

# Overview of open knowledge in Francophone Africa

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## Introduction

The “*open*” movement started at the beginning of the 1990s with the emergence of open source software and the creation of a pioneer open archive in the field of physics in the United States. However, it was really in the 2000s that the movement expanded and countries in both the North and South took advantage of the new possibilities offered by the internet and information and communication technologies.

The issues of open knowledge are being reformulated endlessly by the actors who engage with it, whether in the domain of information technology (open source software, open data...), science (open access, open archives, open knowledge, open science...), politics (open government, open democracy...) or even in the area of authors’ rights (free licences, open licences, Creative Commons...). According to Chartron (2013), the visions of these actors “have a tendency to not truly converge any more”. The use of different terminologies confirms this phenomenon and it is difficult to find French equivalents for Anglophone concepts: “*open*” is sometimes translated as “*libre*” or “*ouvert*”, or both, or is not translated.

Historically, there have been various phases in the open access movement globally. The initial era was that of the pioneers and visionaries in the 1990s, then the era of protest by research libraries over the price of certain scientific journals, and militant international declarations such as the *Budapest Open Initiative*<sup>1</sup> en 2002. Later years have seen “recovery of the movement by political stakeholders”, the Office of Science and Technology Policy<sup>2</sup> in the United States and the European Commission, for whom *open access* is based on a more liberal approach: “the results of public research should filter into the socioeconomic world and promote its development” (Chartron, 2013).

The “*open*” movement is multifaceted with multiple stakeholders and regional inequalities. Although this momentum initially developed in Western countries, “open access nonetheless represents an opportunity for developing countries to emerge from a chronic situation of a lack of access to information” (Hachani, 2014). “A clear wish for southern countries to benefit from this new model of intellectual distribution and production,” should also be noted “in the successive declarations that have contributed towards fashioning the open access ‘spirit’” (Boukacem-Zeghmouri, Ben Romdhane and Abd-Allh, 2008).

It is therefore not only a matter of technical change made possible by digital technology but also reconfiguration of the power relations at play in the production and distribution of knowledge, particularly in the scientific domain. “Projects initiated throughout the world have thus overturned the decades-old established order in the distribution of research results and the knowledge sharing process” (Diouf, 2014). Equitable sharing of knowledge is an ideal put forward by open access defenders (Aigran, 2008), who criticise the monopoly of the scientific journals, their exorbitant tariffs and their evaluation criteria. Generalised access to the internet could effectively make it possible for publications to be disseminated quickly and globally.

Today, the open access movement “can no longer be ignored” (Guédon, 2007). It represents a great challenge, particularly for countries excluded from the world stage of knowledge, such as the African continent. This study proposes an overview of the challenges and methods of creating open knowledge systems in Francophone Africa, by exploring the available literature on the subject and by a survey among the affected stakeholders.

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<sup>1</sup> <http://www.budapestopenaccessinitiative.org/>

<sup>2</sup> Office of Science and Technology Policy

Francophone Africa demonstrates an interest in and commitment to open access, North Africa being more advanced than sub-Saharan Africa, which is still in its “infancy”, and Senegal as a leader (Diouf, 2014).

This study has been written within the framework of the Global Open Knowledge Hub (GOKH) programme, implemented by the Institute of Development Studies (IDS) in collaboration with a range of partners. GOKH aims to build a global open knowledge platform for open data sharing and exchange on a broad range of development issues. The aim of the programme is to “improve the supply and accessibility of content that supports evidence-informed policy making and practice in international development.” In particular, a key objective of the project is to raise the profile of diverse perspectives on international development, paying particular attention to content from organisations based in the global south. In the final year of the programme a small amount of funding was granted to study the challenges and methods of creating open knowledge systems in Francophone Africa. Other scoping studies in this series include Online Knowledge Portals for Development in Africa and Mapping Latin American Portals<sup>3</sup>

## 1. Open access in Francophone Africa

### 1.1 Overview of the Francophone world

#### The Francophone world

The term “Francophonie” [“Francophone world” in English] appeared for the first time in approximately 1880, when a French geographer, Onesime Reclu, used it to designate all people and countries speaking the French language.

The Francophone world is estimated at 274 million people<sup>4</sup>, and includes countries in which the majority of the population speaks French, whether French is the only official language (13 countries<sup>5</sup>), one of many official languages (which affects a total of 32 countries<sup>6</sup>), or a mother tongue or one that is commonly used (for example, in North Africa). The African continent has 23 Francophone countries<sup>7</sup>. After France and Western Europe (45% Francophone), sub-Saharan Africa (33%) and North Africa (10%) have the most Francophone people in the world.

The Francophone world is not uniform, although most countries share the fact that they were former French colonies. Each country has its own distinguishing economic, political and cultural history.

#### Definitions of “Open Knowledge” and “Open Access”

The Open Knowledge Foundation (OKF) definition of Open Data or Open Content is: “A piece of content or data is open if anyone is free to use, reuse, and redistribute it – subject only, at most, to the requirement to attribute and/or share-alike.”<sup>8</sup>. This knowledge may include cultural content such as music, films or books, scientific data or public data coming from governments or public services<sup>9</sup>. Open Knowledge does not include computer software, but rather refers to

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<sup>3</sup> To access the studies please follow the links respectively <http://www.okhub.org/wp-content/uploads/2016/02/SoulBeatAfrica-scoping-study.pdf> and [http://www.okhub.org/wp-content/uploads/2016/01/LiLA\\_mapping\\_study.pdf](http://www.okhub.org/wp-content/uploads/2016/01/LiLA_mapping_study.pdf)

<sup>4</sup> Source : <http://www.francophonie.org/-Qu-est-ce-que-la-Francophonie-.html>

<sup>5</sup> We cite Benin, Burkina Faso, Republic of Congo, Democratic Republic of Congo, Côte d’Ivoire, France, Gabon, Guinea, Mali, Monaco, Niger, Senegal and Togo.

<sup>6</sup> Source : <http://www.francophonie.org/Le-francais-langue-officielle-dans.html>

<sup>7</sup> The 23 countries in Francophone Africa are in North Africa (Tunisia, Morocco, Algeria) and sub-Saharan Africa (Benin, Burkina Faso, Burundi, Cameroon, Comores, Côte d’Ivoire, Djibouti, Gabon, Guinea, Madagascar, Mali, Mauritania, Niger, Central African Republic, Democratic Republic of the Congo, Republic of Congo, Rwanda, Senegal, Togo and Chad).

<sup>8</sup> (<http://opendefinition.org/> accessed 01/08/2013)

<sup>9</sup> <http://opendefinition.org/od/1.1/fr/>

content. This content is considered as “open” from the moment it is accessible online, in an open format, under a licence that permits its redistribution and reuse.

Translating such concepts into non-English languages is challenging. In French, Open Knowledge is translated both as “savoir libre” and as “connaissances ouvertes.” The distinction between “libre” (literally translated as ‘free’ in English, as in ‘unrestricted’ linking to the concept of freedom in the philosophical sense) and “ouvert” (‘open’ as in ‘free to access and modify’) is still hazy<sup>10</sup>. Generally the term “libre” is more associated with the libertarian ideal and “ouvert” with liberal or pragmatic approaches (Broca, 2013). However, both terms can be interpreted in terms of accessibility and lack of cost and they may also describe computer coding and its component of interoperability, specific to free and/or open formats. According to Bernault (2016), the degree of openness in terms of copyright is what principally distinguishes the two terms: “to be able to access the work free of charge does not necessarily mean that it is then possible to use, amend or redistribute it.” “Accès ouvert” (open access) would allow the work to be reviewed free of charge, while “accès libre” (free access) would allow it to be used, amended and redistributed. In any case, irrespective of the domain, the open movement questions and redefines the relationship “between value and ownership” (Broca, 2013).

