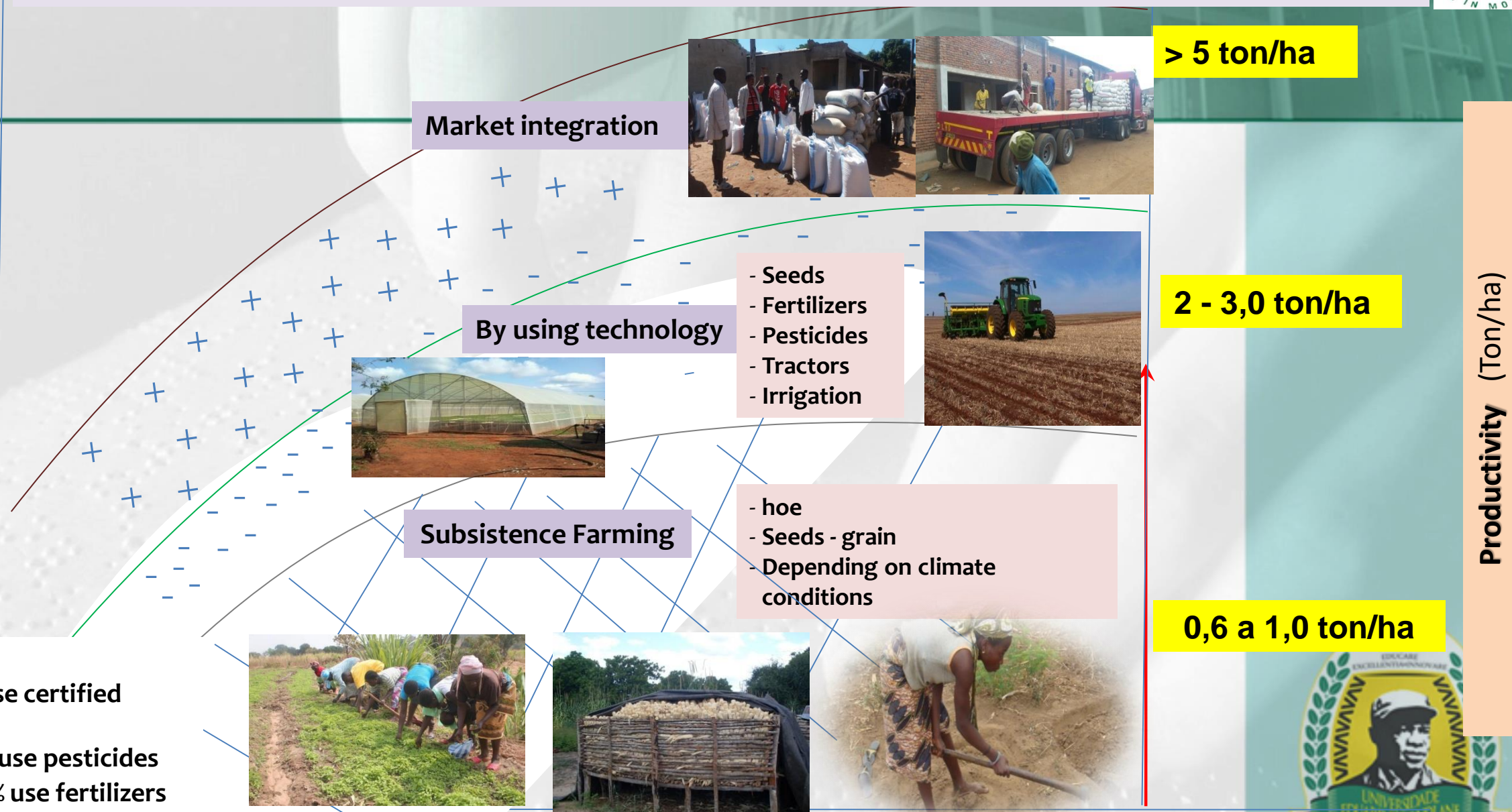
MOZAMBIQUE HAS RECORDED STRONG GROWTH, BUT MANY LOW-INCOME HOUSEHOLDS ARE MISSING OUT ON THE BENEFITS

STRONG GROWTH HAS GONE IN HAND WITH POVERTY REDUCTION, ESPECIALLY AFTER THE LATE 2000s

The poverty rate has declined on average by 1% per year



THE STATUS OF AGRICULTURE IN MOZAMBIQUE



Market integration



> 5 ton/ha

By using technology

- Seeds
- Fertilizers
- Pesticides
- Tractors
- Irrigation



2 - 3,0 ton/ha

Subsistence Farming

- hoe
- Seeds - grain
- Depending on climate conditions



0,6 a 1,0 ton/ha

Productivity (Ton/ha)

Low inputs:

- Only 5% use certified seeds
- Only 2,5% use pesticides
- Only 3,75% use fertilizers
- Mechanizations around 2% animal traction about 5%.



