

Marseille, 8 November 2019



Symposium Report

Under Unesco patronage, IRD, the CIRAD, and Cheikh Anta Diop University (UCAD) held the first international symposium dedicated to open science in French-speaking sub-Saharan Africa. The aim of this symposium was to discuss the challenges and perspectives for open science in the Global South, especially in French-speaking Africa, which has a mixed landscape in this matter. The event took place from 23 to 25 October at the Confucius Institute on the UCAD campus.

1. PARTICIPANTS

► **Good representation of French-speaking sub-Saharan African countries**

The symposium brought together around **150** participants from **16** countries:

- 10 countries in sub-Saharan Africa: Senegal, Côte d'Ivoire, Burkina Faso, Mali, Niger, Benin, Cameroon, the Democratic Republic of the Congo, Nigeria and Madagascar,
- 4 countries in the European Union: France, the Netherlands, Lithuania and England,
- 2 countries in North America: Canada and the United States.

► **A meeting of researchers, data specialists, and scientific information specialists**

The cross-cutting theme of the symposium **brought together communities that do not normally engage in discussions together**: scientific information specialists (40%), data managers (20%), researchers (20%) and students (20%).

► **The participation of key institutions for organising open science in the Global South**

The symposium mobilised representatives from pan-African institutions involved in the sharing of research data. These included the African and Malagasy Council for Higher Education (CAMES), the Council for the Development of Social Science Research in Africa (CODESRIA), the Regional Research Centre for Improving Adaptation to Drought Conditions (CERAAS), the AGRHYMET Regional Centre of the Permanent Interstate Committee for Drought Control in the Sahel, and the West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL). It also mobilised international institutions involved in promoting the development of open science: UNESCO, the International Science Council-Committee on Data for Science and Technology,

Research Data Alliance, the African Open Science Platform, ISC-World Data System and the Network for Education and Research in West and Central Africa (WACREN).

2. SUMMARY OF DEBATES AND DISCUSSIONS

The management of the organising institutions (IRD, UCAD and CIRAD) attended the opening of the conference. Also present were the Director of Research and Innovation at the Senegalese Ministry of Research, the Rector of the Francophone University Agency (AUF), and the CAMES General Secretary.

► *A need for knowledge and skills*

The diligence of the participants in the seven workshops on the first day showed a **real need to acquire knowledge, techniques and skills in the domain of data management and scientific information**. It also allowed the participants to familiarise themselves with the current initiatives in the domain of free access to data and publications, both in Africa and internationally.

► *Consensus on the need to promote and pursue open science*

The discussions over the three days and the round-table discussion on the first day allowed participants to draw up the key points for a declaration for the sharing and opening of research data for sustainable development. This appeal presents **open science as an essential driver for using research in the interests of sustainable development**, particularly for improving free access to scientific publications and research data. (*DOI: 10.5281/zenodo.3529678*).

The participants agreed on the following shared objectives: a) one prerequisite: **to strengthen connectivity**, data-related services and **skills in the management, exploitation** and re-use of data; and to respect the principles of b) **good data management**, c) **optimum exploitation of data** and the promotion of those involved in sharing it, and finally d) **data governance**. These last two points are specific and extremely important issues, in view of the desire of African institutions to control access to their data and to give these data both greater scientific and economic value, in order to organise the optimum exploitation of their data with local skills and local digital mechanisms.

The **structuring** and **organisation of a regional network** of actors for the promotion and implementation of open science and the associated policies were judged indispensable for promoting good research data management practices. After discussions with the assembly and in view of the preceding analyses, the geographic and cultural scope proposed for the establishment of a network (**French-speaking sub-Saharan Africa**) appears most relevant and logical, given the poor visibility and involvement of actors from this region in the international community's mechanisms for exchange and organisation in the target domains.