It is therefore not possible to reduce the term “open access” to the single issue of access to knowledge, as the aspects of sharing and reuse have also to be taken into account. In 2002, the *Budapest Open Access Initiative* defined open access to knowledge as the convergence of an old tradition - the desire of scientists to publish their research with the objective of sharing knowledge - and a new technology - the internet, “to create a public benefit without precedent”: “the sharing of the knowledge of the rich with the poor and the knowledge of the poor with the rich gives this literature its potential benefit, and lays the foundation for the unification of humanity through intellectual dialogue, and a quest for common knowledge”<sup>11</sup>.

More specifically, the Budapest Declaration defined open access to scientific literature as “free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited”<sup>12</sup>.

Self-archiving, open archives, or even open access journals are means of creating open knowledge. Technical and information technology standards, such as the protocol recommended by the *Open Archives Initiative* (OAI), facilitates indexing of data and metadata, referencing by search engines and distribution.

### Classification of Francophone countries in terms of data openness

Several indices measure the level of data openness in different countries, particularly public data made available to governments. According to the *Open Data Barometer*<sup>13</sup>, in first 10 places are the leaders of open public data, identified among the industrialised countries of the North: United Kingdom, United States of America, France, Canada, Denmark, New Zealand, Netherlands, Korea, Sweden and Australia.

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<sup>10</sup> In order to better target French language expressions, we circulated a questionnaire on the translations of the main terms associated with “Open” (*Open Access, Open Data, Open Knowledge, Open Licence...*), among the Francophone community of the *Open Knowledge Foundation*. Nearly 20 responses were received, which confirmed the lack of consensus on French terminology. Apart from the expression “données ouvertes” (*Open Data*), the adjectives “ouvert” and “libre” were suggested in equal proportions.

<sup>11</sup> <http://www.budapestopenaccessinitiative.org/translations/french-translation>

<sup>12</sup> Idem

<sup>13</sup> <http://opendatabarometer.org/3rdEdition/report/#rankings>

Tunisia and Morocco are the only two Francophone countries to join the group of “emerging” *Open Data* countries. In fact, Morocco was the first country in the Maghreb to initiate an open public data policy in 2011, followed by Tunisia in 2012. However, the *Open Data* portals of these governments are rarely updated and their implemented policies have still not managed to meet the set challenges.

Most Francophone countries are part of the “limited capacity” group of countries, with the lowest open access indices (Cameroon, Mali and Haiti feature among the latter). This means that there are open data initiatives, but these remain confidential and are in the hands of a limited number of experts. Although this barometer only takes into account one aspect of the open movement, it does provide an overview of the initiatives in regions throughout the world.

Open knowledge and open access are recent phenomena, with numerous socioeconomic challenges. From the institutional side, the three main stakeholders on the international stage are the American government, the European Commission and the British government (Chartron, 2013). This movement took root in Western countries, but has opened new perspectives in emerging countries.

## 1.2 Challenges of open knowledge in Francophone Africa

The most fervent defenders of open access in Africa are found particularly in the field of knowledge, within a context where the countries of the South are marginalised in the international knowledge system.

Antonin Benoît Diouf, library curator at the Université Gaston Berger [Gaston Berger University] in Senegal, confirms that “our countries are the most impacted by the benefits to be derived from the open access initiative” (Diouf, 2010). In fact, Jean-Claude Guédon, an academic from Quebec and pioneer of the open movement, recalls that “beyond its immediate and obvious programme of offering unhindered access to international academic literature, one of the objectives of open access is to improve certain flagrant dysfunctions in the current system of scientific communication” (Guédon, 2008). These dysfunctions include the North/South scientific divide which has severely penalised African countries in their quest for sustainable development.

### The North/South scientific divide

The concentration of knowledge production in northern industrial countries has relegated many developing countries to a “scientific apartheid” according to Bonaventure Mvé-Ondo<sup>14</sup> (2005). Several phenomena have resulted in this state of affairs:

Modern science was developed within the context of the advent of European power and colonial expansion during the 19<sup>th</sup> century (Paty, 2007). Modern science was therefore part of colonialism and contributed towards the subjection of some southern countries, via territorial mapping, inventorying of natural resources - with a view to their exploitation and exportation, the study of tropical diseases, the ethnography of colonised populations - to better control them, etc. (Mvé-Ondo, 2005). It is therefore an imported science that was used for colonial purposes, making its appropriation by colonised peoples difficult.

After several countries became independent in the 1960s, differences were seen between Anglophone and Francophone countries. Whereas the former, more decentralised, British colonies were able to nationalise colonial research centres, Francophone countries stayed under

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<sup>14</sup> Bonaventure Mvé-Ondo is a Gabonese academic and is currently the Vice-Rector of the Agence Universitaire de la Francophonie [University Agency for Francophony](AUF)

a trusteeship system with the former metropolis and were not able to conduct a “transfer of knowledge” as seen in the analysis by Bonaventure Mvé-Ondo.

The liberal turn of the 1980s further aggravated the condition of the African system of higher education and research, which was already a poor relative of national policies<sup>15</sup>. The privatisation of research and the merchandising of knowledge has further marginalised developing countries in a knowledge-based economy where scientific knowledge is no longer seen as a public good but as a private commodity serving the commercial and economic interests of the powerful. Between 1960 and 2000, sub-Saharan Africa’s share in published scientific production worldwide decreased from 1% to 0.3% (Mvé-Ondo, 2005).

Public budget reductions, structural adjustments and conflicts intensified the “scientific apartheid” resulting in the phenomenon of “brain drain” towards northern countries. As stated in the *Global Research Reports* (Adams, King and Hook, 2010), it should also be recalled that most countries are still far from the universal primary education objectives set as part of the Millennium Development Goals.

Bonaventure Mvé-Ondo thus concludes that “the situation is so serious (...) that most research structures in Africa have essentially become dependent on support or cooperation programmes funded by the North”. African research institutions must confront a fourfold crisis: “of confidence, human resources, financial resources and identity” (Mvé-Ondo, 2005).

Within this context, the open knowledge movement may be part of the answer to the problems encountered by African research. Moreover, open knowledge, as well as participation in the production and control of knowledge, are today considered the major sources of leverage in the fight against inequality and poverty.

### The benefits of open knowledge

Christian Gidéon (2008), a Nigerian researcher at the University of Ottawa, summarises the benefits of open research data for Africa as follows: it is a matter of increasing the number of scientific publications, improving the visibility of the grey literature produced by southern countries and reducing the barriers that hinder access to and sharing of knowledge.

These aspects involve challenges that are specific to the African situation.

- ***increasing scientific publications and improving the visibility of the grey literature produced by southern countries***

In Africa, scientific visibility and distribution is highly problematic: “African researchers are nearly completely invisible, with only a few exceptions” (Diouf, 2014). One of the reasons is the rarity of African scientific journals or their very irregular publishing frequency. The inegalitarian international scientific system is also responsible, as it gives more credit to journals from the North than from the South “for reasons that are not always related to quality issues” (Guédon, 2007). Conducting research in poor countries therefore often means setting it “in fields that are not necessarily a priority” for these countries (Guédon, 2008). This “lost science” from southern countries may be promoted via open access platforms as was the case in Latin America, and particularly Brazil (Guédon, 2007).

The open knowledge movement, particularly open archives, represents a new horizon for African scientists, who see it as a means of rapidly increasing the visibility and distribution of their publications (Gidéon, 2008) and gaining peer recognition (D’Eggis, 2013).