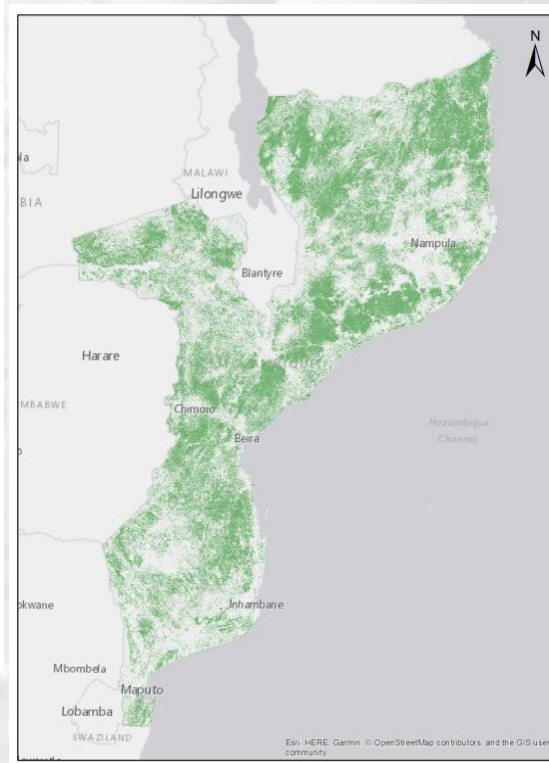
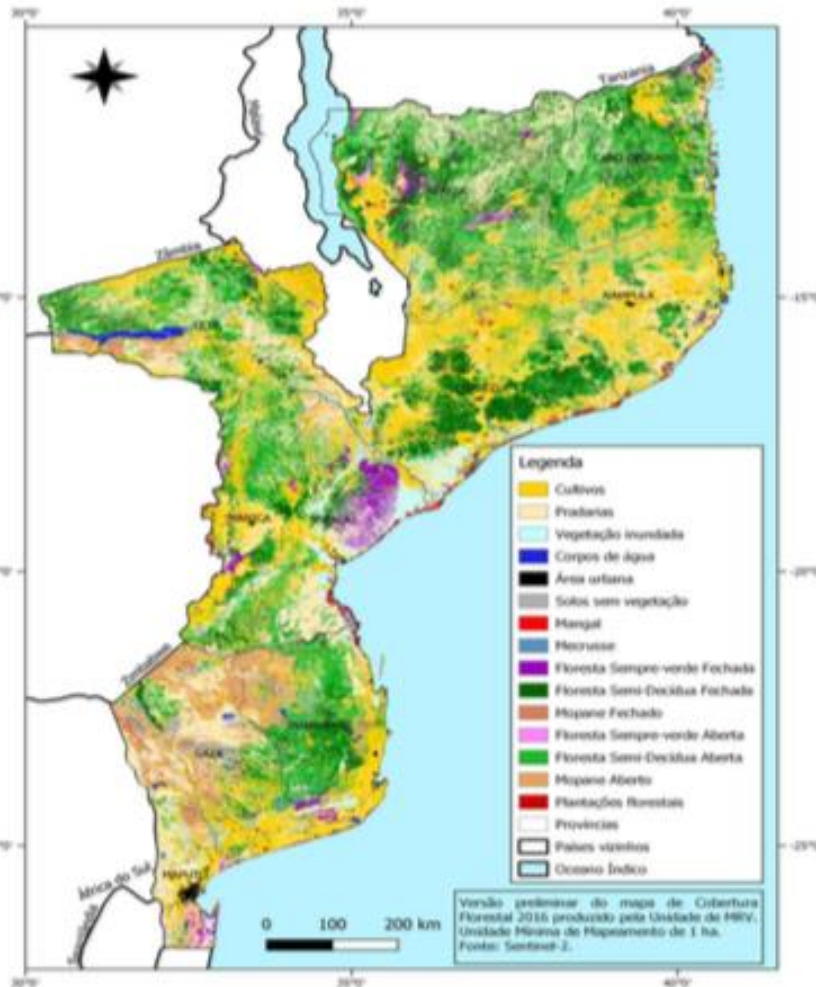
Forest cover

2007

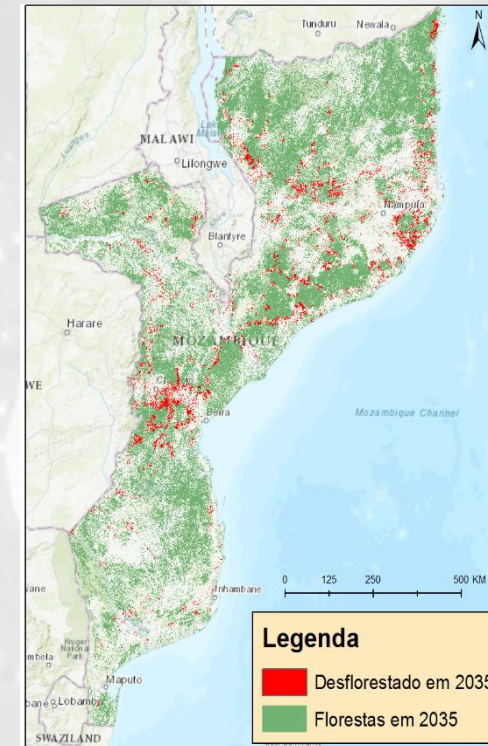
- 40 million of hectares of forest
- 51% of the national territory
- 27 million of hectares of productive forest

2018

- 33 million de hectares of forest
- 47% of the national territory
- 17 million of productive forest



Source: FNDS, 2018



Source: Mabilana, 2019

By 2035 about
2.8 Million of Hectars may be
deforested

An average of
155.000 ha/year

Way forward for Mozambique

POLICY OPTIONS TO MAKE GROWTH IN MOZAMBIQUE MORE INCLUSIVE

DEALING WITH THE CHALLENGE OF POVERTY AND RISING INEQUALITY REQUIRES PURSUING 3 GOALS:



