Future EU-Africa Collaboration: What Will It Take?

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Africa in context

- **Africa is a continent on the rise**
  - Real GDP grew at rates faster than global since 2015

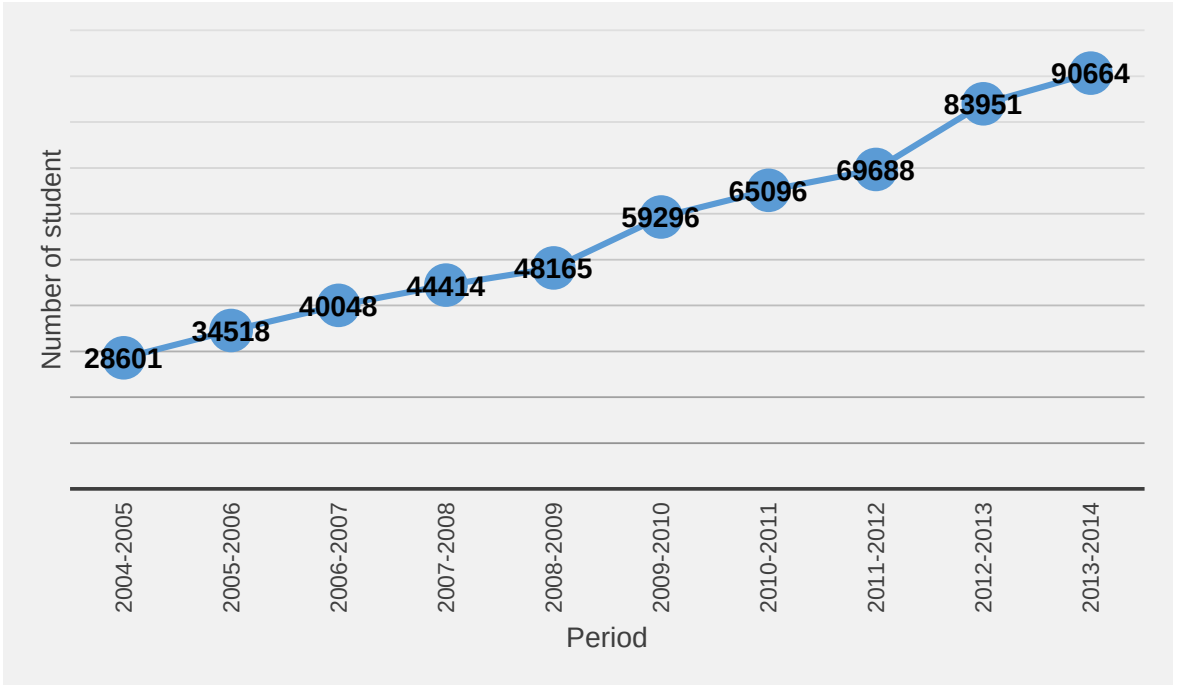
- **Africa is getting younger**
  - Africa's youth bulge is an opportunity for rapid growth, but also a risk

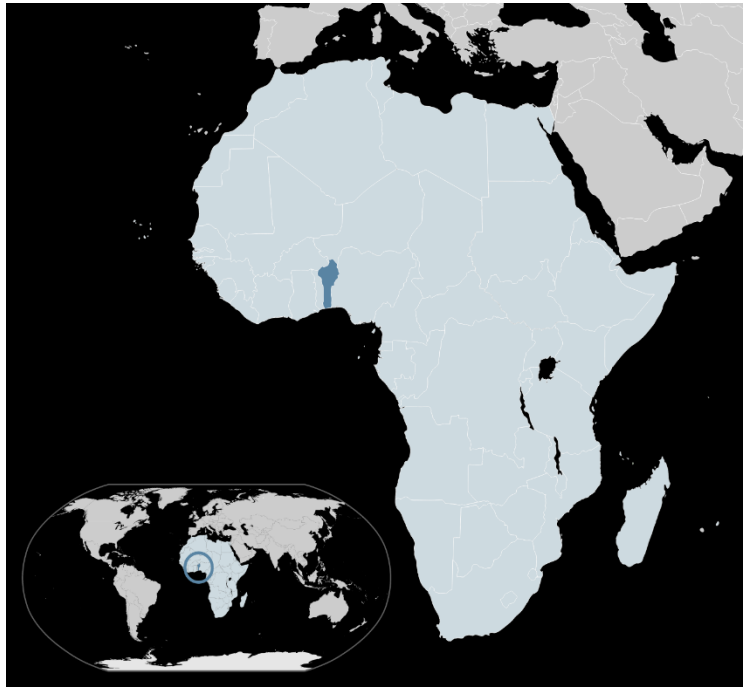
- **Africa is increasingly urbanising**
  - Proportion of Africans living in urban areas to grow to 50 percent by 2030

Main challenges

Increasing Number of Students

University of Abomey-Calavi remains the most popular university of Benin with high annual students' recruitment