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<sup>15</sup> Public assistance to research in Africa is one of the lowest in the world: 0.2% of the Gross National Product (GNP) while it is as much as 3% in developed countries (Mvé-Ondo, 2005)

For Diéyi Diouf, a lecturer-researcher at the Université Cheik Anta Diop de Dakar [Cheik Anta Diop University of Dakar] (UCAD) and library curator, the possibilities offered by information and communication technologies (ICT) correspond to a “latent need”, but she notes that publishing scientific papers online remains problematic in Africa “at a time when access to electronic resources is key between researchers” (Diouf, 2014).

Open access platforms strengthen the visibility and impact of research. “The impact of open access articles tends to increase in the majority of cases”, and “the worldwide availability of various publications to everyone with internet access leads to an increased use of resources” (Guédon, 2008).

The digitisation of knowledge also promotes improved access to science for rural or isolated areas that “for material or historic reasons, have no major libraries, museums, or scientific centres” (CESE, 2013).

- ***reducing barriers that hinder access to and sharing of knowledge***

For scientific and academic communities throughout the world, open access enables direct internet access to articles, theses, reports, etc. and reduces financial and technical obstacles, which are a major challenge for countries in the South.

Within the African context, access to knowledge is even more crucial as universities and libraries can barely serve their initial purpose and have very limited documentary resources. At a conference organised in 2004 by CODESRIA<sup>16</sup> (Conseil pour le développement de la recherche en sciences sociales [Council for the Development of Social Science Research in Africa]), Bernard Dione, a lecturer-researcher at UCAD, denounced “the difficult situation of African universities and their libraries”, owing to “the lack of a clearly defined mission, insufficient or even absent budgetary resources, low levels of ICT access, limited and often obsolete collections, and inadequacy of the services provided to users” (Zidouemba, 2007).

Even though the open access movement was born in the North out of an internal protest by the scientific community in the face of a growing concentration of scientific publishing and the surge in subscription costs at the end of the 1980s (Aigram, 2008), this phenomenon was intensely felt in poor countries. “Several university libraries in Francophone countries were forced to discontinue their subscriptions to periodicals owing to monetary devaluation and the increased cost of these documents” (Diouf, 2009).

Open access itself is not sufficient to “ensure equal access for all, but it removes or greatly lessens a number of obstacles to the establishment of an international scientific arena that would offer comparable documentary resources to the researchers likely to use them” (Diouf, 2014).

In an economy dominated by rich countries, scientific research approval channels are another major obstacle for researchers from emerging countries who wish to be able to prioritise their own research themes according to local interests (Guédon, 2007). Even though open knowledge brings into question the traditional methods of peer evaluation and the monopoly of Western scientific journals, the credibility and legitimacy of open access publications continues to be problematic.

The digital revolution is the subject of keen interest in Africa, as emphasised by Diéyi Diouf

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<sup>16</sup> Every two years, CODESRIA organises a “Conference on electronic publication and distribution”. The first instance took place in 2004 in Dakar, Senegal.

(2014): “any connected author may today consider distributing his or her texts professionally on the international network, thus removing all economic and time-related barriers and other hindrances related to paper printing, which means that the methods of production, processing, storage, distribution and access to scientific information are changing rapidly”.

Open access is seen as being able to offer numerous solutions to the problem of unequal national and international access to scientific and technical information (STI), thus promoting quality education and research in Africa, one of the primary conditions for sustainable development (UNESCO, 2000).

Nonetheless, this movement has encountered resistance on the ground.

## Obstacles to open knowledge

- ***Lack of information***

Most documentation on open knowledge is in English, which is a major obstacle to the acquisition of knowledge by non-English speakers. This lack of knowledge about the modalities and challenges of open access and open knowledge leads to numerous received ideas and much reticence, specifically on the part of the researchers and students<sup>17</sup>.

In a study on Open Knowledge in Algeria and Tunisia, Boukacem-Zeghmouri, Ben Romdhane and Abd-Allh (2008) found that “most researchers receive no training in information searching and literacy skills either through their university courses or their library on campus “.

- ***Researchers’ reticence***

In practice, African researchers make little use of open access opportunities, such as open archives (Ben Romdhane and Ourfelli, 2012). They accord less credibility to open access publications owing to a lack of information and clear policies on licences and copyright, and a fear of plagiarism (Diouf, 2014), even within a context where publication is difficult. They are generally reticent about ICTs owing to a lack of training, equipment and connectivity.

Open access is reconfiguring the economy of the digital publishing world, but online African journals still need their own economic and editorial model. Within a context of lack of public support and funding, “these editors drive both processes (paper and electronic) at the same time, playing with a budget initially allocated only to paper publication (Diouf, 2014), adding further to their insecurity.”

As emphasised by Jean-Claude Guédon (2008), “it is regarding the issue of prestige that open access seems to be the most disadvantaged”, although it challenges the traditional approval channels and proposes new evaluation processes. For example, open access journals propose *open peer review* evaluations for greater transparency and monitoring of editorial decisions. In fact, although the objective of peer evaluation in the current scientific publishing system is to validate publications, this system has led to numerous criticisms expressed by open access defenders<sup>18</sup>.

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<sup>17</sup> This was noted in the survey conducted by the SOHA project among university students from Francophone African and Haitian universities (interview with Florence Piron, 2016), and mentioned in various studies on open access (Hachani, 2014).

<sup>18</sup> To go further, read the doctoral thesis of Algerian researcher Samir Hachani on “L’avenir du contrôle par les pairs dans la publication scientifique face au défis du libre accès” [“The future of peer control in scientific publication in the face of open access challenges”] (Université d’Alger [Alger University], 2013). <https://tel.archives-ouvertes.fr/tel-00922600>

To ensure credibility, online content needs to have institutional support, but progress is “still extremely tentative” with regard to its accreditation and recognition, although CAMES (Conseil africain et malgache pour l’enseignement supérieur [African and Madagascar Council for Higher Education]) has officially recognised the scientific nature and value of articles published in electronic journals (Diouf, 2014).

With the creation of the HAL-Francophonie Afrique et Océan Indien [HAL-Francophone Africa and Indian Ocean] portal<sup>19</sup> and via Francophone digital campuses, the Agence Universitaire de la Francophonie [Francophone University Association] (AUF) specifically used education and training activities to encourage universities to publish their works online (D’Eggis, 2013). The arguments put forward by the AUF are: archiving, visibility, recognition, copyright guarantee and use of research distribution methods.

- ***Inadequate scientific policy***

Scientific research and access to Scientific and Technical Information (STI) represent a small share of public investment, but the supervisory ministries have no sufficiently clear policy regarding open access to STI. Although open access may assist in resolving major difficulties relating to the visibility and distribution of African works as well as access to international knowledge, it can only become a reality if there is willingness and synergy between the concerned stakeholders. In southern countries, even if “the links in the scientific information chain” exist, they often hardly collaborate, owing to “structural and functional dysfunctions” (Bakelli, 2005).

As emphasised by Antonin Benoît Diouf (2010), “the *Open Access* initiative cannot become a reality if our researchers limit themselves to an ‘active consumer’ and ‘passive producer’ role, contenting themselves with the scientific products of their colleagues from developed countries, published in open access publications. They need to contribute by offering their scientific works and this production process needs to be funded.”

- ***Internet connection difficulties and technical constraints***

The digital divide is a major obstacle to the deployment of open knowledge in Africa. The problem of internet access has still not been resolved, owing to the cost and poor condition of telecommunications infrastructures (Diouf, 2010).

In comparison with North America, which has an internet penetration rate of 84.9% of its population, this rate is only an average of 21.3% for Africa<sup>20</sup>. With regard to connection speeds, the situation is also very fragile. Owing to the poor quality of the internet network, southern countries experience “delays and dysfunctions” with regard to STI access, even those countries that have experienced economic growth in recent years, such as Algeria (Hachani, 2014).