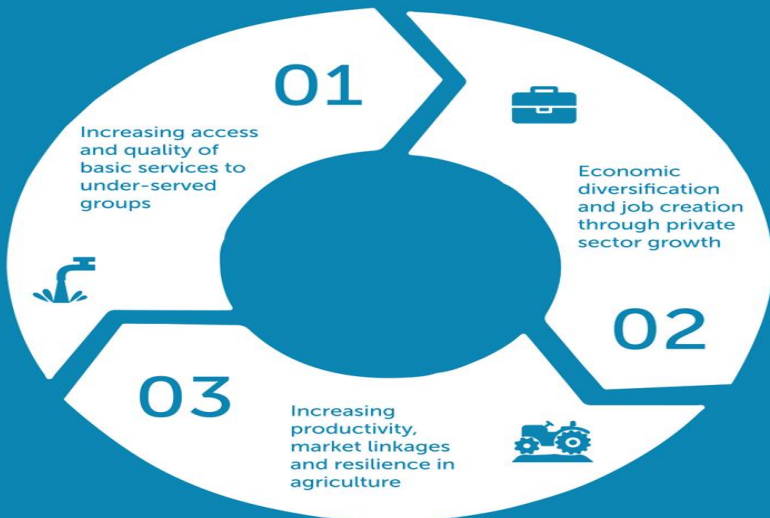
Economic
diversification



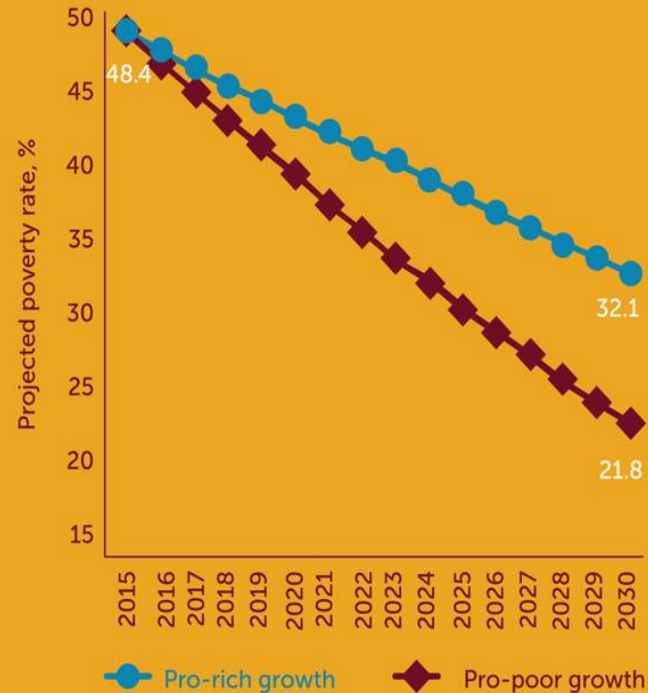
Increasing
equity



Resilient
agriculture




POVERTY WILL FALL FASTER GOING FORWARD IF GROWTH BECOMES MORE INCLUSIVE



Source: World Bank using WDI and IOFs (2002/03, 2008/09 and 2014/15)

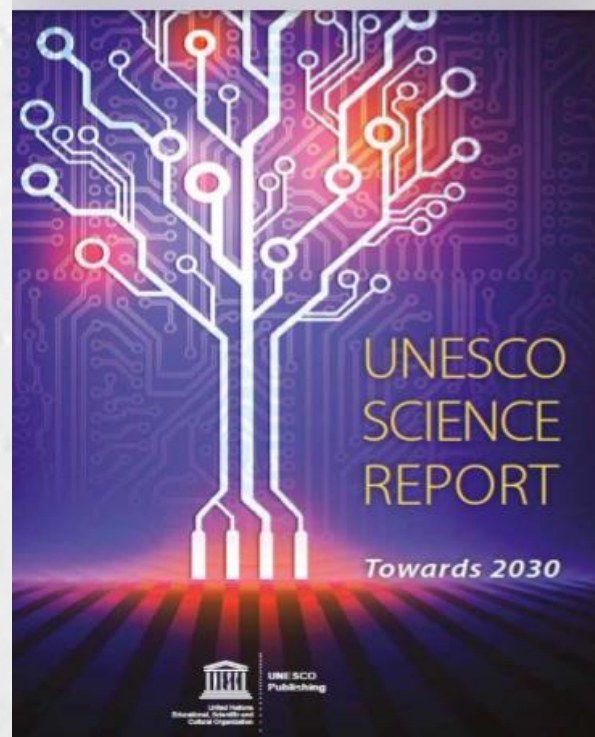
ACADEMIA and academic cooperation

Raising agricultural productivity, building a more diverse economy and equity and investment in people wont happen without science and technology  academia and academic cooperation is required!

'Science and technology alone will not save Africa, but Africa can not be saved without science and technology'- Prof. Mohamed Hassan- President TWAS

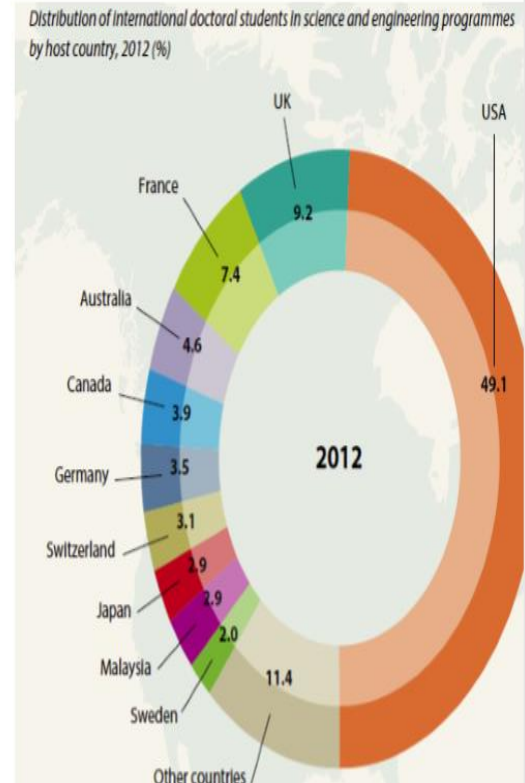
45 Universities and high schools in Mozambique, 18 publics

Todas				
Área de Formação	Públicas	Privadas	Total	% do total
Educação	9314	5108	14422	27.1
Humanidades e Artes	649	179	828	1.6
Ciências Sociais, Negócios e Direito	9738	16963	26701	50.2
Serviços	1014	58	927	1.7
CSHS Total*	20715	22308	42878	80.6
% CSHS	76.4	85.1	80.6	0.2
Ciência	1398	888	2286	4.3
Engenharias, Industria e Construção	2977	1625	4602	8.7
Agricultura	712	234	946	1.8
Saúde e Bem-Estar	1309	1157	2466	4.6
CNEAS Total**	6396	3904	10300	19.4
% CNEAS	23.6	14.9	19.4	0.0
Total	27111	26212	53178	100
% de total	51	49		



Ten countries host 89% of international PhD students in science and engineering fields.

