

Roadmap for EU - African Union S&T cooperation

1. AFRICAN UNION as a partner of the EU

Africa is a unique partner for the EU for historical and geographical reasons. The high degree of interdependence between Africa and Europe as well as the shared principles of equal partnership and joint ownership have contributed to the development of a long-term, broad and evolving partnership across various policy areas.

Africa, with a population of 1.2 billion people -the second largest continental population- has seen its share of world GDP grow since 2004; in 2014, Africa's share reached 3.2%, compared with 1.9% ten years earlier. Although the GDP per capita for Africa as a whole was just € 1638 in 2014, it had more than doubled since 2004.¹

Africa is the third most important international trade partner for the EU after Asia and Northern America; in 2014 it accounted for around 9% of both the imports to the EU-28 and the exports from the EU-28. On the other hand, the EU remains Africa's biggest partner either for trade, development aid or investment; it is estimated that around a fifth of global foreign direct investment (FDI) flows in Africa comes from EU companies. This partnership goes far beyond trade; over the period 2014-2020, the EU will invest almost €40 billion for the African continent, with a focus on development and other priorities, such as governance, migration and human rights, human development, energy and infrastructure and sustainable agriculture and food security.

[Latest EU-AFRICAN UNION Summit]

The fourth EU-AU Summit took place on 2-3 April 2014 in Brussels, under the title "Investing in People, Prosperity and Peace". Both sides reaffirmed their commitment to the objectives set out in the Joint Africa-EU Strategy, adopted at the Lisbon Summit in 2007, and reiterated their determination to give a new momentum to their partnership by endorsing a common Roadmap that sets out strategic priorities and the means to implement them in areas of mutual interest. The identified priorities for the period 2014-2017 are: Peace and Security; Democracy, Good Governance and Human Rights; Human Development; Sustainable and inclusive development and growth and Continental Integration; Global and emerging issues. EU-Africa cooperation on science, technology and innovation (STI) is contributing to the attainment of all other socio-economic development objectives, including Sustainable Development Goals targets and therefore has a cross-cutting role in the 2014-2017 Roadmap, but also a dedicated chapter under human development where the key objectives set are reinforced cooperation between research communities, creation of joint academic research programmes and the development of a long-term, jointly funded Research and Innovation Partnership with a focus on food

¹ Please note that the statistics mentioned in this paragraph cover the whole African continent - Source: Eurostat. (2015). *European Union-African Union Statistical Portrait*

and nutrition security. The next EU-Africa Summit is scheduled to take place in Abidjan on 29-30 November 2017, with 'Youth' being its central theme.

[EU-AFRICAN UNION non-S&T cooperation agreements]

Two main frameworks govern EU relations with Africa: the **Cotonou agreement** which provides a legal basis for relations with Sub-Saharan African countries together with Caribbean and Pacific countries; and the Joint Africa-EU Strategy (JAES) adopted by the African and European Heads of State at the Lisbon Summit in 2007.

The Joint Africa-EU Strategy (JAES) is the political framework steering relations with the whole African continent. It has changed the nature of the relationship between Africa and the EU to one based on partnership, egalitarian relationships, shared objectives and mutual benefits and risks. It developed a long term vision on how to ensure peace and security and leverage faster socio-economic growth and sustainable development in Africa.

The EU-ACP Cooperation Programme on Science & Technology² phase I (EUR 35 million 2000-2007), financed 36 projects. In the second phase of the programme (EUR 23 million, 2008-2013) 21 projects were financed. The focus of the programme is on **Energy Access and Efficiency** as well as **Agriculture and Food Security**.

African Union Research Grants (20 million euros between 2008 and 2013; 17.5 million euros in 2016-2017). This action provides funding to the African Union Commission (AUC) to organise calls for proposals for collaborative research projects and to fund the selected projects. It has two objectives: 1) to support collaborative research that contributes to the sustainable development of African countries and the fight against poverty, while respecting ethical and gender issues (through the calls, the African Union Commission supported research in post-harvest agriculture, renewable and sustainable energy and water and sanitation); and 2) to develop the capacity of the AUC to design, implement and monitor R&D funding programmes and, ultimately establish an efficient, credible and reputable African framework programme for research and innovation (R&I), which can also attract funds from other sources.