Owing to unreliable connections and power cuts, the scientific community cannot fully benefit from open access. Moreover, as noted by Dieyi Diouf (2014), this lack of connectivity is accompanied by a lack of technical skills, particularly regarding the creation and hosting of websites, as well as the ways to update and reference them. This context explains the low

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<sup>19</sup> Created in 2001 by the CNRS (Centre national de la recherche scientifique [National Centre for Scientific Research]), the HAL portal (“Hyper articles en ligne” [“Hyper articles online”]) is an open archive that allows researchers to submit their articles and manuscripts to an open access database developed by the Centre pour la communication scientifique directe [Centre for direct scientific communication] (CCSD) of the CNRS (<https://hal.archives-ouvertes.fr>). “HAL-Francophonie Afrique et Océan Indien” was created in 2013 out of collaboration between CAMES, the Conférence des recteurs des universités francophones d’Afrique et de l’océan Indien [Conference of Rectors from Francophone Universities in Africa and the Indian Ocean] (CRUFAOCI), the Réseau Interuniversitaire des Grands-Lacs [Great Lakes Interuniversity Network] (RIGL) and the AUF (<https://hal-auf.archives-ouvertes.fr>)

<sup>20</sup> Source : Internetworldstats 2013, cited by Hachani (2014)

number of open access initiatives, their irregularity as well as the lack of confidence in this type of publication.

However, despite obstacles, there is a state of mind that is favourable to open knowledge in Francophone Africa, as many stakeholders are convinced that “access to research results is a key issue, both scientifically and economically: the circulation of new ideas and the sharing of knowledge promotes scientific discovery and innovation, which are sources of growth” (D’Eggis, 2013).

The following chapter will attempt to identify ways to implement open knowledge in Francophone Africa.

## 2. Pathways to open knowledge in Francophone Africa

### 2.1 Cartography of open knowledge

In Africa, there is no project for a sizable virtual library accessible via the internet, such as “Gallica” in France<sup>21</sup>, except the “[African Digital Library](#)” project, jointly launched in 1999 by Technikon (South Africa), the World Bank and Net Library (United States).

Many African countries are in favour of open access. The right to information is inscribed in the African Charter of Human Rights and Rights of Peoples (Article 9<sup>22</sup>), adopted in 1981 and ratified by 25 states since that time. In recent years, the African Union has strengthened its commitment to promoting and guaranteeing access to information. A model law on access to information<sup>23</sup> was therefore drafted by the African Commission in 2013 to encourage member states to develop such a law. Several countries have enshrined the right of access to information in their constitutions: South Africa, Nigeria and Guinea Conakry, Niger and Tunisia in Francophone Africa (Kane, 2014).

Within this open knowledge movement, libraries “are considered as real partners in the development of open access” (Kane, 2014). The digitalisation of theses and dissertations was an initial project. The creation of institutional repositories is still in its embryonic stages in Francophone Africa. North Africa is more advanced than sub-Saharan Africa, and Senegal is a pioneering figure.

#### a. open archives and institutional repositories

In 2002, the *Budapest Open Access Initiative* (BOAI) was the catalyst for “a worldwide movement in favour of open access”, in which libraries have a major role to play. Throughout the world, libraries developed institutional repositories, “the objective of which was to retrieve local publications from their institutions, give them new exposure, and improve capture of local research results” (Guédon, 2007).

Open archives, or institutional repositories, are storage servers made available to scientific communities to build a database of their work. This may involve published or “preprint” articles and theses, submitted via self-archiving or a dedicated service. The objective of open archives is to archive, store and distribute content via open access, according to variables that differ depending on the context (Ben Romdhane and Ourfelli, 2012).

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<sup>21</sup> Created in 1997, Gallica is the digital library of the Bibliothèque nationale de France [French National Library] and its partners: <http://gallica.bnf.fr>

<sup>22</sup> <http://www.achpr.org/fr/instruments/achpr/#a9>

<sup>23</sup> [bch.cbd.int/protocol/outreach/africanunion-modellaw\\_fr.pdf](http://bch.cbd.int/protocol/outreach/africanunion-modellaw_fr.pdf)

New Zealand was a pioneer in Africa, creating an institutional repository at the University of Otago in 2005 (Gidéon, 2008). In 2008, Gidéon counted 13 institutional repositories in Africa, referenced on *Open Doar*<sup>24</sup> (South Africa, Namibia, Uganda, Zimbabwe). In 2014, Kane noted that Senegal was the only Francophone country to have made an appearance, with two open archives. In February 2016, the *Open Doar* directory of institutional repositories returned more than 20 results for Francophone Africa<sup>25</sup>, sometimes with several repositories referenced per country: Algeria (12), Cameroon (1), Egypt (5), Morocco (2), Senegal (2), Tunisia (1). The significant increase in the number of open archives is proof of a breakthrough in terms of open access in Francophone Africa.

### ***Local open archive initiatives***

In North Africa, the movement for open access to scientific research is recent, but has been well received by the affected stakeholders. In 2006, Arab countries launched the “Riyadh appeal” to encourage the scientific community to submit their works to open archives and create open access journals. North African countries have initiated open archives, but their quality is unequal in terms of access, service, submission, or use of the OAI protocol (Ben Romdhane and Ouarfelli, 2012).

In Algeria, two main stakeholders have played a key role in the establishment of open access policies: the Ministry of Higher Education and Scientific Research and CERIST (Centre de Recherche sur l’Information Scientifique et Technique [Centre for Research on Scientific and Technical Information]). An initial institutional repository was established at the Université d’Alger I [University of Alger I] during the 2000s, followed by seven other open archives in universities and research centres (Hachani, 2014). CERIST, created in 1985, implemented the scientific and technical information policy of Algeria. A real “driving force” (Hachani, 2014), it has its own institutional repository and has established a collective catalogue of documentary sources of university libraries as well as a national thesis reporting programme. The country appears to wish to establish a national scientific policy “capable of organising and coordinating stakeholders as well as their actions” (Boukacem-Zeghmouri, Ben Romdhane and Abd-Allh, 2008).

Tunisia established a national research and development policy in 1996 with the adoption of a specific law and increased public investment. The Centre national universitaire de documentation scientifique et technique [National University Centre for Scientific and Technical documentation] (CNUST) is considered as the resource institution for STI access, and provides databases, electronic journals and other documents to the scientific community. Although “open access is almost absent in Tunisia” (Boukacem-Zeghmouri, Ben Romdhane and Abd-Allh, 2008), one open archive was created in partnership with several universities (Archive Ouverte Universitaire Tunisien [Tunisian University Open Archive]) (“AOUT”<sup>26</sup>).

In Morocco, the Institut Marocain de l’Information Scientifique et Technique [Moroccan Institute for Scientific and Technical Information] (IMIST), an entity of the Centre National pour la Recherche Scientifique et Technique [National Centre for Scientific and Technical Research] (CNRST) has become the spokesperson for open access to STI. In 2007, it launched the “Catalogue National des Thèses et Mémoires” [National Catalogue of Theses and Dissertations] (“Toubk@l”<sup>27</sup>). This multidisciplinary repository is based on the Open Access principle and is one of the first open archive systems in Morocco. This digital collection now includes as many as

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<sup>24</sup> The information provided by *OPEN DOAR* may be used as an indicator, but the indicated archives sometimes have “dead” links or are websites without actually being open archives. Moreover, not all open archives of each country are systematically referenced.

<sup>25</sup> <http://www.opendoar.org/countrylist.php>

<sup>26</sup> <http://www.pist.tn/>

<sup>27</sup> <http://toubkal.imist.ma>

11,658 theses and 9,000 bibliographic entries<sup>28</sup>. Two universities have also created their own open archive systems (Université Mohammed V de Rabat [Mohammed V University of Rabat]) and Hassan II de Casablanca [Hassan II of Casablanca]).