Malaysia plans to attract 200,000 students by 2020 (56,000+ in 2012), double that in 2007.



Eduardo Mondlane University

(www.uem.mz)



EMU:

- Founded in 1962
- Around 45,000 students
- Annual intake of about 4500
- 11 faculties
- 6 schools
- About 2,000 lectures and researches
- About 3,000 staff



Faculty of Agronomy and Forestry Engineering (FAEF)

www.agronomia.uem.mz

- Founded in 1963
- About 100 lectures (45% PhD- all abroad, 32% MSc)
- 3 BSc programs
- 10 MSc programs
- 3 PhD programs
- About 800 students
- Annual intake of about 200




UNIVERSIDADE
EDUARDO
MONDLANE

**- SEMINÁRIO -
POLÍTICAS AGRÁRIAS E SUAS
IMPLICAÇÕES NO DESENVOLVIMENTO
NACIONAL**

Oradores: Prof. Doutor João Mutondo e Prof. Doutor
Castilho Amilai

**MAPUTO, 22-AGOSTO-2018
11:00-13:00, ANFITEATRO 200
CONVIDADOS: ESTUDANTES, DOCENTES E INVESTIGADORES**

FACULDADE DE AGRONOMIA E ENGENHARIA FLORESTAL

Resumo: Ao longo do tempo várias políticas foram ensaladas, no país, visando a dinamização do sector agrário cujo resultados tem sido bastante controversos no debate académico. Neste seminário os oradores pretendem fazer uma resenha das políticas agrárias com ênfase para a avaliação do Plano Nacional de Investimento no Sector Agrário (PNISA). A grande conclusão que deriva da sua análise é que o sucesso das políticas depende sobretudo da qualidade do debate das mesmas, da dinâmica nacional e internacional e da quantidade e qualidade de recursos disponíveis para a sua execução, monitoria e avaliação.

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Global picture of African universities (what you see or taught to see)



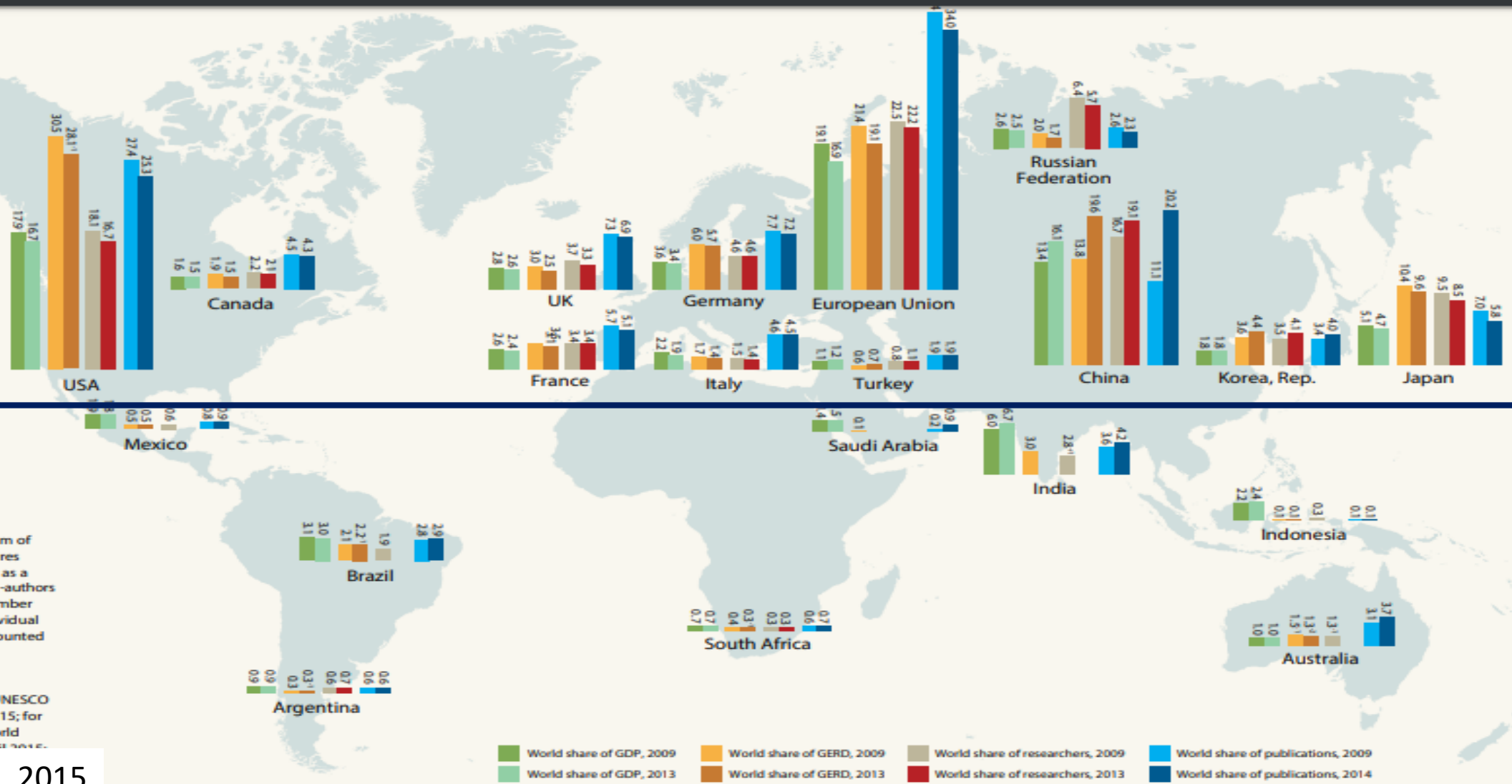
- Poor governance
- Political influence
- Underfunded
- Understaffed and under skilled
- higher enrolment rates and lower absorption capacity



