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Policies, Practices, and Tools to Promote Open Science. Latin America and the Caribbean and the European Union in Trans-regional Perspective

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Abstract

This document is largely based on the presentations and discussions during virtual dialogues on Open Science organised by the EU-LAC Foundation and OBREAL Global together with partners from different regions held on 6 and 7 April 2022. The main objective of the dialogues was to highlight policies, practices, and tools to promote Open Science, as well as emerging Open Science cooperation initiatives between institutions and networks in the European Union and Latin America and the Caribbean, and other regions of the world. The seminar showed that Open Science means much more than open access to scientific publications and research data. Taking Open Science seriously means fundamentally rethinking conventional, sometimes outdated, processes of evaluation and indexing. It also means understanding that sharing scientific advances with all people is a fundamental human right and that the process of scientific research cannot be detached from the societies and peoples that fund it. The dialogues have shown that Latin America is far ahead of Europe when it comes to Open Access. This is probably because research funding in Latin America is almost exclusively in the hands of the state; in addition, the lack of access is also an indicator of social inequality. In Europe, Open Access and Open Science have a strong advocate in the EU. Still, despite all the Commission's recommendations, it always comes down to what is implemented at the national level. In the last two decades, several Latin American organisations have developed numerous ideas on Open Science that could also be useful for the European debate. Bi-regional and inter-regional dialogue is therefore essential.

EU-LAC Foundation, Germany; OBREAL Global, Spain

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Acronyms

LAC	Latin America and the Caribbean
EC	European Commission
CELAC	Community of Latin American and Caribbean States
CLACSO	Latin American Council of Social Sciences
CONICET	National Council for Scientific and Technical Research
ENLACES	Latin American and Caribbean Space for Higher Education
ERA	European Research Area
FOLEC	Latin American Forum for Scientific Evaluation
IISER	Indian Institute of Science Education and Research
JIRI	Joint Initiative for Research and Innovation
LERU	League of European Research Universities
NDLI	National Digital Library of India
ORE	Open Research Europe
GDP	Gross Domestic Product
Redalyc	Network of Scientific Journals of Latin America and the Caribbean, Spain and Portugal
TDX	Tesis Doctorals en Xarxa
UNESCO	United Nations Educational, Scientific and Cultural Organization
EU	European Union
UOC	Universitat Oberta de Catalunya

Introduction

This document is largely based on the presentations and discussions during virtual dialogues on "Open Science: Innovations, Challenges and Projections for the Future based on an Inter-regional Dialogue", held by the EU-LAC Foundation¹ and OBREAL Global² together with partners from different regions on 6-7 April 2022. The main objective of the dialogues was to highlight policies, practices, and tools to promote Open Science, as well as emerging Open Science cooperation initiatives between institutions and networks in the European Union (EU) and Latin America and the Caribbean (LAC), and other regions of the world.

The specific objectives of the initiative were a) to provide spaces for dialogue, synergies, and capacity building between institutions, professionals, and experts in Open Science from LAC, the EU, and other regions; b) to gather proposals from institutions, experts on tools, technical solutions and policies relevant to the different regional and national contexts that help to implement UNESCO's recommendation on the exercise and promotion of Open Science; c) elaborate relevant inputs for the Third UNESCO World Conference on Higher Education (WHEC 2022) based on the results of the reflections generated and d) enhance bi-regional EU-CELAC dialogue and cooperation in the practice of Open Science.

At the beginning of the dialogues, the Executive Director of the EU-LAC Foundation, Adrián Bonilla, pointed out that it was a question of understanding the issue of Open Science not exclusively as an indicator of prosperity or progress, but of human development. Consequently, the idea of open access to knowledge, to the sources of knowledge, and to the tools of knowledge, should be seen as an issue that involves both logics of inclusion, of democratisation of societies, as well as logics of exclusion. Access to information, knowledge, and science is part of the United Nations' Sustainable Development Goals (SDGs), which are a cornerstone of relations between Europe and Latin America and the Caribbean and are also part of the common policy of the two regions, characterised in particular in recent years by the importance that the issue of social cohesion has taken on the bi-regional agenda. It is therefore a human development objective and at the same time an instrument of social cohesion that refers to basic concepts of equality of opportunities and equity in the distribution of resources, which also has to do with the production of knowledge.

Adrián Bonilla pointed out that the differences or asymmetries that characterise the societies of both regions, and particularly Latin American societies in terms of access, have different types

¹ The EU-LAC Foundation is an international intergovernmental body established in 2010 by Latin American and Caribbean (LAC) and European Union (EU) states, as well as the EU through its institutions. Its mandate is to work closely with its 61 members to promote bi-regional partnership and dialogue, including through the participation of civil society, in order to generate relevant inputs for intergovernmental processes. An essential part of this mission is to build bridges to increase mutual knowledge and promote dialogue and collaboration on issues that are high on the agenda of the strategic partnership between the two regions, such as higher education, science, technology and innovation, sustainable social and economic development, climate change, culture, multilateralism and gender relations.