Few countries in sub-Saharan Africa have a history of open archives. In Senegal in 2007, the Institut Fondamental d'Afrique Noire [African Institute of Basic Research] (IFAN) launched an institutional repository, dedicated to "African Cultural Property"<sup>29</sup>, in partnership with the Université Toulouse II [Toulouse II University], which offers approximately 300 documents, half of which are photographs. However, the project is experiencing storage and maintenance difficulties. There is another open archive<sup>30</sup> created by the African Institute for Economic Development and Planning (IDEP), a pan-African organisation that brings together 54 independent African countries and whose head office is in Dakar.

In 2011, Cameroon started an open archive titled "CamPuce"<sup>31</sup>, managed by an association whose objective is to promote scientific activity and open access in Cameroon as well as all neighbouring countries. Projects focus on the availability of a scientific and professional publication service as well as the organisation of information sessions in Cameroonian universities.

In central Africa, the Centre international de recherche et de documentation sur les traditions et langues africaines [International Centre for Research and Documentation on African Traditions and Languages] (CERDOTOLA), created in 1977 with the support of UNESCO, developed a project on "Increasing the Prestige of Grey Literature in Central Africa" in partnership with the Université Libre de Bruxelles [Free University of Brussels]. This involves the collection, digitalisation and online publishing of theses and dissertations defended in the universities of the ten CERTODOLA member countries, whose themes relate to African traditions (Kane, 2014).

It should be noted that this overview gives an idea of the open access initiatives in Francophone Africa, but it is not exhaustive; there are certainly other projects, to which we have not had access owing to a lack of available information.

### ***The HAL open archives***

In 2001, France created an open archive platform, under the name "HAL" (Hyper articles en ligne [Hyper Articles Online]), established by the Centre national français de la recherche scientifique [French National Centre for Scientific Research] (CNRS) and common to all universities, grandes écoles [prestigious higher education institutes with competitive entrance examinations] and French research centres. This platform allows researchers to submit their articles and manuscripts to an open access database. Access to the data is free, but its use and reuse is not necessarily so.

Within the context of its policy of international cooperation and with the objective of developing the scientific heritage of Francophone countries, France has developed several open archive initiatives with countries in the South. The first initiative, "HAL-CONFREMO"<sup>32</sup> was implemented for researchers from the Middle East, under the auspices of CONFREMO (Conférence des recteurs et présidents des établissements membres de l'AUF au Moyen-Orient [Conference of rectors and presidents of AUF member establishments in the Middle East]). This open archive was created in 2009 and today contains more than 1,000 articles, papers and theses made available to the entire scientific community (D'Eggis, 2013).

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<sup>28</sup> <http://www.imist.ma/index.php/component/content/article/43-imist/221-toubk-l-le-catalogue-national-des-theses-et-memoires-en-chiffres>

<sup>29</sup> <http://bca.ucad.sn/jspui/>

<sup>30</sup> This open archive is referenced on OPEN DOAR but the site was not accessible on the day this study was compiled (15/02/16).

<sup>31</sup> <http://eprints.campuce.org>

<sup>32</sup> <http://hal-confremo.archives-ouvertes.fr>

A HAL-Francophonie Afrique et Océan Indien portal was launched in 2013 (D'Eggis, 2013), driven by the AUF, following the signature of a “Charte pour la réalisation des Archives ouvertes des universités africaines [“Charter for the Creation of African University Open Archives”]<sup>33</sup>. Like HAL, the objective of this portal is to develop African scientific publications by giving researchers the opportunity to submit their research projects, theses, dissertations, articles, papers, etc. in digital format to an open archive site where these documents can be freely consulted by all<sup>34</sup>. However, this portal does not seem to have been fully adopted by the Francophone scientific community as only 26 documents have been registered since the beginning of 2015<sup>35</sup>.

### ***EIFL (Electronic information for libraries)***<sup>36</sup>

With reference to the open archive movement in Africa, the EIFL's action should be noted. This organisation promotes the use of digital technology in libraries of transition economy countries in Africa, Asia Pacific, Europe and Latin America. The EIFL confirms that more than 2,000 libraries have joined its network over the past 15 years. Among its objectives, the *Open Access* programme aims to remove obstacles to the exchange of information by advocating for the adoption of open access and by supporting archive projects. In Francophone Africa, the EIFL has been involved in Algeria since 2001, in Senegal since 2003, in DRC since 2015 and in Burkina Faso since 2004.

Librarians and academics, such as Diéyi Diouf (2014), recommend the support of ambitious open archive policies in Africa, in order to “identify and unify all intellectual production by Senegalese or even African researchers in one large virtual library (collaborative portal), accessible to all at no cost”.

### **b. Digitalisation of theses and dissertations**

In the absence of, or prior to, the creation of the open archives that are currently under development, some sub-Saharan African countries established strategies to increase the prestige of university theses and dissertations, in particular in Senegal.

Even though African universities and libraries are now aware of the new strength represented by digital resources for their countries, initiatives in this domain are still in the embryonic phase and are limited to certain types of documents (Kane, 2014). University theses and dissertations have been the subject of several digitalisation and online access projects. This is a major challenge as approximately 4,000 theses in the French language are defended every year in Africa<sup>37</sup>.

In North Africa, archive and dissemination of university theses and dissertations is managed by institutional repositories, as is the case in Algeria where the electronic submission of academic writings by students has been mandatory since 2012.

In sub-Saharan Africa, several scientific articles bear witness to experiments conducted in Senegal, particularly at UCAD. This University is the largest in West Africa and has independent faculties, national colleges, teaching and research institutes. Since 2003, the University “has

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<sup>33</sup> This charter was signed by CAMES, CRUFAOCI, CNRS, France and the AUF.

<sup>34</sup> <https://www.auf.org/autres-pages/planete/archives-planete-auf/planete-auf-juillet-2014/dossier-du-mois/la-valorisation-et-la-diffusion-du-savoir/>

<sup>35</sup> <https://hal-auf.archives-ouvertes.fr/browse/year>

<sup>36</sup> <http://www.eifl.net/>

<sup>37</sup> “Catalogue collectif des thèses africaines francophones : Vers un portail 2.0 des thèses en ligne” [“Collective catalogue of Francophone African theses : Towards a portal 2.0 of online theses”] <http://www.maroc.ird.fr/les-activites/liste-des-projets-menes-au-maroc-par-themes/valorisation-et-information-scientifique/4-catalogue-collectif-des-theses-africaines-francophones-vers-un-portail-2.0-des-theses-en-ligne>

committed to a major change, structured on the basis of large projects in which information technology techniques have an important place” (Diouf, 2009).

Digitalisation of university theses and dissertations at UCAD is a well-documented process that was launched in the 1990s. CAMES and French institutions for international cooperation have played a key role. With the support of the AUF, an initial digital corpus of 1,600 theses has been indexed in PDF format by CAMES (Zidouemba, 2007).

In recent years, this University has experienced a strong research momentum and an increase in production, which has strategically raised the question of storage and retention as well as the distribution of scientific papers<sup>38</sup>. Furthermore, as the cost of access to scientific documentation has become higher and higher, UCAD is paying increasing attention to the opportunity to “create conditions for sharing and providing free access to the greatest number of documents produced by a large-scale African University centre” (Diouf, 2009). Moreover, as Senegal is one of the few Francophone countries in the south to consider telecommunications as a priority sector, it is amongst those with the best electronic communications (Zidouemba, 2007).

