Advisory Group on R&I for Africa-Europe Cooperation

Proposed actions

Background

In May 2021 DG Research and Innovation (RTD) and DG International Partnerships (INTPA) officially launched an **Advisory Group (AG) on Research and Innovation for Africa-Europe Cooperation**. The AG consists of six high-level experts and six personal research assistants coming in equal shares from Africa and Europe. They assist the European Commission in finding answers on how to best mainstream and boost R&I in the cooperation between the two continents.

The experts cover a wide range of cross-cutting themes from capacity building, to innovation uptake, data monitoring and policy advice within the four thematic pillars of:

1. Africa-Europe stepped up cooperation in R&I for empowered **health systems**;
2. Strengthening **R&I capacities** in Africa focusing on both regional and bilateral cooperation;
3. **Innovation and technology** revolution;
4. **Green Transition** in Africa.

The group works until October 2021 and will present four evidence-based policy papers showcasing recommendations on how to improve R&I strategies as part of a positive agenda between Africa and Europe. *The proposed actions are based on the second drafts of the policy paper as of August 2021.*

Health

Research and Innovation should be "part of the DNA" of Development programs, where research partners are needed for implementation, monitoring and evaluation as well as feeding data for improving, adapting to local realities, scaling up and continuously looking for improvements and innovations. The proposed coordination supports actions   to create synergies and plan for future activities in a co-constructive way between AU and EU that *aims at facilitating harmonised surveillance and disease intelligence, and supporting the implementation of Africa CDC's strategic agenda to improve surveillance, emergency response, and prevent infectious diseases, as well as strengthening health systems in collaboration with the World health Organisation, Member States and partners*

Type of activities linked to the three sub-priority areas identified by the AG health team:

(1) R&I capacity building for health systems:
Support of existing and new networks of excellence between Africa and Europe such as EDCTP that is an efficient model also for new areas and evolving domains such as transformation the health systems. Other examples include the AAS ARISE network, EDCTP & ACDC Epi Fellows Training program, H3Africa and 300-program as proposed by green transition AG group.

Pilot/demonstration projects on priority areas such as:

- **Epidemic preparedness and response:** health systems preparedness, support vaccination manufacturing,
- **Unfinished MDG & SDG Priorities - Women, Child and adolescent Health, NCDs , Mental Health**
- **Precision medicine, precision public health:** Genomics medicine or precision medicine: African experts developed a framework that was adopted by AAS, AESA and AUDA-NEPAD on an **initiative to implement genomics medicine in Africa[1]**. COVID19 crisis showed the importance of this field in pandemic surveillance, preparedness and response.
- **Development and support Networks of Excellence:** such as COHRED, EDCTP, H3Africa[2] or other good examples of South-South and North South collaboration, with a lot of work that has been done (several nodes are already in place in different countries, big efforts on capacity building, data governance and infrastructure).

(2) Ethical and regulatory issues

- Support networking between national regulatory agencies. Further collaboration and *technical assistance* are needed to support AMA.
- *Support the harmonization of African ethical and regulatory framework at the regional and continental level in collaboration with EMA.*
- *Establish platforms and training opportunities supporting African ethics committees and research community* via AU-EU Projects

(3) Bridging the gap between R&I/policies and health intervention

The know-do gap remains substantial and more is needed to make a difference in the field. Science and Health Diplomacy, accountability frameworks, leadership and strong partnerships with local and global sustainability frameworks to have a long-term impact on health, based on health data and priorities cfr SDG 3

- Invest and support Implementation research projects and establish a monitoring and evaluation program for a sustainable follow up.
- Integrate research in the development program of health system strengthening as well as in higher education programs –> EU-AU ERASMUS/NYERERE higher education program
- Establish measures to support young and experienced researchers in their early careers, including incentives to avoid brain-drain.

R&I capacities

1. *Science, Technology Policy and Governance* –
   - Capacity building Support Programmes in Strengthening STI Policy Governance, Science Diplomacy and Advice – Support through Academies of Science

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[1]

[2] H3Africa | Human Heredity & Health in Africa | Human Genomic Research

- Strengthen existing Academies of Science and support establish of new Academies where they do not exist
- Capacity Building in STI Measurement support production of Country Surveys (Capacity of National Statistics Offices and Ministries of Science and Technology) and Continental Surveys- Support AUDA-NEPAD STI Indicators Programme
- Capacity building in developing Research Ethics Guidelines across institutions

2. *Human Capital Development and Strengthening Institutional Capacities* –

- Capacity building programmes to increase STEM capacities – support African Mathematical Sciences Network of Centres of Excellence
- Support Mobility programmes through MSCA and establish Joint Africa-EU Research Chairs Programme in priority areas
- Strengthen Research and Innovation Management Capacities across Higher Education and Research Centres – support Research and Innovation Offices in Universities and Research Centres; Support establishment of Technology Transfer Offices at Universities and Research Centres
- Support Science Communication Programmes at Member State level and AUC Level