- Limited research and research capacity (Africa as continent accounts for less than 1% of global research output)
- Highly dependent on external funding
- Limited impact
- Limited innovation
- No adequate and updated labs
- Highly theoretical (borrowed from the west)
-



Global picture of African universities (what you see or taught to see)



Note: For publications, the sum of individual G20 members' shares exceeds the share of the G20 as a group, as publications with co-authors from more than one G20 member are included under each individual country concerned but are counted only once in the G20 total.

Source: for GERD (PPPS) and researchers: estimations by UNESCO Institute for Statistics, July 2015; for GDP (PPPS): World Bank's World Development Indicators, April 2015.

Source: Unesco, 2015

Yet !

What you don't see or not publicized

SS Africa is not a priority in the global R&D cooperation agenda

Figure 6 International collaboration in science and innovation, 2007-11; co-authorship and co-invention as a percentage of scientific publications and PCT patent applications (OECD, 2013)

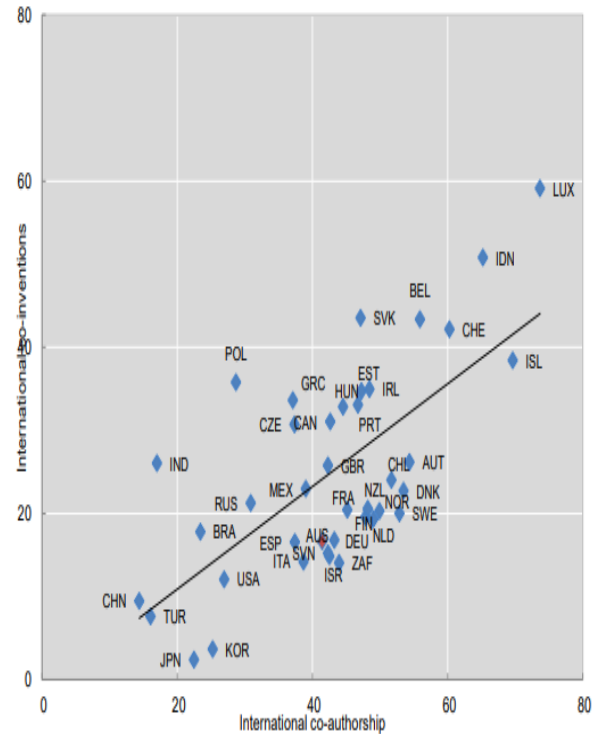
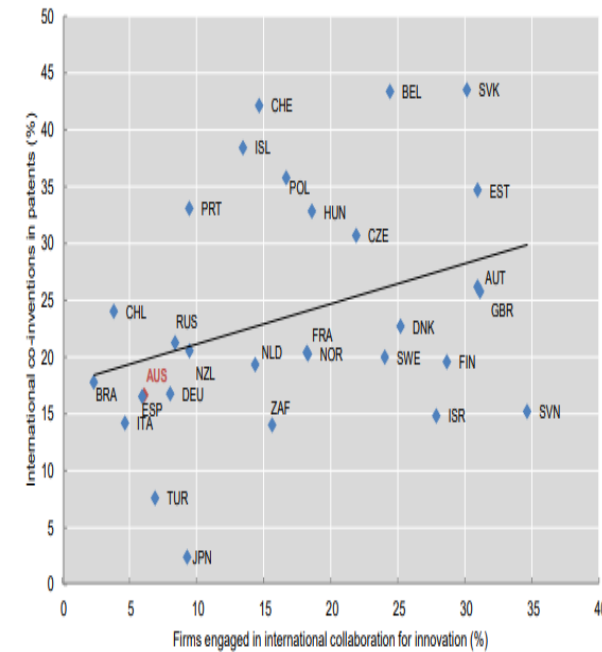
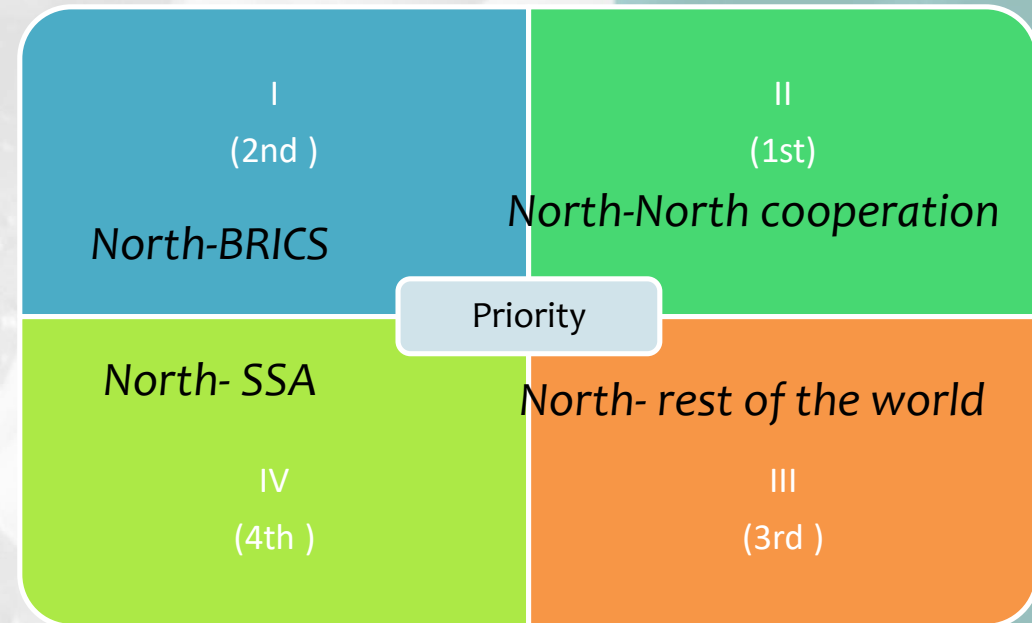


Figure 8 International collaboration on patents, 2007-11 and innovation, 2008-10; as a percentage of PCT patent applications and of product and/or process innovative firms (OECD, 2013).