In 2002, the CYBERDOCS-UCAD project was a large project conducted by the bibliothèque centrale de l’UCAD [UCAD Central Library] (BUCAD), in partnership with CAMES and CODESRIA and with the support of the Agence intergouvernementale de la Francophonie [Intergovernmental Francophone Agency]. By joining the “CYBERTHESES” programme started by the Université de Lyon 2 [Lyons 2 University] and the Université de Montréal [University of Montreal], BUCAD set up “CYBERDOCS-UCAD”, an online platform to archive and distribute scientific works produced within the University (Zidouemba, 2007). An “academic publication digitalisation department” was created at UCAD to complete this project. The presented objective was to provide “broader and more rapid access to scientific content, increase the prestige of research results and promote the grey literature that is often unknown and underused by teachers/researchers and students both nationally and internationally” (Diouf, 2009).

The “CYBERTHESES” programme has been transformed over time into an international programme for cooperation between the universities of Lyons, Montréal, Geneva, Santiago in Chile, Dakar and Antananarivo. On the ground, the project has experienced some technical difficulties such as connection problems and untimely load shedding, “triggering server shutdowns and the disappearance of data” (Diouf, 2009), as well as legal and financial difficulties (Zidouemba, 2007) that have led to the project’s temporary discontinuation (Kane, 2014).

Numerous positive aspects related to open access have been noted further to this experience: “strong support by the scientific community owing to rapid access to research results”, “an increase in citations of online works by peers”, and the adoption of a rectoral decree on the systematic submission of electronic versions of any academic work completed at UCAD (Diouf, 2009).

Another initiative of the Association of African Universities (AAU), the “DATAD” project (“*Database of African Theses and season Dissertations*”<sup>39</sup>) enabled an Internet portal to be launched in 2003 for the distribution of academic works from several African universities<sup>40</sup>. The project was discontinued for a few years and has now been revamped<sup>41</sup>.

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<sup>38</sup> UCAD saw its numbers increase from 24,776 students in 2001 to 75,188 students in 2012 (Kane, 2014).

<sup>39</sup> “Database of African Theses and Dissertations”

<sup>40</sup> Three Francophone institutions out of a total of 13 : UCAD (Senegal), CODESRIA (Senegal), université de Yaounde I [Yaounde I University] (Cameroon) (Materu-Behitsa 2004)

<sup>41</sup> To access more information see <http://datad.aau.org/>.

Between 2004 and 2007, the French Ministry of Foreign and European Affairs implemented a large-scale project, SIST, via the Fonds de solidarité prioritaire [Priority Solidarity Fund] (FSP), to provide 12 African countries<sup>42</sup> with open access digital platforms in research and university centres. The objective was to promote the integration of African research in the international scientific community by improving access to scientific and technical information. Various French cooperation bodies, such as the AUF, Francophone digital campuses and CIRAD<sup>43</sup>, collaborated on the project with local stakeholders. Education and training workshops were organised and numerous online platforms were created. For example, UCAD created a SIST platform<sup>44</sup> (Kane, 2014), as did CAMES<sup>45</sup> (Liré, 2010). These portals are accessible but often seem not to be maintained, as the SIST project was financed for a limited period.

Further to these experiences, UCAD established a new digital library, only accessible via the intranet, which provides access to all documents that have already been digitalised and continues the project of digital archiving and distribution of academic works. Differences should be noted between the disciplines, as the number of digital theses is lower in the arts fields than in the medical field, for example (Kane, 2014).

Senegal has also experienced rapid growth in its network of public and private libraries, with the former being established in 2005 as part of a Consortium (Consortium des bibliothèques, d'enseignement supérieur et de recherche du Sénégal [Consortium of higher education and research libraries in Senegal] - COBESS) in order to harmonise documentary policies and practices at national level. COBESS, with the support of the EIFL<sup>46</sup>, has also set itself the objective "of establishing and using compatible computer systems to enable information exchange and open knowledge for users"<sup>47</sup>.

### c. open access journals<sup>48</sup>

At the same time as the open archives, "the effort to create open access journals has intensified" (Guédon, 2007). In fact, as part of the momentum of the international movement for open access in the 2000s, open access online journals appeared. These digital journals are part of a change in the economy of scientific publishing: "Electronic journals represent an opportunity for African countries, allowing researchers to circumvent local inadequacies to access the wealth of information available internationally, for example, and even making their own contributions by publishing on the network" (Diouf, 2014).

In reference directories such as the *Directory of Open Access Journals - DOAJ*<sup>49</sup>, no Francophone African journals are indexed. On the *African Journals Online - AJOL*<sup>50</sup> portal, about 30 journals are referenced: Algeria (5), Benin (2), Burkina Faso (3), Cameroon (8), Côte d'Ivoire (4), Madagascar (1), Senegal (6), Togo (1) and Tunisia (2). By way of comparison, this portal lists 217 journals for Nigeria and 94 for South Africa.

In North African countries, open access journals are generally academic journals produced by university institutions, but their open access distribution is random. The Webreview portal<sup>51</sup>, a

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<sup>42</sup> Algeria, Benin, Burkina-Faso, Burundi, Cameroon, Côte d'Ivoire, Ghana, Madagascar, Mali, Nigeria, Senegal, Tunisia

<sup>43</sup> French organisation for agronomic research and international cooperation for the sustainable development of tropical and Mediterranean regions.

<sup>44</sup> <http://www.sist.sn>

<sup>45</sup> <http://greenstone.lecames.org/>

<sup>46</sup> EIFL : Electronic Information for Libraries - <http://www.eifl.net/>

<sup>47</sup> <http://senegal.eifl.net/presentation>

<sup>48</sup> Definition : "According to the Budapest initiative, an electronic journal is a publication with "free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles [...] or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself." (Extract from the Budapest Initiative for Open Access, 14 February 2002).

<sup>49</sup> <https://doaj.org>

<sup>50</sup> <http://www.ajol.info>

<sup>51</sup> <http://www.webreview.dz/>

CERIST initiative that is unique in Algeria, is attempting to identify and promote these open access journals (Hachani, 2014).

In Senegal, CODESRIA has edited and published several scientific journals online, with distribution of the full text of the articles in PDF format, but the publications are irregular (Diouf, 2014). Within a context where African research and scientific publishing faces numerous difficulties and has been poorly funded or supported by supervisory organisations, online journals have met the same fate.

In this case, too, international cooperation bodies such as the AUF provide major but inadequate support. For example, in 2010, the AUF launched an internet portal, "Savoirs en partage"<sup>52</sup> ["Knowledge Sharing"], which promotes the distribution of scientific documents, particularly journals, through online publication by member establishments (D'Eggis, 2013).

#### **d. Francophone digital campuses and distance learning**

As noted in several research works (D'Eggis, 2013; Mvé-Ondo, 2005) and testimonies<sup>53</sup>, Francophone digital campuses are essential stakeholders within the context of training, research and open access in Francophone Africa.

Since the 2000s, the AUF has encouraged the establishment of Francophone digital campuses in seven southern countries, in partnership with local establishments. The AUF can now count more than 35 Francophone digital campuses throughout the Francophone world. Spaces for digital learning and practice, their mission is to host students, teachers and researchers, provide them with access to scientific and technical information (via open access to different databases, archives, etc.), allow them to benefit from distance learning programs, develop their expertise, share their research work, etc.<sup>54</sup> They are therefore major stakeholders in promoting digital tools and open access and, "although they depend on the scientific capacity of universities from the North", these centres have successfully "pooled educational products and active participation by African universities to ensure knowledge sharing" (Mvé-Ondo, 2005).

The objective of digital campuses is to democratise access to knowledge through distance education, open access to knowledge and the use of ICTs, on the lines of the "open universities", in France and Francophone countries, as seen in the experience of the Francophone digital campus in Madagascar: "for a long time, this service was the only way for researchers and students in their thesis year to access quality scientific literature" (Andriamparany and Rakotomalala, 2008).