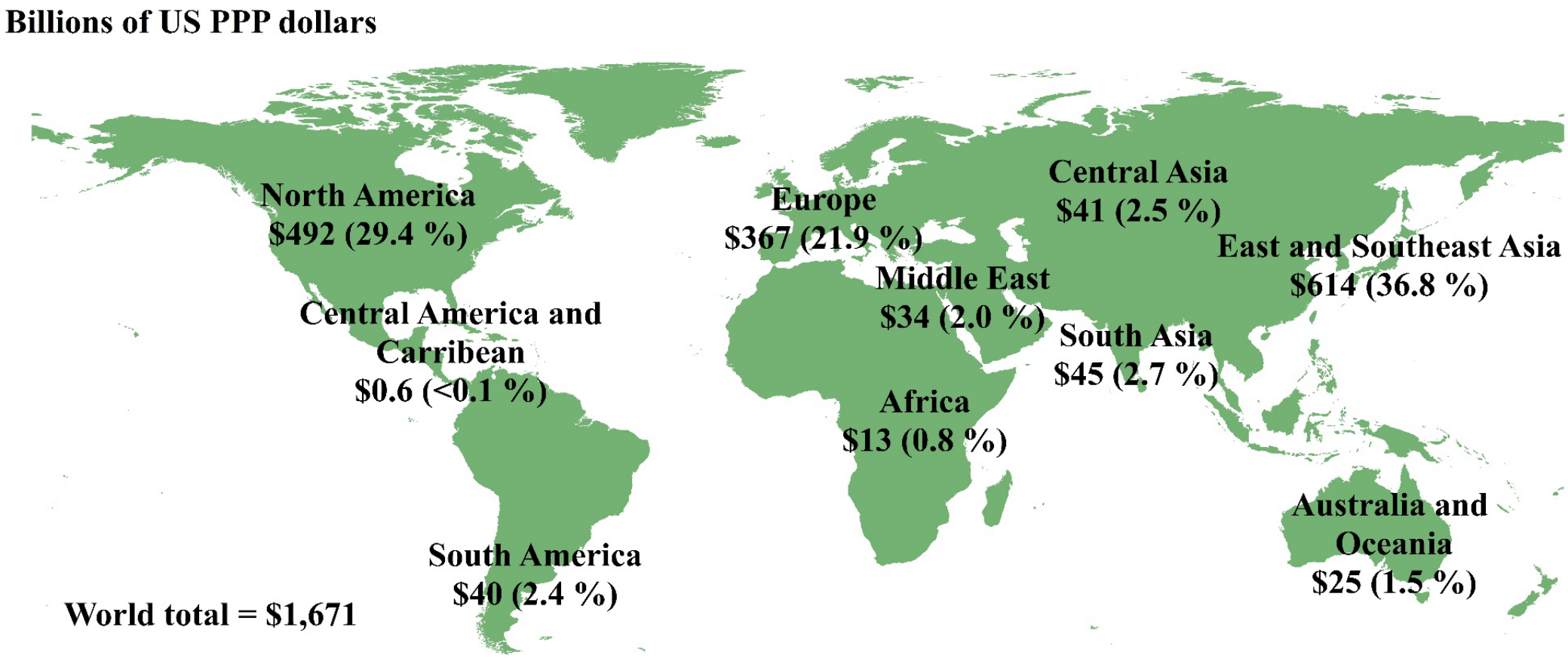


Increasing Number of Students

A VERY BIG CHALLENGE BECAUSE:

- ✓1000 teaching staff for 90000 students
- ✓ EVERY YEAR 30000 get their diploma (BSc, MSc & PhD) with less than 1000 among them having a job

GLOBAL EXPENDICTURRES FOR RESEARCH AND DEVELOPMENT (NSF, 2016)



Africa devotes very little financing to research relative to any other region.
What implication for its development ???

INDICATORS Of SCIENTIFIC ACTIVITIES

Lowest number of researchers in Africa compared to other continents

	Researchers (1000)				Researchers (share, %)			
	2007	2009	2011	2013	2007	2009	2011	2013
World	6400.9	6901.9	7350.4	7758.9	100.0	100.0	100.0	100.0
America	1516.6	1656.7	1696.1	1721.9	23.7	24.0	23.1	22.2
Europe	2125.6	2205.0	2296.8	2408.1	33.2	31.9	31.2	31.0
Africa	150.1	152.7	173.4	187.5	2.3	2.2	2.4	2.4
Asia	2498.1	2770.8	3063.9	3318.0	39.0	40.1	41.7	42.8
Oceania	110.5	116.7	120.1	123.3	1.7	1.7	1.6	1.6

WORLDWIDE DISTRIBUTION OF RESEARCHERS (UNESCO, 2015)

Indicators of scientific activities

Worldwide distribution of Publications

(UNESCO, 2015)