Source: Australian Academy of the Humanities, 2015

Urgent/pays off



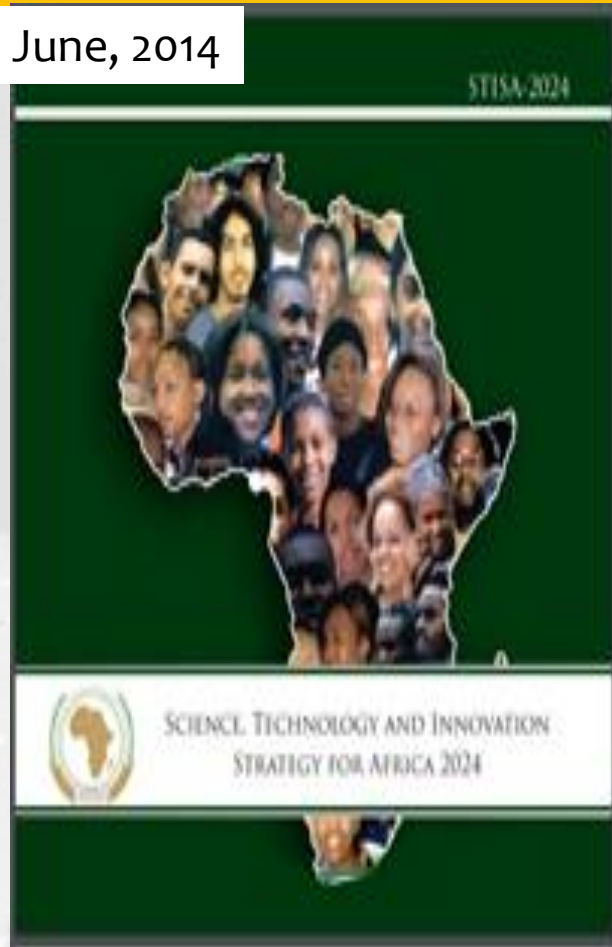
Important

Source: author

Yet !

What you don't see or not publicized

June, 2014



Priorities	Research and/or innovation areas
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 Hemoglobinopathie - Maternal and Child Health - Traditional Medicine
3 Communication (Physical & Intellectual Mobility)	- Physical communication in terms of land, air, river and maritime routes equipment and infrastructure and energy - Promoting local materials - Intellectual communications in terms of ICT
4 Protect our Space	- Environmental Protection including climate change studies - Biodiversity and Atmospheric Physics - Space technologies, maritime and sub-maritime exploration - Knowledge of the water cycle and river systems as well as river basin management
5 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
6 Create Wealth	- Education and Human Resource Development - Exploitation and management of mineral resources, forests, aquatics, marines etc - Management of water resources

Table 1: Summary of STISA-2024 priority areas



- Africa has by far the strongest growing scientific production (38.6% over 2012-2016)
 - Astonishing growth of authors (43%) 10% higher than the 2nd (Middle East 33%) for the same period
 - Mozambique, Rwanda, Zambia more than doubled the world average citation impact
 - Ethiopia could increase research output by 28% in one year
- Source: Elsevier, 2019



- Each country commit 1% of GDP for STI

Yet !

What you don't see or not publicized

Figure 2.10: **Outbound mobility ratio among doctoral students, 2000 and 2013**

By region of origin (%)



Note: The outbound mobility ratio is the number of students from a given country (or region) enrolled in tertiary programmes abroad, expressed as a percentage of total tertiary enrolment in that country (or region).

Source: UNESCO Institute for Statistics, June 2015

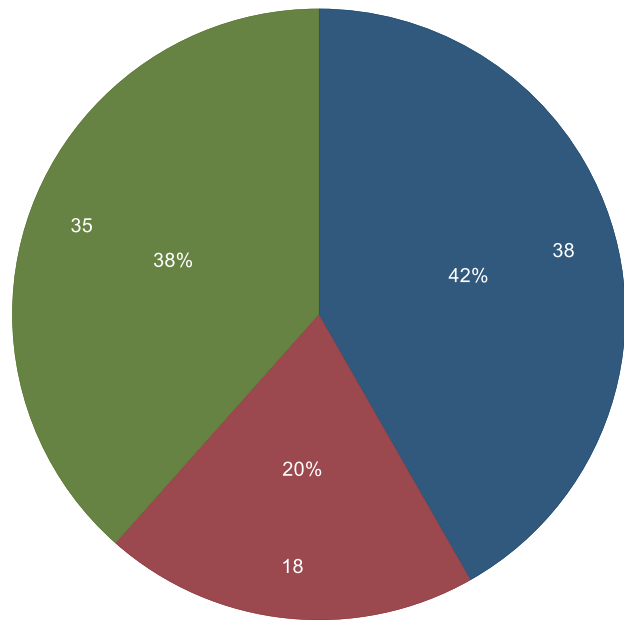
Africa has started to look more inner than out.

- Africa Intra-Mobility- RUFORUM
- RISF funding –Julius Ecuru Presentation

Yet !