The distance education implemented by the AUF in partnership with universities from the South fits in with the tradition of knowledge democratisation. Open and distance learning (ODL) projects were started within the post-colonial context of an African university crisis: "The first area affected by the chronic dysfunction of universities is that of training, the quality of which is dubious (...). One of the points noted among the university shortcomings is the lack of essential access to scientific and technical information" (Loiret and Oillot, 2013).

As a result, the Association des universités partiellement ou entièrement de langue française [Association of Partially or Entirely French Language Universities] (AUPELF), which became the AUF, implemented a vast support system for Francophone universities in the South, by setting up technological structures in them to facilitate research. At the beginning of the 1990s, the AUF

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<sup>52</sup> <http://www.savoirsenpartage.auf.org>

<sup>53</sup> Within the context of this study, we have circulated a second questionnaire to persons committed to open knowledge in Francophone Africa (approximately 65 people, mainly coming from research and documentation fields). The objective was to complete a review of literature concerning open access in Francophone Africa. The responses (about 30) confirmed the information given, particularly with regard to the institutions involved in open access, namely: universities and libraries, cooperation and international institutions, government and associations.

<sup>54</sup> <https://www.auf.org/nos-implantations/nos-campus-numeriques-francophones/>

set up SYFED (Système francophone d'édition et de diffusion [Francophone publishing and distribution system]) centres, at low cost thanks to ICTs (minitel then internet), which enabled access to large international databases, in partnership with the Institut de l'information scientifique et technique [Institute for Scientific and Technical Information] (INIST) of the CNRS. The first SYFED [was created in Dakar in 1991, then in Benin, Cameroon, Côte d'Ivoire, Gabon, Guinea, Mauritania, Niger, Senegal and Togo.

As the internet was almost exclusively in English at the beginning, "the Francophone world came up with an action plan to set up a Fonds francophone des inforoutes [Francophone Information Highway Fund] (FFI) to motivate the creation of French language content on the internet" (Loiret et Oillot, 2013). Since that time, an ambitious policy of support to Francophone public universities has been put in place, to counteract "the state of dilapidation" of many African countries "under IMF structural adjustment programs" and which "can no longer employ new higher level teachers" (Loiret et Oillot, 2013). From the "Université virtuelle francophone" ["Francophone Virtual University"] to the Francophone digital campuses, the AUF has invested in the organisation of major distance learning systems, teacher training and new practices related to digital tools. In 2012 - in less than 10 years - almost 130 distance learning diploma programmes have been proposed, 40 of which are from universities in the South (Burkina Faso, Cameroon, Madagascar, Morocco, Senegal, Tunisia etc. (Loiret et Oillot, 2013).

By supporting the *Massive Open Online Courses (MOOC)*<sup>55</sup>, which appeared in the 2000s, the AUF is offering further support in the provision of African training. "MOOCs allow what ODL cannot: tens of thousands of students can follow the training at the same time. This is the main educational innovation provided by this type of system"<sup>56</sup>. In fact, "the flow of students accessing higher education has continued to grow for the past several years (...). The establishments in charge of hosting this mass of learners do not have the capacity to host them under ideal conditions and, since that time, has been unable to offer them a quality education. In fact, in Africa, it is common to see students attending a course from outside the amphitheatre - some can only hold 1,500 although 3,000 are registered for the course. This mass increase in numbers has had various repercussions on the learning experience of the students: difficulty accessing material, problems with teacher communication, information that is difficult to access, etc." (Roland et Stavroulakis, 2016).

MOOCs are new modalities for distance learning, which have the potential to update educational practices and improve learning conditions, as a complement to traditional course offerings. A Francophone consortium ("REAMOOC") was recently established to create permanent MOOC courses, particularly in Senegal and Cameroon (Roland and Stavroulakis, 2016).

In its "Digital strategy for Francophone higher education", the AUF clearly promotes "open educational resources"<sup>57</sup>, and invites "establishments to publish open access online courses and open source educational software and to produce directories of learning objects". It also wishes to "facilitate global access to education, by supporting the use of licences that promote the free circulation of content (Creative Commons). The quest for accessible science can be fulfilled through the development of open archives and support of open access electronic journals" (AUF, 2014).

Major digital movements have appeared in recent years, shaking up knowledge access models. Although most African countries recognise the opportunities offered by this digital change, their difficult economic and social contexts do not allow them to implement ambitious projects that

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<sup>55</sup> MOOCs : Massive Open Online Courses

<sup>56</sup> <http://www.foad-mooc.auf.org/Qu-est-ce-qu-un-MOOC.html>

<sup>57</sup> the term "open educational resources (OER) " was adopted for the first time during a UNESCO forum in 2002. OERs refer to "teaching, learning or research material belonging to the public domain or published with an intellectual property licence that allows its use, adaptation and free distribution". Source : <http://www.unesco.org/new/fr/communication-and-information/access-to-knowledge/open-educational-resources/>

will lead to open access to scientific knowledge for all. It should also be added that among the open access stakeholders, universities and libraries are on the frontline, but they receive insufficient support from supervisory organisations and there is no clear national policy on the subject. The support of international cooperation bodies such as the AUF therefore continues to be important, with this organisation having been involved in African universities since the independence of the French colonies.

Access to open knowledge for all also involves a change in the power relations at play in the production and distribution of knowledge. A social movement around “open science” has seized upon these issues and is working towards the democratisation of science, through the use of digital tools, particularly open access. Promoting science as a “common good” is the objective of the SOHA project that is active throughout Francophone Africa and Haiti.

## 2.2 Case study: the SOHA<sup>58</sup> project

The SOHA project (Open Science for Haïtia and Africa) is a result of meetings within the Association science et bien commun [Science and Common Good Association]<sup>59</sup> and the Association francophone pour le savoir [Francophone Knowledge Association] (ACFAS)<sup>60</sup>, and more specifically the meeting of researchers, Diéyi Diouf (Senegal) and Florence Piron (Quebec).

Diéyi Diouf is a lecturer-researcher at the École de Bibliothécaires, Archivistes et Documentalistes [School of Librarians, Archivists and Documentalists] (EBAD) at UCAD where she was a library curator and documentalist. She has become a pioneer figure in the defence of the open access movement in the Francophone African academic world<sup>61</sup>. Florence Piron is a lecturer-researcher in the Department of Information and Communication at the Université Laval [Laval University] in Quebec.

At the initiative of researchers Diouf and Piron, the SOHA project was launched with funding from the International Development Research Centre (IDRC, Canada) for a two-year period, from January 2015 to December 2016. The project is part of OSCDnet (*Open and Collaborative Science in Development Network*<sup>62</sup>).

The project consists of action research, entitled “Open science as a collective tool for development of the power to act and of cognitive justice in Haiti and Francophone Africa: towards a roadmap”. The objective is twofold: to understand the obstacles to the emergence of an open science culture in Francophone Africa while creating a dynamic that is favourable to this emergence. Diéyi Diouf and Florence Piron were quickly joined by about 20 co-researchers from Francophone Africa and Haiti, specifically masters or doctoral students<sup>63</sup>.