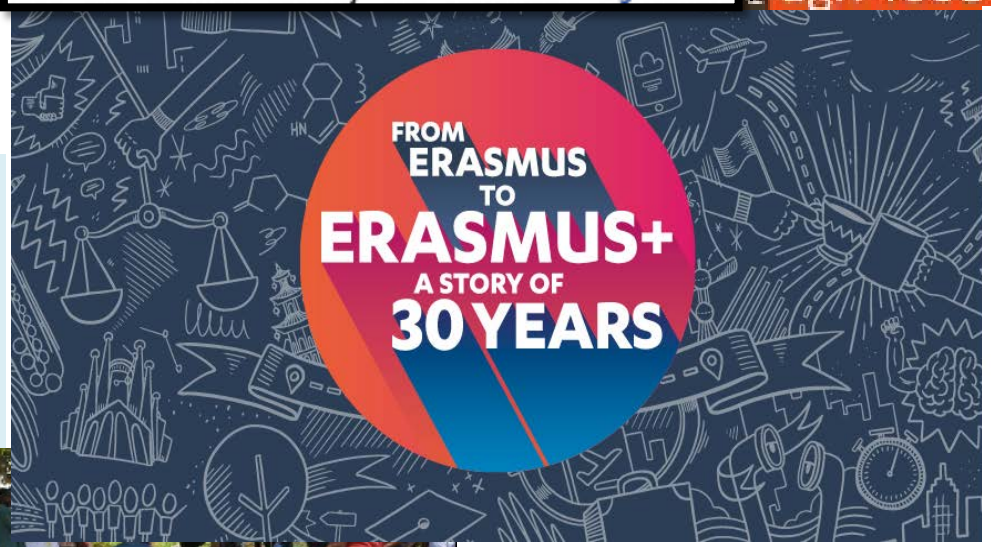
	Total number of publications		Progress 2008-2014 (%)	Share of publications worldwide (%)		Publications (1000) per capita		Publications with International co-authors (%)	
	2008	2014		2008	2014	2008	2014	2008	2014
World	1 029 471	1 270 425	23.4	100	100	153	176	20.9	24.9
High Income economies	812 863	908 960	11.8	79.0	71.5	653	707	26.0	33.8
Medium-high Income economies	212 814	413 779	94.4	20.7	32.6	91	168	28.0	28.4
Medium-low Income economies	58 843	86 139	46.4	5.7	6.8	25	33	29.2	37.6
Low Income economies	4 574	7 660	67.5	0.4	0.6	6	9	80.1	85.8
America	369 414	417 372	13.0	35.9	32.9	403	428	29.7	38.2
North America	325 942	362 806	11.3	31.7	28.6	959	1 013	30.5	39.6
Latin America	50 182	65 239	30.0	4.9	5.1	93	112	34.5	41.1
The Caribbean	1 289	1 375	6.7	0.1	0.1	36	36	64.6	82.4
Europe	438 450	498 817	13.8	42.6	39.3	542	609	34.8	42.1
European Union	379 154	432 195	14.0	36.8	34.0	754	847	37.7	45.5
South-Est America	3 314	5 505	66.1	0.3	0.4	170	287	37.7	43.3
European Free Trade Association	26 958	35 559	31.9	2.6	2.8	2 110	2 611	62.5	70.1
Other in Europe	51 485	57 208	11.1	5.0	4.5	188	207	27.2	30.3
Africa	20 786	33 282	60.1	2.0	2.6	21	29	52.3	64.6
Sub-Saharan Africa	11 933	18 014	51.0	1.2	1.4	15	20	57.4	68.7
African arab Estates	8 956	15 579	74.0	0.9	1.2	46	72	46.0	60.5
Asia	292 230	501 798	71.7	28.4	39.5	73	118	23.0	26.1
Central Asia	744	1 249	67.9	0.1	0.1	12	18	64.0	71.3
Asian arab Estates	5 842	17 461	198.9	0.6	1.4	46	118	50.3	76.8
West Asia	22 981	37 946	65.1	2.2	3.0	239	368	33.0	33.3
South Asia	41 646	62 468	50.0	4.0	4.9	27	37	21.2	27.8
South-Est Asia	224 875	395 897	76.1	21.8	31.2	105	178	23.7	25.2
Oceania	35 882	52 782	47.1	3.5	4.2	1 036	1 389	46.8	55.7

There has been a number of collaborations between EU and Africa

Capacity Building in Higher Education, Science, Technology, Research and Innovation

LEAP-Agri

A Long term EU-Africa research and innovation Partnership on food and nutrition security and sustainable Agriculture



LEAP 4 FNSSA

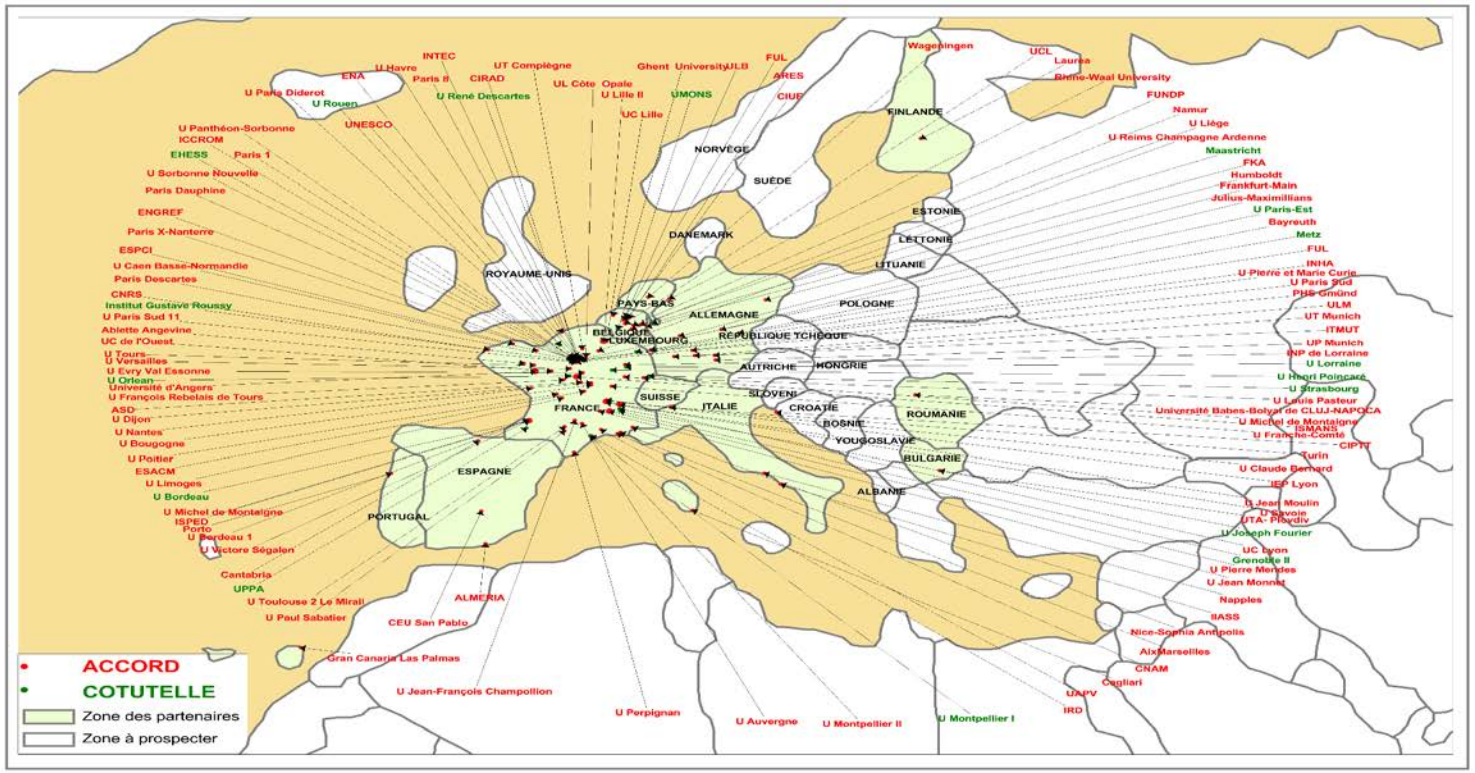
Long-term EU-AU Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture

ACP Science & Technology Programme

INTER-UNIVERSITY COOPERATION by **University of Abomey-Calavi (Benin)**

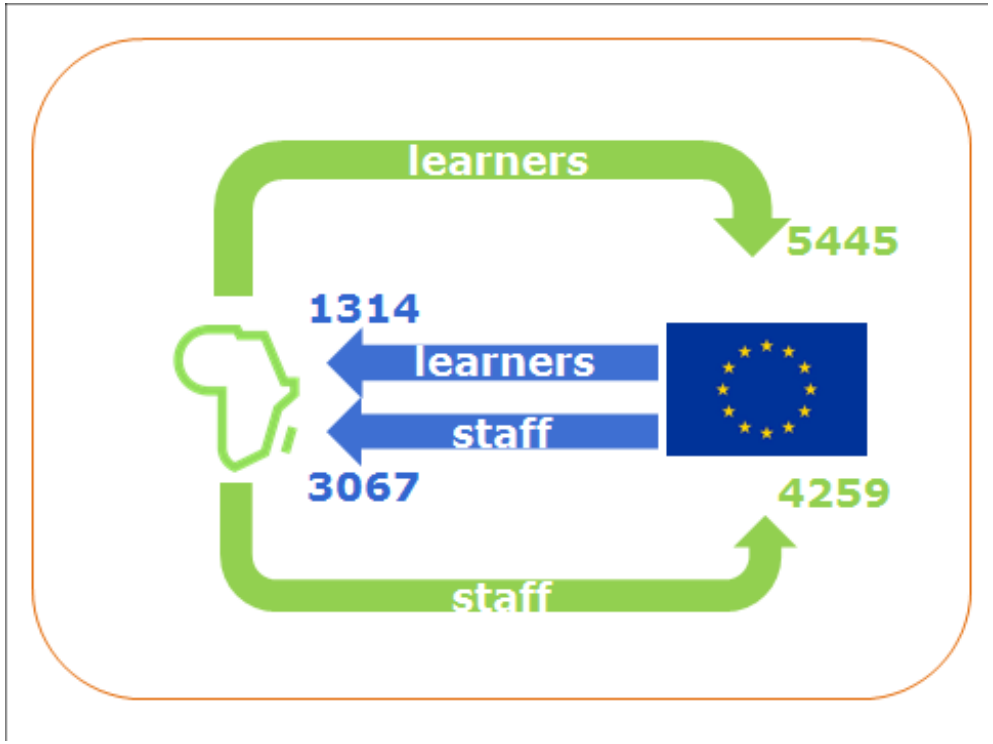
Europe: Dynamic in West Europe

Main Partners: Belgium, Netherlands, France, Germany,



- **10 INTRA ACP & INTRA AFRICA MOBILITY PROGRAMME** ➔ 50 MSc, 20 PhD and > 20 staffs trained at country level
- **> 10 Edulink programmes** ➔ Joint curricula development,
- **> 10 EU collaborative research programmes** with more than 20 PhD trained

What are the impacts of these programmes on Africa in the field of education and research or (in more general context) on the human development in Africa?