► *Disparity and poor visibility of actors and projects*

The various contributions were a chance for **specialists from the Global North and South to share experiences and views**. This gave rise to numerous exchanges and lively debates. An initial analysis shows that the two main prerequisites for improving the sharing and openness of science are upgrading digital infrastructures (to provide sufficient connectivity to exchange data and information online) and upgrading data storage infrastructures. The inadequacy of these

infrastructures is currently a barrier to the perpetuation, wider distribution and wider use of data. In particular, there is a lack of incentive-based policies. Nevertheless, the CAMES proposes an incentive for open-access distribution of scientific documents, and a pan-African infrastructure: the very recently-established DICAMES.

The discussions helped to highlight **major disparities in the practice of managing and disseminating research outputs**. These disparities are first of all geographical. They seem to be connected to the research means and policies of the countries, with pronounced weakness in central Africa (particularly the DRC and Cameroon). This weakness appears as a low level of knowledge and skills and/or a lack of digital management and dissemination mechanisms. Disparities of the same kind also exist between research institutes, regional institutes or centres and universities. The centres with regional missions are the most advanced.

In general, the various actors are not present in the networks, projects or international initiatives in Africa, or beyond. Consequently, their actions lack visibility and are not connected to the community. For many participants, the symposium was a chance to discover some of these initiatives. Finally, in both academic institutions and countries, management and dissemination policies for scientific outputs have yet to be defined.

► ***On open access to publications***

Open access to publications is much more advanced in the East and South African countries. Ethiopia has just created a national policy on open access; Kenya and Ghana also have incentive-based policies from institutions. The incentives primarily concern the submission of documents and the opening of data. These are domains in which few initiatives have been developed so far. Interesting projects were presented, for example the DICAMES, a networked open archive. It allows all universities in West Africa to submit their documents. The *Grenier des savoirs* (Knowledge Attic) is a new African open-access journal platform. Other countries have networks allowing actions to be launched, such as the Network for the Pooling of Scientific and Technical Information (*ReMIST*) in Burkina Faso, the Consortium of Higher Education and Research Libraries in Senegal (*Cobess*) and the Virtual University Library Network in Côte d'Ivoire. These networks currently have few means, especially digital means.

► ***On research data***

Some regional or national players are advanced: WASCAL, AGRHYMET, the Ecological Monitoring Centre (CSE) and the Senegalese Institute of Agronomic Research (ISRA). They have skills and platforms for the management and dissemination of data, and some have digital infrastructures, or have made research data exploitation part of their strategy (ISRA strategic plan). Generally, the rules and/or policies for the exploitation and dissemination of research data are not defined. Skills need to be strengthened, to professionalise the management and dissemination of data, in order to implement the FAIR data principles (for making data Findable, Accessible, Interoperable, and Reusable). The discussions show that the sharing and opening of data must be combined with the development of new, added-value services. These could help to promote the professions and institutions themselves. For some, this can be seen as an opportunity, but also an essential condition for supporting data-related activity, particularly concerning the opening of data from public operators (meteorological service, hydrology, etc.).

► ***On African scientific journals***

The Directory for Open Access Journals (DOAJ) is an infrastructure that lists more than 13,000 open-access journals, according to quality criteria. It is indispensable for the development of good quality journals in Africa. The *Grenier des savoirs*, the CAMES journals, the RAMReS journal in 12 series in partnership with the Conference of Rectors of French-speaking Universities in the Africa and the Indian Ocean (CRUFAOCI) and the *African Journal Online* (AJOL) were cited. There is local excellence, which needs to be brought into the foreground via high-quality journals and linguistic diversity. In general, the journals need to professionalise. The CAMES keeps a list of “predatory” journals.

► ***On the evaluation of research***

This theme was addressed several times. Researchers sometimes prefer to produce funded expert reports over scientific publications, whereas evaluation by the CAMES is based on Western models, in that it evaluates publications according to the journal impact factor and their presence in the Web of Science database. The CAMES has set up a dematerialisation programme, to retrieve work and publications by scientists, without having defined an open-access policy. These questions surrounding evaluation were debated by researchers and the CAMES.