The SOHA project states that “open science can become an essential tool for development in Francophone Africa and Haiti” as “it not only facilitates access to international science by researchers from these countries, but it allows them to increase the visibility of their work and improves links between universities and civil society for the benefit of the whole world.”<sup>64</sup>

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<sup>58</sup> For this case study, the sources are interviews conducted with Professors Diouf and Piron in January and February 2016, as well as the website of the project [www.projetsoha.org](http://www.projetsoha.org) and its concept note, which can be downloaded here:

[http://www.scienceetbiencommun.org/sites/default/files/projet\\_science\\_ouverte\\_en\\_afrique\\_et\\_haiti\\_-\\_version\\_finale\\_1.pdf](http://www.scienceetbiencommun.org/sites/default/files/projet_science_ouverte_en_afrique_et_haiti_-_version_finale_1.pdf)

<sup>59</sup> Founded in July 2011 in Quebec as a non-profit organisation, the Association’s mission is to stimulate vigilance and action towards open science for the common good. <http://www.scienceetbiencommun.org/#sthash.ilsMqrlX.dpuf>

<sup>60</sup> Created in 1923 in Quebec, the objective of ACFAS is to promote research and innovation as well as the scientific culture in Francophone areas. <http://www.acfas.ca>

<sup>61</sup> In 2009, Diéyi Diouf defended a thesis entitled “What methodology for electronic archiving and distribution of scientific and technical documentation?” (Diouf, 2009), which dealt with the challenges of open archives for African research. It recommended the creation of participatory open archives where each user could become a stakeholder, via self-archiving for example.

<sup>62</sup> <http://ocsdnet.org/?s=soha>

<sup>63</sup> The project was developed on the basis of 16 countries (Benin, Burkina Faso, Cameroon, Côte d’Ivoire, Gabon, Haiti, Madagascar, Mali, Niger, DRC, Senegal, Chad) and aims to expand.

<sup>64</sup> [http://www.projetsoha.org/?page\\_id=20](http://www.projetsoha.org/?page_id=20)

Open science is defined as an alternative to conventional science, close to the people and for the society, that favours the collaborative methods offered by web tools and is based on a critique of power relations, similar to the feminist critique of science. The definition given by the project itself is as follows:

“Oriented towards the ideal of open sharing of information, collaborative work, cognitive justice, and closer links between science and society, in brief, science as ‘common’, [open science] brings together varied and sometimes heterogeneous practices from open access to scientific publications (through journals or institutional repositories), to participative action research and scientific democracy, through the creation of alternative research sites (such as living laboratories, open access laboratories and science shops), open access and sharing of research and bibliographic data, collaborative scientific writing, use of web 2.0 and social networks to increase the prestige of research, importance for local knowledge, citizen and participatory science, critique of the conventional practices of peer evaluation and the priority given to open source software and open licences.”<sup>65</sup>

The SOHA project has developed around five focal points:

1. **Understanding of the obstacles to the adoption of open science** by final honours and postgraduate students. A questionnaire was circulated within the universities of 19 countries in Francophone Africa and Haiti. The analysis is in progress and the results will be distributed via open access on the project site. Special attention is drawn to the gender indicators: the percentage of female respondents to the survey is only 25%, a figure that reflects the persistent gender inequalities in the scientific domain in Haiti and Francophone Africa.
2. **Supporting the creation of local training tools for open science** by means of open educational resources. A distance training module (MOOC) is currently being developed on the use of open access tools for all stages of thesis compilation. It was decided to create such a tool further to the finding of a real lack in this domain, with students and researchers from the South having a poor digital culture. The module will be developed collaboratively by about 60 people associated with the project. Other training will be also be proposed, for example on free software for the creation of open archives.
3. **Testing the feasibility of institutional repositories and science shops** in universities. The project has had a favourable impact on the STI stakeholders in Francophone Africa, in particular with CAMES, with collaboration planned for the establishment of a pan-African repository, common to member states<sup>66</sup>. With regard to the science shops, these are not shops in the traditional sense, but entities that offer non-profit organisations and civil society access, generally free of charge, to scientific information produced in universities and research centres by students supervised by researchers<sup>67</sup>. The objective is to meet civil society’s demand for knowledge or expertise, instead of scientists or institutions deciding the programmes. The agenda of the SOHA project includes the creation of science shops in different countries (Haiti, Benin, Burkina Faso, Togo, Cameroon, DRC) as well as a pan-African science shop project.
4. **Creating and facilitating an interdisciplinary network for information and exchange** by bringing together young leaders of open science in Haiti and Francophone Africa. This network was created under the name “SOHA collective” and its popularity has boomed as, half-way through the project, there were already approximately 900

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<sup>65</sup> [http://www.projetsoha.org/?page\\_id=20](http://www.projetsoha.org/?page_id=20)

<sup>66</sup> <http://www.projetsoha.org/?p=160>

<sup>67</sup> Voir Piron 2009

members. The project's Facebook<sup>68</sup> group also shows strong involvement by the African and Haitian community with 1,700 members in a few months.

5. **Publishing a roadmap for the generalised adoption of open science** in the universities of these countries. A closing conference will take place in Dakar in December 2016, where the results of the project and the recommended strategy will be presented.

The SOHA project is therefore “sowing the seeds” so that another scientific culture that is more democratic, more accessible and more closely connected to local development can emerge with new generations of researchers and students in Haiti and Africa.

As such, this initiative is concretising the wishes of Bonaventure Mvé-Ondo (2005), who called for a break with the traditional methods of thought: “The future of Africa is not simply based on the fight against illiteracy or the reduction of poverty, but firstly on a reduction of the scientific divide. And that calls for a number of breaks: a break with traditional methods of behaviour and thought, a break with the rejection of science as the “white man’s toy”, a break with consumerist imitation and, finally, a break with the commoditisation of knowledge.”

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<sup>68</sup> <https://www.facebook.com/groups/1398875467085123/>

### 3. Conclusion

The open access experiences that we have identified in this study point towards greater visibility for African research and contribute towards its integration as well as improved knowledge sharing.

Within the open knowledge movement in the countries of the South, libraries and universities seem to be the driving force, as open access gives them an “opportunity to counteract budgetary constraints and meet the needs of researchers”, as noted by Diéyi Diouf (2009). However, this researcher finds that digital challenges also raise issues of equipment, connectivity and specific technical and documentary knowledge, which “amounts to a real change in the librarian’s role”, with special effort required within the economic and social context of developing countries.

As recalled by Guédon (2007), “the struggles around open access can be predicted with confidence and will continue to multiply for many years to come (...). In fact, it is nothing less than living through the transition from the printed to the digital”. For Africa, it is also a case of “moving from westernisation of science to a truly shared science (...). At the same time, it involves critically re-engaging with ‘traditional’ knowledge and skills, and appropriating modern science” (Mvé-Ondo, 2005).

However, “local mentalities remain strongly marked by the colonial past of the different regions,” (Roland et Stavroulakis, 2016). Irrespective of the origin of knowledge, diplomas, journals, etc., whatever comes from “the North” is deemed more credible, to the detriment of local practices. This domination aspect reduces “the ability to act of the people who live in countries of the South and makes them underestimate their knowledge and skills, particularly in the scientific domain, which creates a major obstacle to development” (Diouf and Piron, 2015). This is even more true for women, who suffer discrimination owing to gender inequalities in access to education, ICTs, research, knowledge, etc. (Réseau Genre et TIC [Gender and ICT Network] 2005).

To conclude, the recommendations of Algerian researcher, Yahia Bakelli, in 2005 still seem relevant: the priority is “to promote the emergence of as many frameworks for debate as possible (in the form of workshops, conferences, discussion forums, special journal editions, etc.) in order to expand the debate and involve the stakeholders themselves (...), which should allow for the development of a solid discussion” (Bakelli, 2005). As we have seen, this is the exact objective of the SOHA project, the only one of its kind in Francophone Africa.

There are various currents of thought in this ongoing digital and scientific change. Are we heading towards an “economy of knowledge” or a “society of knowledge”? (Guédon, 2008). Will knowledge be considered as a commodity or a common good? This is the essence of the debates between “open access” and “open knowledge” that are in the process of redefining our relationship with information and science, throughout the world as well as in Africa.

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