- ✓ Trainings mainly focused on basic sciences and Social sciences
- ✓ Very few researchers trained in STEAM
- ✓ Very few training programmes focused on the new jobs for future
- ✓ Very few equiped laboratories
- ✓ Very few follow up by African governments

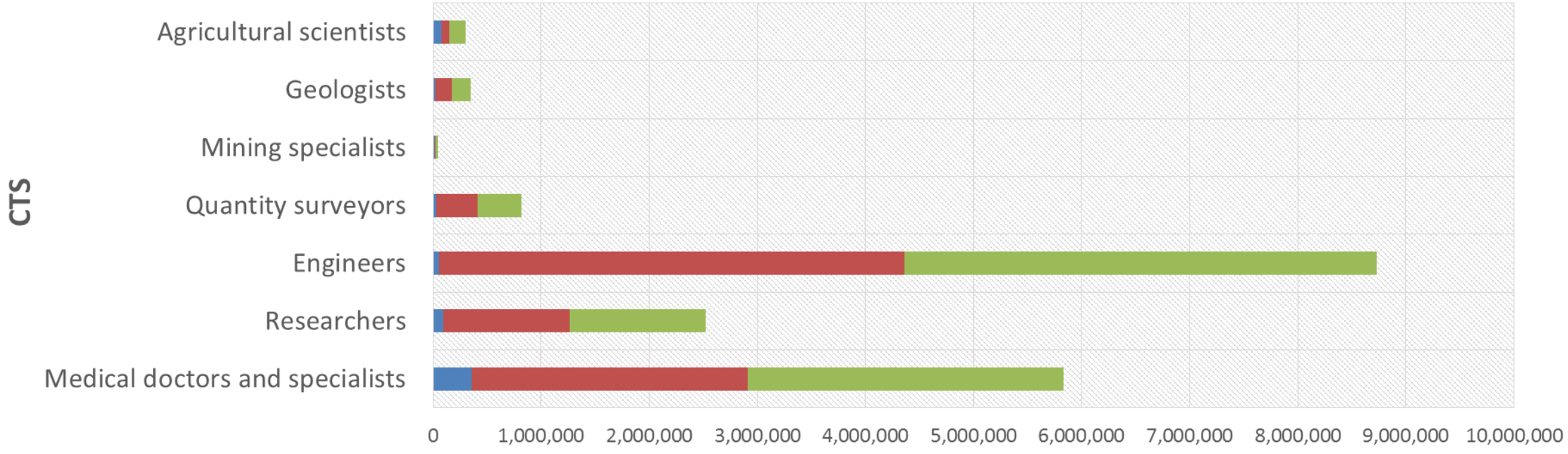
SUCCESS STORY AT UNIVERSITY OF ABOMEY CALAVI THAT NEED TO BE SUPPORTED

- From 2013 to date, the Rectorate used the **internal budget of UAC** to implement a Collaborative Research Program comprising 30 projects from a **global cost of USD 3,000,000**

- The program has involved **43 % of the 800 lecturers** appointed to UAC and leads to the academic **promotion of 65 lecturers at various grades**

- In addition, from that same programme, **118 scientific papers were published, 47 PhD and 150 Master dissertations defended**.

Yet, skills gaps remain across the continent



	Medical doctors and specialists	Researchers	Engineers	Quantity surveyors	Mining specialists	Geologists	Agricultural scientists
Current	358,035	92,133	55,601	27,432	15,066	20,736	81,637
Gap	2,557,563	1,168,571	4,309,065	382,127	9,090	152,929	69,974
Ideal	2,915,598	1,260,704	4,364,667	409,559	24,156	173,665	151,611

Source: ACBF.2016. African Critical Technical Skills: Key Capacity Dimensions Needed for the First 10 Years of Agenda 2063. ACBF: Harare

Key Challenges for Future

- **Disjoint between the outputs of the African higher education institutions and Africa's development vision/Agenda**
  - Most universities are still focusing on humanities (95% of enrollments) and lesser on critical technical skills. E.g for Benin: About 80% of the 90000 students are enrolled in the field of Letter, social sciences and/or Economy. T**HIS NEEDS TO CHANGE** ➔ More focus should be on the STEAM

- **Inactive role of the private sector**
  - Private sector investment in R&D is very high relative to the public sector. In Africa, the government is the major R&D contributor, with a small role for the private sector. E.g for Benin almost totally of the investments for higher education is supported by the Government. No private support and **THIS ALSO NEEDS TO CHANGE**

What is not yet a reality in Africa compare to other regions of the world?