3. **Innovation, Technology Transfer and Intellectual Property** –

- Funding instruments to support strengthening of Innovation Ecosystems at country and regional level
- Capacity building programmes in Technology Transfer and IP for Higher Education Institutions, research Centres and entrepreneurs

4. *Research and Innovation Infrastructures* –
- Strengthening Cyber-Infrastructures (National Research Networks/NRENS, Super-computing infrastructure and capacities – through existing programmes such as Ubuntu Net ,
- Funding for Scientific instruments and equipment,
- Funding Centres of Excellence (COE); Innovation & Tech Hubs/Parks, Industrial Parks, Regional & Continental Innovation Clusters – Joint partnerships across Africa-EU

5. *Open Science*

- Support the implementation of open science and creating adequate regulatory environment that goes beyond Open and free access

6. **Digital Transformation and Emerging Technologies** –

- Funding for Assessment studies in areas of digital and emerging technologies
- Funding joint programmes in emerging technologies

7. **Research and Innovation Funding** –

- Strengthening existing R&I Funding instruments and schemes and establishing new and flexible funding programmes at bilateral, regional and international levels , diversifying funding partners

8. **International Cooperation and Partnerships**

- Strengthening existing partnership platforms, designing new innovative multi and inter disciplinary partnership platforms to respond to emerging and future global challenges such Covid-19 and other pandemics

9. *Cross-cutting areas*

- Dedicated funding programmes to promote Women and Youth in STEM and skills in Digital technologies ,
- Capacity strengthening in Science Communication,

● Strengthening STI, Education and Industry linkages,

Technology & innovation

1. *Enhance know-how and technology application*

   o **'Industrial research chairs'**: Extend the application of 'research chairs' programme to industry by appointing 'industrial research chairs' who can be hosted by 'think tanks' focused on Africa and Europe especially in strategic areas e.g. cybersecurity, green economy, to foster application-oriented research; reinforce capacities of think tanks and to host research chairs within think tanks;

   o Create thematic acceleration programmes focusing on start-ups building solutions to critical social and business challenges using digital technologies;

   o Enable knowledge and technology transfer on space and satellite technologies, telemedicine, smart devices, big data and machine learning;

   o Facilitate triple helix applied research programmes to drive impact;

   o Provide grants and scholarship to early-stage researchers in HealthTech, Fintech, AgricTech and EdTech

2. *Building networks and relationships*

   o Facilitate/sponsor exchange programmes (companies and research institutions)

   o Co-invest in Agritech, Edtech, Fintech and HealthTech startups (AU and EU)

   o Provide funding for network and operations of accelerators and incubators

   o Create thematic exchange programmes focusing on startups, researchers, and policymakers

3. *Policy framework and development*

   o Facilitate capacity building programme for public officials on technical efficiency and the emerging role of digital innovation

   o Provide supports for harmonisation of trade policies under AfCFTA

   o Capacity building initiatives aimed at empowering policymakers to proactively develop policies and regulations

   o Facilitate capacity building programme for public officials on effective regulation and facilitation of innovation in health

4. *Build a legislative/financial framework designed to mainstream innovation and R&I*

   o Create sandboxes between government, regulatory bodies and tech communities for regulatory proposals

   o Set up Policy Hackathons to encourage entrepreneurs to reflect and propose their own regulations

   o Reinforce E-government measures and digitalization of business registration and tax payment

   o Establish local Point of Contacts for startups in the governmental administrations

   o Introduce fiscal alleviation/waiver for newly created businesses

   o Install sub-regional committees with representants of tech communities to fact-track the implementation of the AFCTA

   o Encourage the adoption of relevant legal framework for intellectual property, data collection and data protection at country-level

- o Encourage the adoption of quotas for startups and small entrepreneurs within public procurement, securing fast-track administrative processes

5. *Reinforce AU-EU cooperation for innovation & R&I*
   - o Set up a joint EU-AU fund to support innovation in sectors identified as shared EU-AU priorities, with eHealth and Edtech solutions as a start
   - o Build a joint AU-EU program designated to engage the African Diaspora of Europe in the development of tech competencies and tech ecosystems in their countries of origin, with a focus on business development, skill-building, mentorship and funding
   - o Engage a joint EU-AU assessment of best-performing ICT/digital/engineering curriculum in Africa and Europe (looking at the contemporary needs of the labour market)

6. Extend and step-up AEIP-programme with joint AU-EU initiative supporting tech-hubs
   - o Conduct a detailed assessment/mapping of entrepreneurs' needs in terms of capacity and competences
   - o Determine performance measures to identify the most active and performant incubators/accelerators
   - o Develop country technical facilities for prototyping/ testing/ trying solutions equipped with experts to advise entrepreneurs on technical knowledge
   - o Support the best performing hubs with training and seniorisation capacities for their staff
   - o Develop strong regional pools of mentors/ investors/ resources for entrepreneurs, supporting the development of Hub Franchises