► ***On North-South partnership***

The importance of cooperation was emphasised, and numerous partnerships were highlighted, particularly with EIFL (Electronic Information for Libraries, an NGO that has been working for around 10 years in Africa), UNESCO, the World Bank, the BRGM, IRD, the CIRAD, the AUF, the International Development Research Centre (IDRC, Canada), but also WACREN, which for two years has been coordinating the LIBSENSE librarians’ network, to introduce open archives and create a network. For now, these initiatives have not led to visible results, but have helped strengthen capacities in the countries concerned. It was also pointed out that African scientific research is not sufficiently connected with projects funded by international donors. Certain actors, like the EIFL or WACREN, communicate with their networks in English, which makes it difficult for French speaking communities to access the tools and concepts of open science.

3. RECOMMENDATIONS

Following the symposium, we recommend pursuing the efforts to strengthen digital initiatives and mechanisms that provide free access to publications. We also recommend that the efforts of the French-speaking sub-Saharan African scientific community be focused on promoting and supporting awareness-raising and training about data management practices, and on the creation of local digital measures for broader sharing and greater openness of research data.

To this end, **IRD**, in connection with CIRAD, can act as a **catalyst and facilitator** for the promotion of open science in French-speaking sub-Saharan Africa, particularly when it comes to:

1. Supporting networking of research stakeholders, with a focus on open science, by connecting these stakeholders with the existing networks or international institutions: ISC ROA (International Science Council-Regional Office for Africa), Research Data Alliance, CAMES, CILSS (Inter-State Committee for Combating Drought in the Sahel), African Open Science Platform, UNESCO,
2. Increasing the skills and technical capacities of key actors who are already partners, such as the CSE, WASCAL, the Agrhymet Regional Centre, CERAAS and WACREN, in connection with the actions of the D-DUNI on improving digital infrastructures,
3. Capitalising on its key actors, their projects and their digital mechanisms, to promote practices and expand the implementation by bringing in other players. For open access, we can draw on the mechanisms of DOAJ, DICAMES and IDEP. For open access to data, the data-dissemination initiatives of the CSE, WASCAL and Agrhymet could be used as a base,
4. Monitoring and providing content for the UNESCO roadmap for drawing up recommendations on open science.

Planned short-term and medium-term actions

1. Signature of the declaration by key players, and by those who have helped to draft it and can drive the actions described above, extension to the international institutions present at the symposium.
2. Meeting with UNESCO (Division of Science Policy and Capacity Building, Science Policy and Partnerships) to contribute to the development of their open science toolkit.
3. Funding for academics and researchers visiting Europe: organisation of short stays (2-3 months) in France or in another European country, for one or two African academics, so that they can discover the open science ecosystem (policy, training, community, methods and tools, developments) in France and/or Europe.
4. Training in open science, particularly in the *FAIRification* of data (making data compliant with the FAIR principles) and data sharing, giving priority to researchers from IRD partner institutions within the JEAJ (Young teams associated with IRD) and the IJL (International Joint Laboratory) frameworks, to improve the dissemination and management of their data and documents. The existence of the Franco-Senegalese campus is a valuable opportunity to build an open science module into the existing training programmes.
5. Organise events to raise awareness and build capacities, possibly capitalising on the structures working in this domain (WACREN, EIFL, the Confederation of Open Access Repositories), where “data champions” can be sought, to drive the development of open science.

6. Another Open Science in the South Symposium could be held in two years, with the involvement of other financial partners and in a lighter form, to assess and discuss the progress of the various projects.
7. Promote and implement actions in connection with the Declaration for the Sharing and Opening of Research Data for Sustainable Development drawn up collectively at the Dakar symposium.

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Links

- Declaration for the Sharing and Opening of Research Data for Sustainable Development: <https://zenodo.org/record/3538891>
- Final symposium programme with presentation materials: <https://opensciencesud.sciencesconf.org/resource/page/id/6>