[EU-AFRICAN UNION S&T cooperation agreements]

The EU-Africa High Level Policy Dialogue (HLPD) on Science, Technology and Innovation was adopted at the 2nd Africa-EU Summit in Tripoli in 2010 as an important element of the Joint Africa-EU Strategy (JAES). The dialogue serves as a platform for regular exchanges on research and innovation policy and aims to formulate and implement long-term priorities to strengthen Africa-Europe cooperation on science, technology and innovation. The dialogue is co-chaired by the European Union (European Commission, DG Research and Innovation) and the African Union (African Union Commission) and brings together the S&T representatives from the 28 EU Member States and the 55 African Union Member States.

Country-level bi-lateral Science and Technology Cooperation Agreements exist with several countries in Africa: South Africa (1996, entered into force 1997), Egypt (2005, entered into force 2008), Morocco (2004, entered into force 2005) and Algeria (signed 2012, entered into force 2013).

² <http://www.acp-st.eu/fr/node/1192>

An important development for the EU-Africa cooperation in R&I is the Association of Tunisia to Horizon 2020. Following the signing of the Association Agreement on 1 December 2015, researchers and innovators from Tunisia are now able to participate in Horizon 2020 under the same conditions as their counterparts from EU Member States and other 13 associated countries.

[R&I landscape in AFRICAN UNION]³

In 2013, the global R&D intensity was 1.7% of GDP, climbing from 1.5% in 2007. Even though the percentages for Africa are below the global trend, there is a growing investment in R&D: Africa's GERD as a share of GDP has increased from 0.36% (2007) to 0.45% (2013). At country level, Ethiopia has used some of the fastest growth rates on the continent to raise GERD from 0.24% (2009) to 0.61% (2013) of GDP. Malawi has raised its own ratio to 1.06% and Uganda to 0.48% (2010), up from 0.33% in 2008. In the same direction, Egypt has engaged itself on the path to knowledge economy by increasing its R&D intensity from 0.43% in 2009 to 0.68% of GDP in 2013.

It is becoming more and more acceptable in Africa and beyond that greater investment in STI can contribute to meeting the needs of today's societies, including the development of modern infrastructure and attainment of economic diversification and industrialisation. Many East and Central African countries have decided to increase their R&D spending, and innovation hubs (Cameroon, Kenya, Rwanda, Uganda, etc.), supported by both the public and private sectors, are on the rise.

The share of academic publications from African Union countries in the overall world output of publications was only 2.88% in 2016 but has been steadily increasing as compared to 1.94% in 2010. Moreover, the scientific impact is also improving, as indicated by the rise of the field-weighted citation impact of African Union publications, from 0.88 in 2010 to 0.94 in 2016 (1.0 being the world average). The share of Africa Union international co-publications was 49.6% in 2016 (39.1% in EU28) as compared to 42.2% in 2010 (31.7% in EU28), showing that international scientific cooperation is significant and also rising⁴.

As far as Africa's share of global researchers is concerned, the percentages between 2007 and 2013 have relatively been the same: In 2013 Africa accounted for 2.4% of the total of researchers in the world, a figure slightly higher than that of 2007 with 2.3%. In 2014 Africa's share of world publications was only 2.6%. However, when it comes to publications with international authors, there has been a 60.1% growth in publications with authors from Africa within the period 2008-2014. With respect to gender equality in R&I, Sub-Saharan Africa, with women constituting 30% of all researchers, is among the regions with the highest shares of female researchers.

The African Union Science, Technology and Innovation Strategy for Africa 2024 (STISA-2024)⁵ is part of the long-term people centred AU Agenda 2063 which is underpinned by science, technology and innovation as multi-

³ Unless stated otherwise, the statistics and information provided in this section have been retrieved from: UNESCO Science Report: Towards 2030 (pub. in 2015)

⁴ Data retrieved from Scival/Scopus in October 2017.

⁵ <https://au.int/en/documents/29957/science-technology-and-innovation-strategy-africa-2024>

function tools and enablers for achieving continental development goals. The Agenda calls for the diversification of sources of growth and sustenance of Africa's current economic performance, and in the long-run, lifting large sections of our population out of poverty. The strategy further fosters social transformation and economic competitiveness, through human capital development, innovation, value addition, industrialisation and entrepreneurship.

So far, the research sector has had little impact in West Africa, due to various framework conditions such as a lack of national research and innovation strategies, limited cooperation between researchers of the region and limited involvement of the private sector. The number of publications coming from West Africa remains low, with only Gambia and Cabo Verde publishing 50 scientific articles or more per million inhabitants. At policy level, the ECOWAS Policy on Science and Technology (2011), which constitutes an integral part of the ECOWAS' Vision 2020 (2011), provides a framework through which its members can develop or improve their own national S&T strategies.