What you don't see or not publicized

- Started with no national lectures- all expats to a 0 expats!
- Over the past 10 years has introduced 10 master programs, 3 PhD programs
- Over the past 10 years has more than tripled the number of staff with PhD (done outside mostly Europe, UK, US)!



Yet !

What you don't see or not publicized

- Over the past 15 years moved from 3 major partners (Holland, Italy, Sweden) to a diversified pool of partners

 Ministry for Environmental Coordination (MICOA)	 FAO	 THE WORLD BANK	 FRUTISUL Moçambique	 WFP PMA
 ETC-UK	 AJAP	 DEPOSAL	 IUCN The World Conservation Union	 Dutch Embassy
 World Vision	 KIT-NL	 EMBAIXADA DA IRLANDA Irish Embassy	 SECAM	 European Union
 PROFORGE	 act:onaid	 Switzerland Corporation	 unicef	 Ministry for Agriculture and Rural development (MADER)
 SIC	 Danida Danish International Development Assistance	 Consultores de Moçambique	 Cotton Institute of Moçambique (IAM)	 MVF Instituto Moçambique de Valor Financeiro ONGD

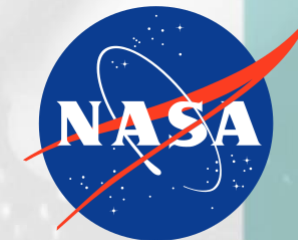


Catholic University of Louvain, Belgium



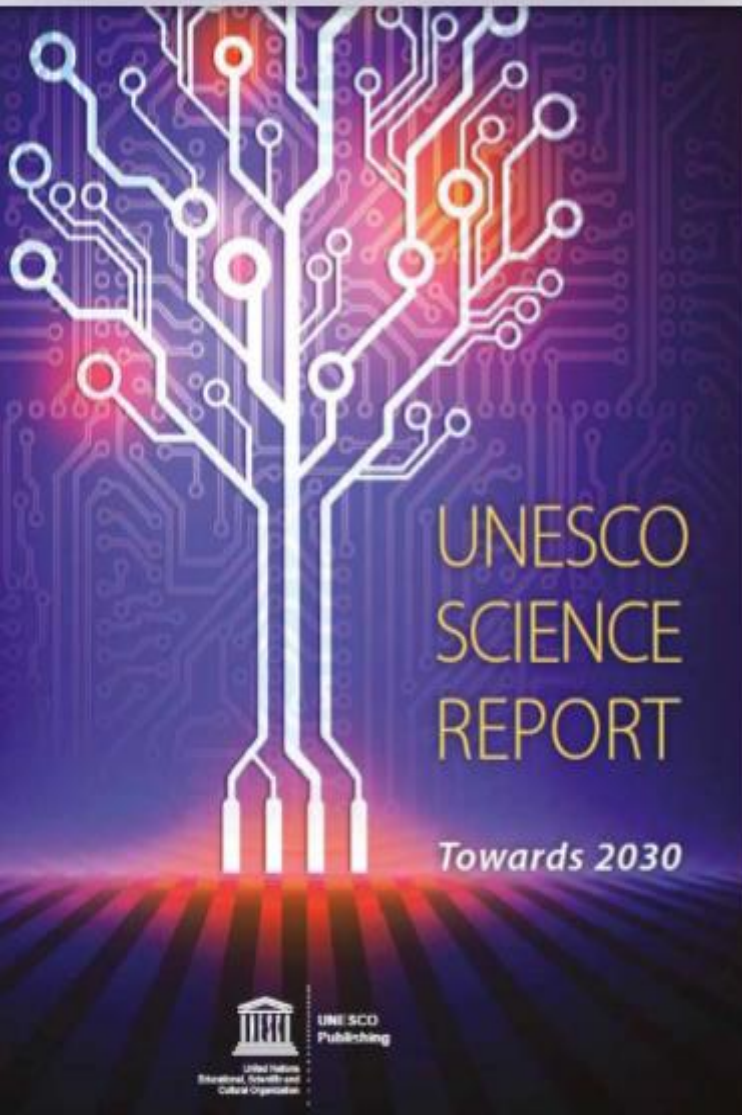
LISBOA

UNIVERSIDADE DE LISBOA

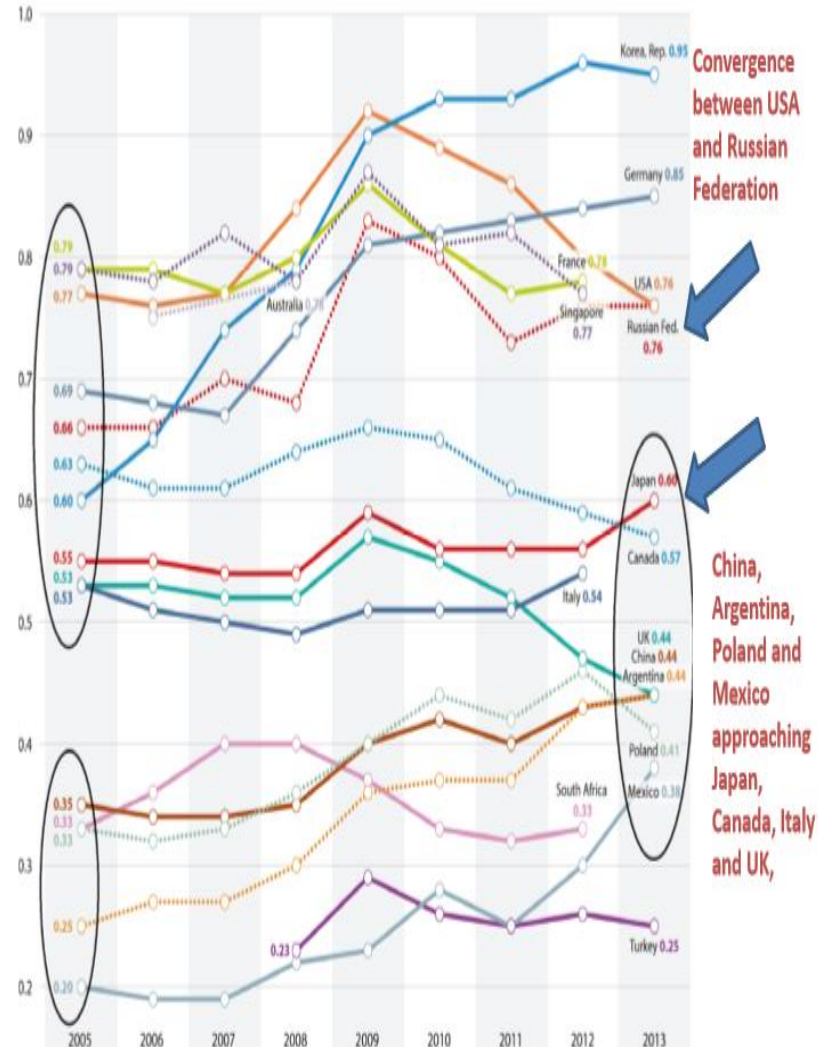


Yet !

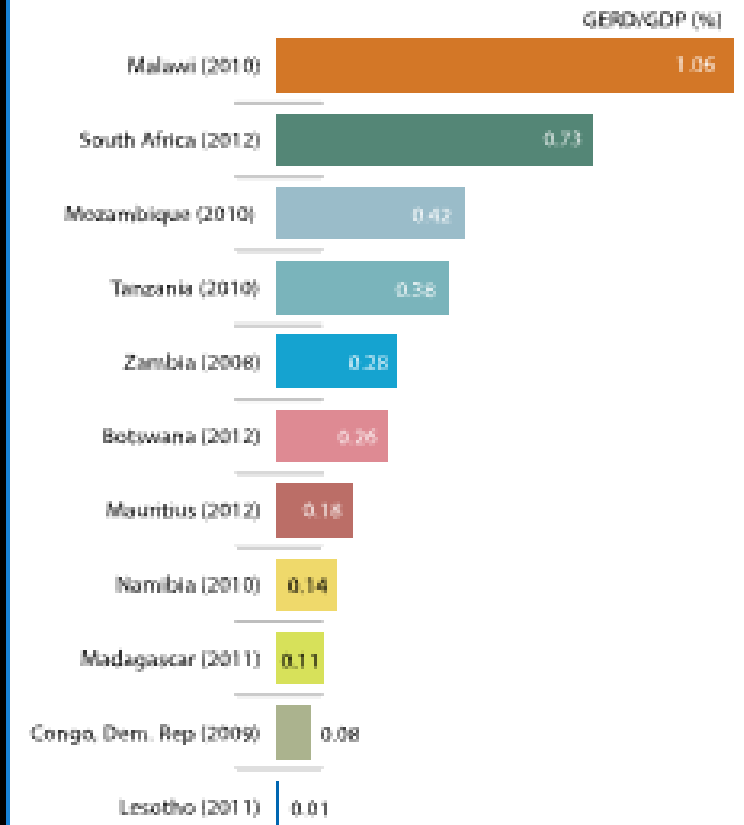
What you don't see or not publicized



GERD financed by government as a share of GDP, 2005-2013 (%)



GERD/GDP ratio in Southern Africa, 2012 or closest year



Source: UNESCO Institute for Statistics, August 2015; for Malawi: UNESCO (2014a)

Changing context... changing minds

*If you focus on problems you get more problems.
But if you focus on possibilities, you have more opportunities*

Zig Zigler

We, as Africans, need to shift from:

- Being a 'begging community', the sorry ones,.... the disadvantaged ones... the losers ... towards a more vibrant and stand up community. We are not the disadvantaged ones, No! We are actually the winners!!!
- A 'complaining club' towards a solution finders
- Blamers towards trustworth, transparent and respected community
- Risk avoiders towards risk takers
- Focusing on a tree instead of a forest (need to take a holist rather than a narrow view)
- PP towards PPPP