Sources of financing for research in China

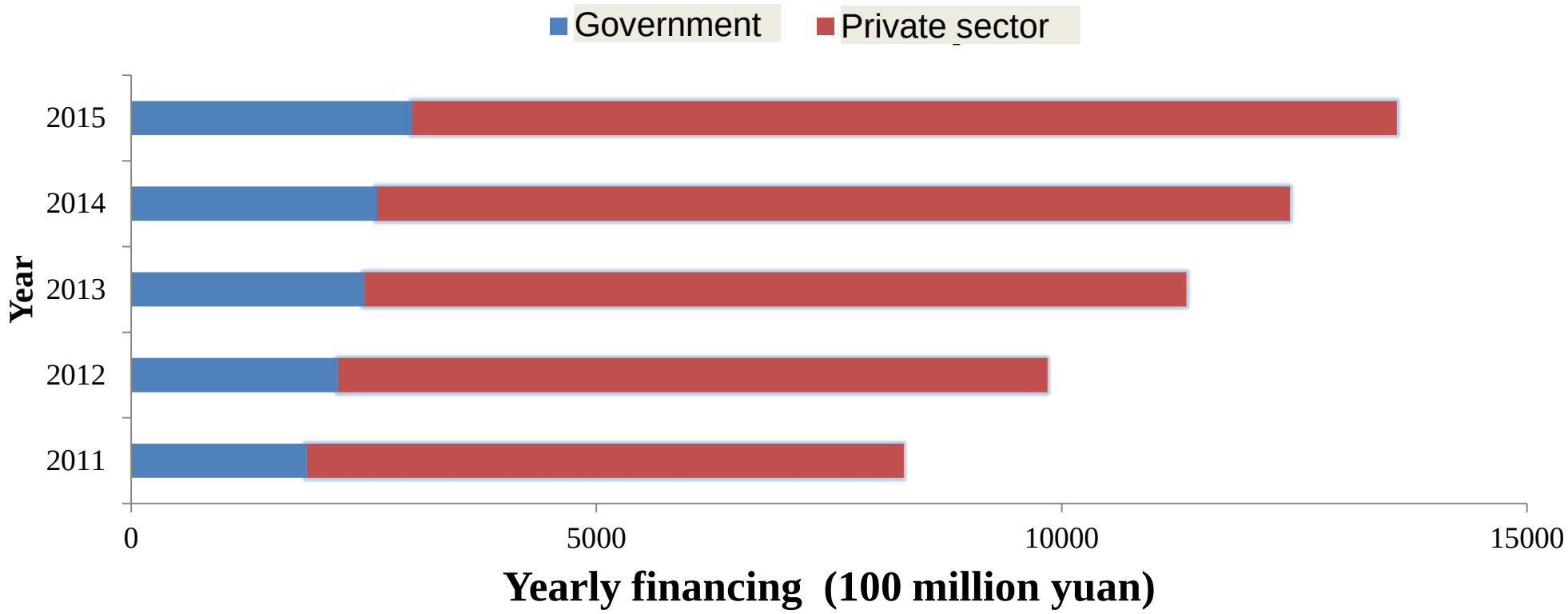


Figure : Between sources distribution of financing for scientific research in China from 2011 to 2015

Source: http://www.stats.gov.cn/tjsj/ndsj/2016/indexeh.htm

Facts, words and numbers

South Korea

1961 : income per capita ≈ Ghana
< Sudan
≈ -1/3 Mexico

1995 : income per capita: **20** * Sudan
2.5 * Mexico

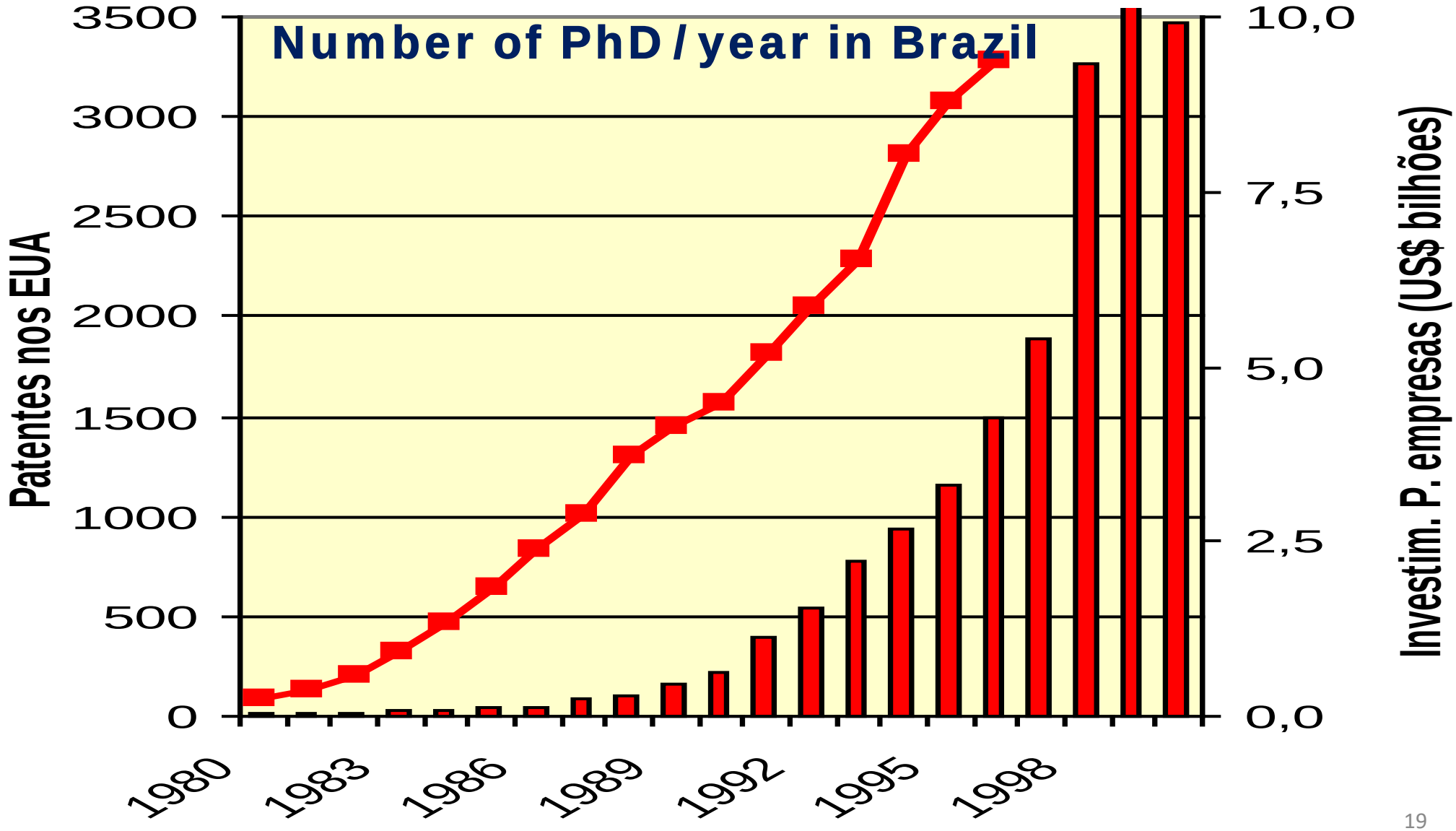
What intrigue induced such a surpassing?