Green transition

The green transition group developed two own programmes for adoption:

"*300 Program*"
A 10-year program under which 300 PhDs and postdocs would be supported. The initial focus of this program would be the PhDs, who would receive dual degree diplomas from their home institution in Africa and their host institution in Europe, spending around 50% of their time in each institution. The focus of these thesis must support the green and sustainable transition in Africa, which should be defined in partnership between the researchers but with a strong focus on solving real life problems faced in Africa, avoiding the top-down issue discussed during our validation workshop. This program would cover scholarships/fellowships and research costs. Postdocs could be hired in the beginning of the program as well, but most of the postdocs should be the former PhDs from the program. More explanation about this program can be found in our draft. This program should be also linked to the Lighthouses explained below.

Lighthouses
The second initiative are the *Lighthouses* to be set up in Africa. As thoroughly discussed during the validation workshop, these Lighthouses would be an important pillar for the sustainable green transition in Africa. While the 300 Program covers part of personal capacity building, the Lighthouses would cover the institutional capacity building, which was highly appreciated and demanded by the African experts during the validation workshop. These Lighthouses would follow the European model adapted to Africa, having the literal sense of the word and shedding continuous light into the African continent. These lighthouses should benefit from long-lasting funding and scientific support from EU

institutions to ensure the continuity of knowledge generation and innovation in Africa. They should have a full-scale vision and at the same time be able to intervene locally; enhance learning of stakeholders; designing and evaluating new technologies to address barriers and facing global warming; reacting very quickly to outbreaks; developing locally appropriate seed varieties; training and rapidly deploying a sufficient number of extensionists to support the smallholder farmers; developing digital applications, from drones to phones; etc. More information about this initiative can also be found in our draft, but we have already selected 10 African universities to be selected as the Lighthouses. These universities were selected based on a spatial distribution (if you check on the map you will see that they are covering the whole African continent), infrastructure and investments already in place and its current vision and relationship with other African countries. We believe that these criteria are important to support the success of this program and for the Green Transition in Africa.

In order to start supporting these initiatives, it is proposed to start setting up the first Lighthouse in Morocco, at the Mohammed VI Polytechnic University (UM6P). UM6P already added draft study as a very good example of how this partnership between Africa and Europe should occur. For more information about it; check draft on topic 3.2. Briefly, UM6P covers all the requirements for a Lighthouse, being located in the most endangered part of the African continent (Northern Hemisphere), having already good connections and projects with European institutions, have being setting up very important infrastructure to deploy the sustainable green transition in Africa, and showing a great vision not only for Morocco but for the whole African continent.

UM6P has been developing important capacity building programs in Africa, including the 'Excellence in Africa' programme in partnership with EPFL (École Polytechnique Fédérale de Lausanne – Switzerland) and RUFORUM, a network of 120 universities in 38 African countries whose mandate is to strengthen the quality and relevance of postgraduate training and research, especially in agriculture, science and technology. The main idea of these initiatives is to bring excellence to the young generation in Africa through training and networking. In terms of education, UM6P follows the motto of 'learning by doing', following the idea of 'living labs', with a strong belief that the transformation in Africa will come through innovation and entrepreneurship.

To strengthen this capability, especially regarding agriculture and food systems, UM6P is planning to launch 14 experimental farms all around Africa. The first one is already working in Morocco, the second one ready to be launched in Ivory Coast, and the third one with the area already defined in Ghana. These experimental farms will be used to bridge the gap between the science and innovation being developed in universities/research centres and the farmers, especially smallholder farmers. These technologies should be adapted and carefully matched with their real needs in order to be adopted and bring the transformation we want to see in Africa.

Taking stock of Francois Moisan, AU-EU HLPD CCSE WG member, it is acknowledged that the development of **green energy solutions to support the Green Transition** in Africa is very important. The development of green energy sources and smart electrical grids that would fit the needs of big cities and smallholder farmers is important to ensure sustainable development in Africa and to strengthen food systems. In this sense, UM6P is the house of the Green Energy Park (https://www.greenenergypark.ma/), a research and innovation platform that seeks to harness the widely available solar energy and have recently launched big projects on green ammonia and green hydrogen, all very important to support the Green Transition in Africa.

Lastly, UM6P is the house of the most powerful supercomputer in Africa (African Supercomputing Center – ASCC – https://ascc.um6p.ma/), which will be a big push for several initiatives, including the **refinement of climatic models** and to be the home of the "**repository data**" suggested during the validation workshop. It will also support researchers, academics and entrepreneurs in areas like **artificial intelligence, data analytics, genomics, food security, agriculture and mining**.