Changing context... changing minds

*If you focus on problems you get more problems.
But if you focus on possibilities, you have more opportunities*

Zig Zigler

Our European partners need to shift from:

- Seeing Africans as JUST implementing partner towards co-authors of innovation and patents (win-win)
- Seeing Africa as continent with no hope, towards a continent with a pool of young and talented people ready to make a different history
- Seeing limited infrastructure, funding, etc as a problems to cooperate with Africans towards looking at them as opportunities to advance science and technology differently and BETTER from the mistakes made in Europe
- A paternalistic approach (HELP) towards an actor oriented approach. Dont give fish, teach them (us) how to fish!



Noting that.....



*If you focus on problems you get more problems.
But if you focus on possibilities, you have more opportunities*
Zig Zigler

- Africa needs more Science and Engineering than bibles
- African and European colleagues need to share more resources (lecturing, papers, conferences, student and staff exchange, joint research and publications,...). Lets end the 'silo and isolated approach'. Lets fish together!
- Africa will be the next major global market for scientific and technological inputs and outputs
- Europe will not develop (on its full) unless Africa goes together. You are our closest neighbour!



Possible (research) cooperation themes (less focus now)

1. Gender, Climate Change and Agriculture
2. Transition from low input to high-tech: long term environment and climate change implications
3. Global farming mobility and land governance in Africa
4. Global farming mobility and evasive pests and diseases
5. Agri-food chains and african food security and soveringnty
6. Ecosystem services in Africa under increased global food and energy demand
7. The role of the African diaspora in Europe towards 2030 and 2050
8. Sustainable food production, processing and consumption
9. Food nutrition and health
10. Youth in agriculture





MUITO OBRIGADO PELA ATENÇÃO

Thank you for your attention

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