Heavy investment in Education,
at every level, stressing on **S&T, ICTs**

South-Korean **Universities and Training Institutes**, **play a dominant role in innovation and in producing qualified manpower** (similarly to UK, Germany, France)

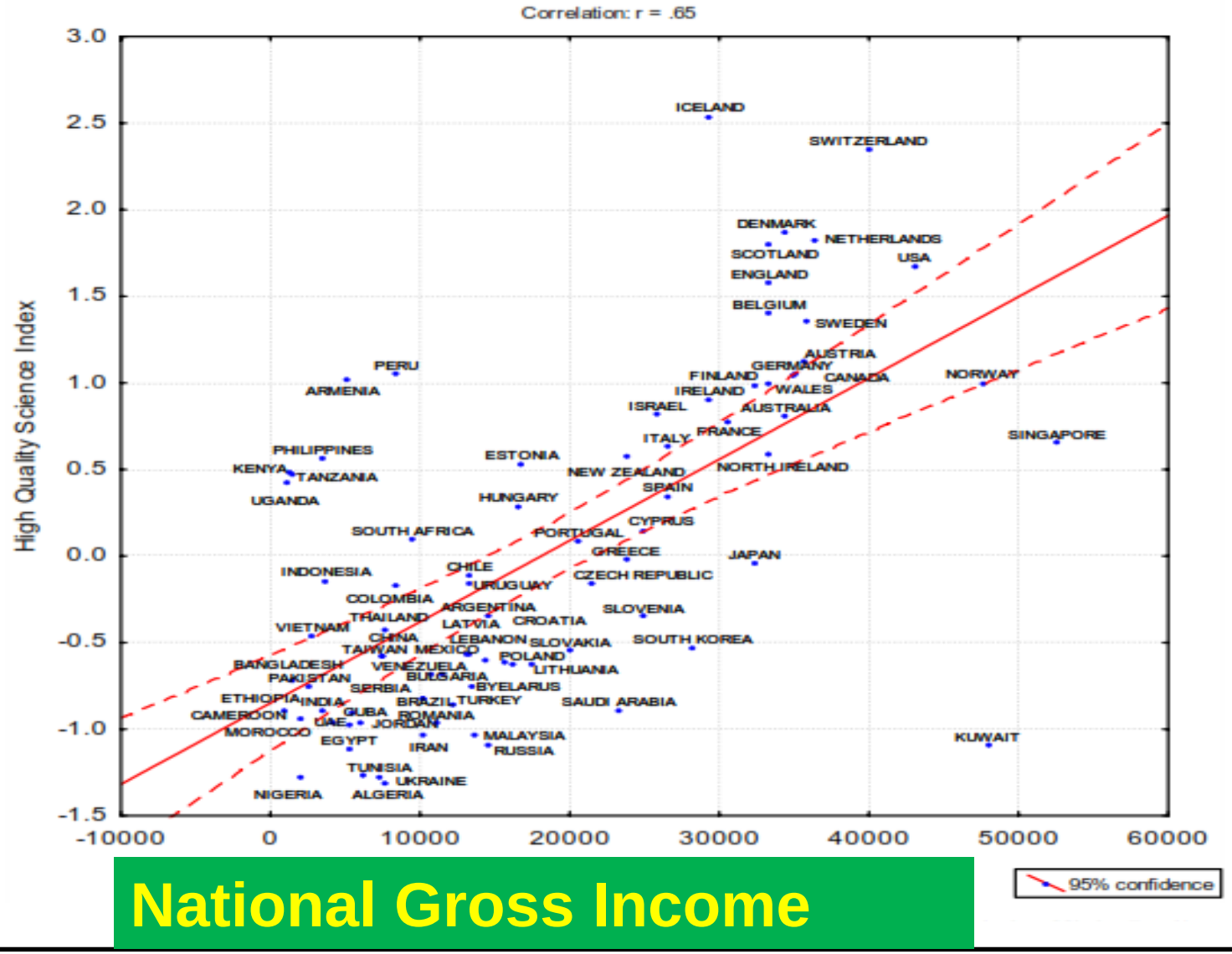
2002: **strategic financing of research for development = 5% national budget.**

Engeneers and PhDs are drivers of qualified research and innovations



The number and the quality of scientific publications are indicative of counties' wealth

High Quality Science Index



National Gross Income

(TRAMES, 2013)

Figure: The relationship between the Gross National Income per capita and the High Quality Science Index.

If we need change in African Universities that will help for development, we need therefore to invest more in Africa research and science.