In East and Central Africa STI has gained a prominent role since 2009. Most policy documents coming from these regions envision prosperous societies based on good governance, inclusive growth and sustainable development. Most of these policy documents put great emphasis on STI, in particular for supporting development. The East African Community (EAC) and Common Market for Southern and Eastern Africa consider STI to be a key component of economic integration.

There is a wide recognition in Southern Africa that STI is a key driver of sustainable development. SADC (Southern African Development Cooperation) adopted a protocol for science, technology and innovation in 2008 with the aim to promote development and harmonisation of science, technology and innovation of the region's members.

The global crisis which was accompanied by low growth and high unemployment rates in Europe and North America, seems to have discouraged emigration in some parts of Africa and encouraged some researchers to return home. The contribution of the returnees to the development of their national research and innovation systems is decisive.

2. State of play of EU-AFRICAN UNION S&T cooperation

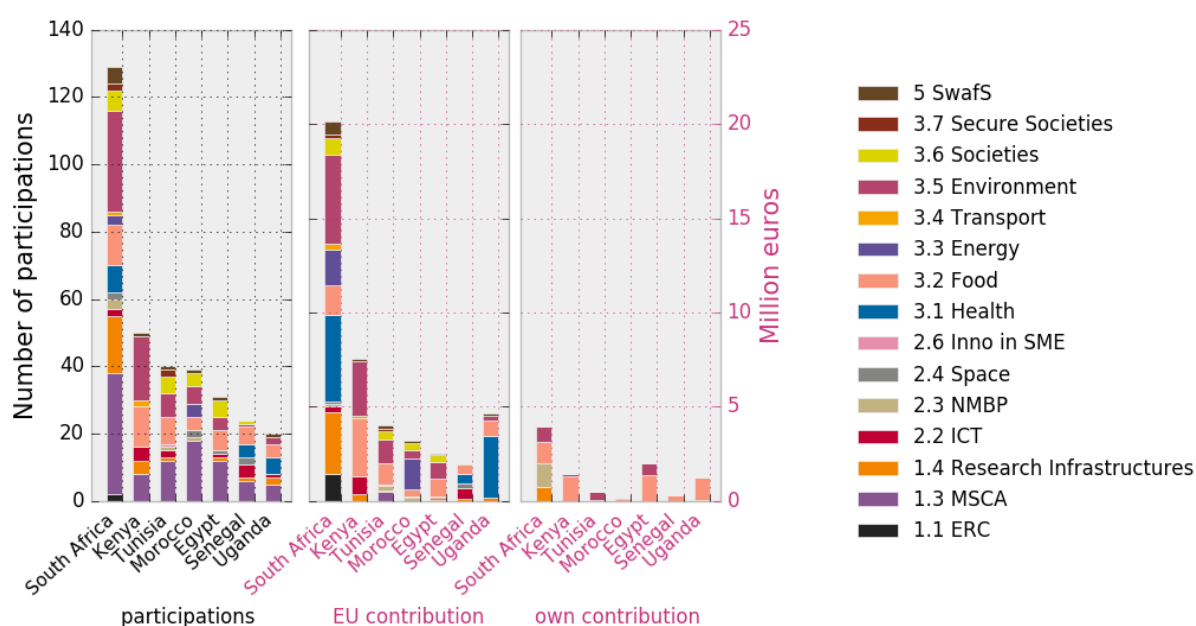
2.1. On-going FP7 and Horizon 2020 cooperation

Entities from African Union member countries were involved 5980 times to 2489 eligible proposals for collaborative actions of FP7, leading to 453 funded projects that involve 1204 African Union participations, while African Union participants have received 166.9 million euros from EU. Health, food security, ICT, climate change and energy were among the primary areas of cooperation. What is more, 1648 nationals from African Union member states participated in Marie Curie actions, while six held an ERC grant.

With reference to Horizon 2020, up to October 2017 African Union applicants have been involved 2229 times in 880 eligible proposals to collaborative⁶ actions. 151 proposals were mainlisted, leading to a success rate of 17.2% (as compared to 14.7% overall). Overall, entities from throughout the African Union have 493 participations in 218 signed grants (of collaborative, Marie Skłodowska Curie Actions - MSCA and ERC actions), receiving 68.7 million euros from the EU and contributing with 12.0 million euros..

Figure 1 shows the participation of the most active AU countries in Horizon 2020. Marie Skłodowska Curie Actions, food and environment seem to be among the dominant areas of cooperation.