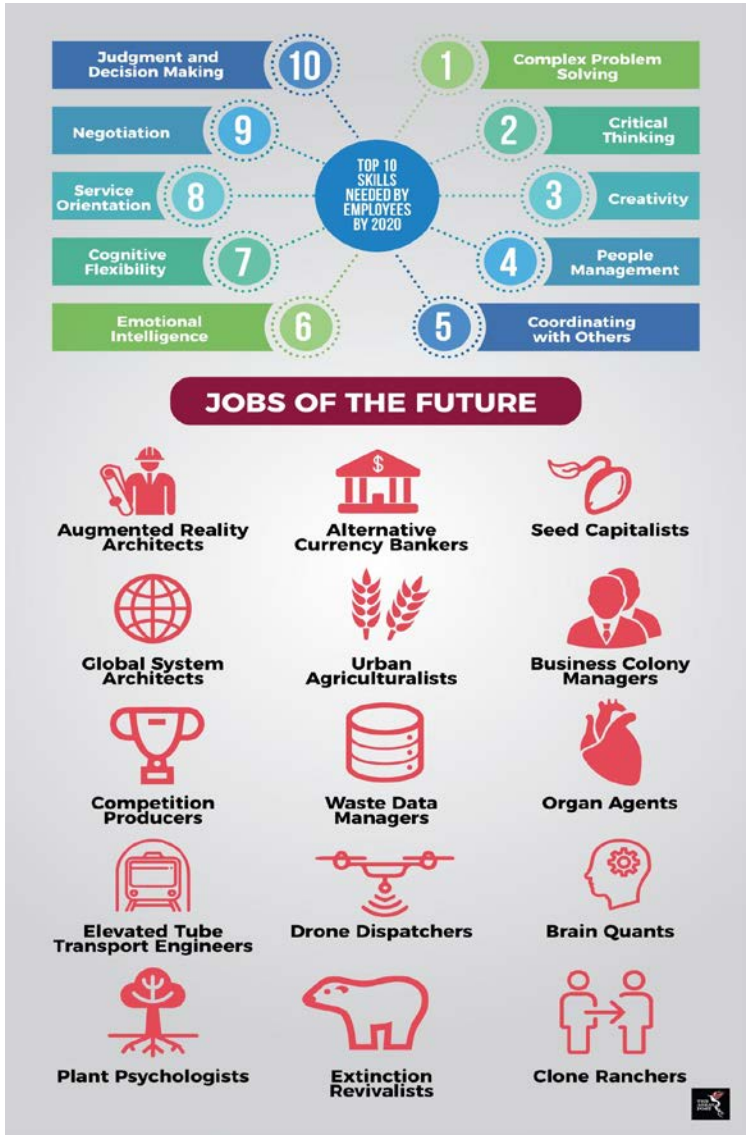
How and For what?

QUALITY not QUANTITY

- One estimate that Africa needs another million PhD scientits to develop home grown solutions
- **This will need 100 Billion dollars**
- How is going to finance? ➔ Mostly African Governments which committed to spend 1% of GDP on research
- Africa GDP is $ 2.4 Trillion, by 2050 it will be $29 Trillion, **1% of that will be $ 290 Billion a year**.
- Therefore, money is not really the Problem theoritically.
- If Money is made available, we need to think **QUALITY not QUANTITY**

Youth and Skills Development

Need to Train for Future



Robot automation will 'take 400-800 million jobs by 2030

Youth and Skills Development at University of Abomey-Calavi (Benin)

- UAC Foundation to secure funds for facilitating the professional insertion of recently graduated students through the Volunteer Corps of UAC and the UAC Startup Valley.
- Each year, a cohort of 400 graduated students is selected for professional internship in several companies. A monthly stipend is provided to the volunteers. At the end of the internship, almost 50 % of volunteers get their first job in their host companies.
- Another institutional innovation is the creation of UAC Foundation, the funding agency of the UAC Startup Valley. Each year, a business creation context is organized for young professionals to facilitative innovation. Selected projects with social and economic impacts are funded. From this

Main strategies

1. **Redesign the teaching-learning process to make it more practical and hands-on**

2. **Increase the visibility of faculties and colleges in Africa;**

3. **Insure a fair availability of infrastructure needs in the national universities;**

4. **Reinforce partnerships between universities and private sectors.**

WHAT EXACTLY WOULD WE NEED TO SUCCESSFULLY REACH THESE GOALS?

- Joint academic curriculum development in relevant areas for both Europe and Africa:
  - Fine arts
  - Entrepreneurship development
  - Sustainable agriculture
  - Policy analysis
  - Science, Technology and Innovation
- Physical students and staff mobility across universities in Africa and Europe for experience sharing and lesson learning
- Increased state investment to support education programmes responding to national development priorities
- Flexibility for African Universities to choose their own thematic fields relevant for their development

WHAT EXACTLY WOULD WE NEED TO SUCCESSFULLY REACH THESE GOALS?

- Strenghten the existing collaboration between UE and African universities

  - Invest more in laboratories development and equipments in African Universities followed by transfer of technologies

  - More investment in technologies transfer from the UE universities to the African ones through massif staff and postdocs mobilities

  - Invest in the establishment of new generation of African scientists for the futur jobs

WHAT EXACTLY WOULD WE NEED TO SUCCESSFULLY REACH THESE GOALS?

- Invest more in start up establishment in African Universities to create more entrepreneurs than generalists
- Invest in joint publications between African and European Universities by performing together research activities benefit for both continents
- Invest to link secondary schools (Professional and/or technical) and African Universities through joint and synergetic curricula development

Merci Beaucoup