Figure 1: Participation of the most active African Union countries in Horizon 2020



Note: Participations of beneficiaries, third-parties and partner-organisations.
 Source: DG Research and Innovation - International Cooperation
 Data: CORDA (JRC, EIT and art.185 not included); extraction date: 17/10/2017

2.2. Current framework conditions for EU-AFRICAN UNION S&T cooperation

There is concrete commitment on both sides to strengthen the overall cooperation framework in the field of science, technology and innovation. Several activities have been undertaken in support of the participation of entities established in Africa to Horizon 2020 namely; training activities and information days about participation in Horizon 2020 were provided both to third-country national contact points (NCPs) and to

⁶ Here referring to all actions except for ERC, MSCA, actions under the SME Instrument and Access to Risk Finance.

researchers and academics in African countries. Many information days and training sessions were organised between 2013 and 2017, some at national level, such as in Burkina Faso, Malawi, Nigeria or Tanzania, others regionally such as in Ghana, Ethiopia and Botswana.

There are still certain factors which may delay the 'way forward' and that will be addressed in the future cooperation:

- Relatively low level of R&D intensity, as illustrated above;
- Unequal access to information about cooperation opportunities through Horizon 2020 and other programmes;
- Institutional weakness and lack of experience of administrative, legal and financial aspects of EU-funded programmes;
- Lack of industry partners for collaboration and/or uptake of results;
- Lack of visibility of successful collaborative research projects.

3. Priorities for the future in S&T cooperation

3.1. Areas of future S&T cooperation agreed at latest Joint Committee/High Level Dialogues

- Following the 2014 EU-Africa Summit the focus was put on developing an EU-Africa Research and Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture. The roadmap⁷, adopted at the 3rd meeting of the EU-Africa High Level Policy Dialogue in Addis Ababa on 4-5 April 2016, towards this R&I Partnership, includes a research agenda, short- to medium-term actions towards implementation (2014-2017) and reflections on long-term options for implementation (by 2020 and beyond) of the R&I Partnership. The R&I Partnership is an EC commitment towards implementing Agenda 2030 (Sustainable Development Goals). The overall budget of the Partnership for 2016-2017 is about EUR 65 million, covered mainly through Horizon 2020 and the African Union Research Grants. The Commission has committed further investment through Horizon 2020 for 2018-2020 and welcomes similar commitments from European and African countries.
- The second phase of the European and Developing Countries Clinical Trials Partnership⁸ (EDCTP) is working with a budget of nearly € 2 billion (2014-2024), of this € 683 million comes from Horizon 2020. Today 14 African countries and 14 Member States of the EU are part of EDCTP² in which members work together

⁷ http://ec.europa.eu/research/iscp/pdf/policy/eu-africa_roadmap_2016.pdf

⁸ www.edctp.org/

against infectious and parasitic diseases, such as AIDS, tuberculosis, malaria, sleeping sickness, hookworm diseases and Ebola.

- The EU has committed to raw materials research and innovation diplomacy with the African Union. A workshop took place in Brussels in 2015.
- Atlantic Ocean research cooperation is one of the main developing areas of joint interest. In parallel with the ongoing North Atlantic cooperation, we have taken significant steps towards an All Atlantic Ocean Research Alliance. The European Commission and South Africa have signed a Declaration of Intent⁹ on marine research and innovation cooperation in October 2016. This Declaration is similar to the one already signed with Brazil in October 2015¹⁰.
- In parallel, South Africa and Brazil signed a joint document on South-South Atlantic research cooperation in October 2015 aiming at developing a South Atlantic Science Plan. It also involves other South Atlantic countries, such as Namibia, Angola, Argentina and Uruguay. On 13 July 2017 these efforts led to the signing by the EU, Brazil and South Africa of a joint [Statement on Atlantic Ocean Research and Innovation Cooperation](#) and the launch of the South Atlantic Research and Innovation Flagship Initiative.
- Cooperation with Africa in ICT focusses on the co-design, adaptation, demonstration and validation (e.g. pilots) in of ICT related research and innovation, including in Content Technologies and Societal Challenges. To date, about €11 million worth of grants have been awarded in e-health, Big Data and geospatial data for land tenure. The 2016-2017 call for "partnerships with to low and middle income countries" offers additional opportunities for cooperation with sub-Saharan Africa being one of the regions targeted and a total budget of €13 million.

3.2. Potential new areas of future S&T cooperation proposed at latest Joint Committee/High Level Dialogue, through SFIC, or by thematic services

Matching the High Level Policy Dialogue 2013 conclusions, African Union and European Union priorities in science, technology and innovation, and international commitments such as the adoption of Agenda 2030 (SDG) and the outcomes of COP21 and COP22, a discussion took place at the High Level Policy Dialogue in April 2016 about orientations for future cooperation with a focus on global change (climate change and renewable energy) and global health.

- An EU-AU and Innovation Partnership on Climate Change and Sustainable Energy is currently being developed in the context of the EU-AU High Level Policy Dialogue on Science, Technology and Innovation. The roadmap towards this dedicated R&I Partnership was adopted at Senior Officials level in October 2017; the official endorsement and launch of the Partnership is expected to take place at the AU-EU Summit in Abidjan on 29-30 November 2017. This jointly developed and owned Partnership will focus on climate action for adaptation and mitigation, renewable energy and energy efficiency. It will further address the

⁹ <http://ec.europa.eu/research/index.cfm?pg=newsalert&year=2016&na=na-041016>

¹⁰ https://ec.europa.eu/research/bioeconomy/pdf/declaration_of_intent.pdf

SDGs in supporting a transition to low-carbon and climate resilient economies. An important amount for the first phase of its implementation has been earmarked through Horizon 2020 for 2018-2020 .

- Closer cooperation with African countries is sought for the prevention and/or treatment of neglected infectious diseases (NID), Non-Communicable Diseases (Global Alliance for Chronic Diseases¹¹), Anti-Microbial Resistance (AMR) and Emerging infectious diseases (Global Research Collaboration on Infectious Diseases Preparedness¹²).
- Enhanced cooperation on environmental research will be further encouraged, in particular in the field of urban mobility and sustainable electrification, with a view to addressing the challenges of climate change, energy security and local air pollution.
- In the same spirit, closer links among African and European partners are sought in the context of the Belmont Forum.. The latter, created in 2009, is a global partnership of 21 research funding organisations and science councils investing in the advancement of interdisciplinary and transdisciplinary research in the field of global environmental change challenge.
- The cooperation with Africa through the GEO (Group on Earth Observation) and its new 10 year strategic plan to 2025 will continue. AfriGEOSS, as the African segment of GEOSS (Global Earth Observation System of Systems) should enhance earth observation and climate monitoring capacities in Africa, as part of the global system to deliver services in priority domains for Africa such as for food security and health. In this context, the GEO governments, when they agreed to adopt the GEOS strategic plan to 2025, resolved to strengthen engagement with developing countries and foster regional cooperation. The Commission is supporting GEOSS activities in Africa through several projects based on Earth observation, in particular to provide projection for food production and assessment of biological resources. The Commission will continue its research and innovation efforts to increase earth observation capacity in Africa (in particular in North Africa).
- Africa and the EU will cooperate further together with a view to addressing the challenge of forced displacement. Solutions will be identified for protracted displacement situations, also in the framework of the EU Partnership Agreements and of the UN migration and refugee compacts. By mapping the dynamics of interactions between the displaced and the host community and bringing it to the attention of policymakers, this cooperation will enhance policy responses to integration needs.
- Interdisciplinary research cooperation between Europe and Africa (in particular North Africa) is encouraged to understand the various factors that drive violent extremism in the MENA region and the Balkans. Such cooperation will improve the knowledge base on violent extremism in these areas, while ensuring a step-up in mutual learning between the EU and third countries in light of common challenges.

¹¹ www.gacd.org

¹² www.glopid-r.org

ANNEX: HORIZON 2020 WORK PROGRAMME 2018-20 TOPICS EXPLICITLY ENCOURAGING COOPERATION WITH THE AFRICAN UNION

	Topic identifier	Topic title
2018	SC1-BHC-15-2018	New anti-infective agents for prevention and/or treatment of neglected infectious diseases (NID)
	SFS-33-2018	Support to the implementation of the EU-Africa Research and Innovation Partnership on Food and Nutrition Security & Sustainable Agriculture (FNSSA)
	LC-SC3-JA-4-2018	Support action in preparation of a Joint Programming activity
	MIGRATION-09-2018	Addressing the challenge of forced displacement
2019	LC-SFS-34-2019	Food Systems Africa
	SFS-35-2019-2020	Sustainable Intensification in Africa
	LC-SC3-JA-5-2019	Joint Programming with EU and African partners for a R&I actions in the area of renewable energy
	LC-GV-05-2019	InCo flagship on “Urban mobility and sustainable electrification in large urban areas in developing and emerging economies”
	LC-CLA-05-2019	Human dynamics of climate change
	SU-GOVERNANCE-10-2019:	Drivers and contexts of violent extremism in the broader MENA region and the Balkans
2020	CE-SFS-36-2020	Diversifying farmers’ income through small bio-based concepts