² OBREAL Global was born in 2004 as an association to implement cooperation projects in the field of higher education and research between the European Union and Latin America; it was created by 23 academic institutions and research centres from Europe and Latin America, and their own networks. As of 2017, it became a global association, redefining its thematic areas and expanding its geographical scope and membership from Europe and Latin America and the Caribbean to Asia, the Middle East and Africa. OBREAL Global's mission is to promote dialogue and synergies between the governmental, academic and social sectors, and to build inter-regional South-South-North bridges in the fields of higher education and research.

of explanations: a) reasons of a structural nature related to the availability of resources, to the economy and to the way in which that economy is shaped in international economic relations; b) reasons of a systemic order that have to do with the way in which social, political and legal orders are constructed at the domestic level, but also at the global level, which in one way or another characterise the distribution of resources, including access to knowledge; c) reasons that have to do with an agency or of a cultural order, which is related to the interests of specific actors in the order of the production of knowledge. These aspects are expressed in dynamics that enunciate the logic of intellectual property and its standardisation, the determination of what is considered scientific or non-scientific, and the type of knowledge that societies eventually see as legitimate.

The UNESCO Recommendation on Open Science, adopted on 23 November 2021, defines Open Science

as an inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community. It comprises all scientific disciplines and aspects of scholarly practices, including basic and applied sciences, natural and social sciences and the humanities, and it builds on the following key pillars: open scientific knowledge, open science infrastructures, science communication, open engagement of societal actors and open dialogue with other knowledge systems. (UNESCO 2021, 7).

Many of the issues mentioned in the UNESCO Recommendation were addressed in the virtual dialogue, focusing on the topics of open access to scholarly publications and research data, and research evaluation. This paper aims to summarise the most important contributions to the debate. It is structured as follows: First, the most important achievements in open access to scholarly publications and research data in Latin America, the Caribbean, and Europe are presented. It also considers bi-regional EU-LAC cooperation, as well as trans-regional experiences in India and Kenya. In the following, the central challenges are discussed. Analogous to this approach, the issue of research evaluation is presented and discussed later in the text.

1. Open access to scientific publications and research data. Progress and achievements

1.1 Latin America and the Caribbean

While the COVID-19 pandemic has reinforced the need for open access to scientific knowledge in Latin America, the region was already one of the pioneers of the open access movement long before the pandemic began. Since the late 1990s, numerous projects have emerged in individual countries, as well as at the regional level, concerning both the creation of legal bases for open access and the establishment of platforms and other tools. Some of the most important of these regional projects are:

- **SciELO:** The SciELO Network provides open access to the contents of scientific journals, organised into national and thematic collections. Each collection is managed by a nationally recognised scientific organisation. The selection of journals to be indexed or discontinued in each collection is entirely the responsibility of the management of each collection, usually with the support of a scientific advisory committee.³

³ See: <https://scielo.org/en>

- **Redalyc:** The Red de Revistas Científicas de América Latina y el Caribe, España y Portugal (Redalyc), founded in 2003, was born with the aim of giving visibility, consolidating and improving the editorial quality of Social Sciences and Humanities journals in the Latin American region. In 2006 it was opened to all areas of knowledge and included journals from the Iberian Peninsula. In 2019 it reached 1,310 journals.⁴
- **Latindex:** The Regional Online Information System for Scientific Journals in Latin America, the Caribbean, Spain and Portugal (Latindex) is the product of the cooperation of a network of institutions that work in a coordinated manner to gather and disseminate information on scientific serials produced in Ibero-America. It became a regional cooperation network in 1997. Latindex has two information products: DIRECTORIO offers bibliographic and contacts data for all registered journals. CATALOGUE 2.0 is composed of journals that meet the highest quality standards according to Latindex methodology.⁵
- **LA Referencia:** The Federated Network of Institutional Repositories of Scientific Publications (LA Referencia), created in 2012 and based on technical and organisational agreements between public science and technology agencies of member countries, is a Latin American network of Open Access repositories. Through its services, it supports national Open Access strategies by means of a platform with interoperability standards, sharing and giving visibility to the scientific production generated in higher education and scientific research institutions. From the national nodes, scientific articles, doctoral and master's theses from more than a hundred universities and research institutions from the countries that make up LA Referencia (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Spain, Mexico, Panama, Peru, and Uruguay) are integrated.⁶
- **CLACSO Virtual Library:** The CLACSO (Latin American Council of Social Sciences) Virtual Library Network is a digital repository that offers free access to more than 100,000 texts from the CLACSO network. The CLACSO-REDALYC portal offers open access and indicators for 850 journals in the social sciences and humanities in Ibero-America (350,721 articles).⁷
- **AmeliCA:** Established in 2019, it is a communication infrastructure for scholarly publishing and Open Science. It is a cooperatively sustained initiative centred on the not-for-profit publishing model to preserve the scholarly and open nature of scholarly communication.⁸

The aforementioned platforms, repositories and networks have grown exponentially, reflecting, on the one hand, the clear need of Latin American researchers and institutions to share information and access knowledge that is often transmitted in commercial spaces (publishing houses, data banks, media) and thus avoid the availability of financial resources becoming a necessary condition to produce knowledge and publish academically. On the other hand, it reflects the political will of some states in the region to promote a mode of knowledge production and management-oriented toward the dissemination and public impact of science.

⁴ See: <https://www.redalyc.org/>

⁵ See: <https://latindex.org/latindex/>

⁶ See: <https://www.lareferencia.info/es/>

⁷ See: <http://biblioteca.clacso.edu.ar/>

⁸ See: <http://amelica.org>

One important characteristic of Latin America, as well as other world regions, is that states are the main funders of science, technology, and research. As a result, they dominate much of the scientific value chain, from paying salaries, infrastructure, and resources, managing the evaluation and generation of indicators and the promotion and development of Open Access and Open Science policies. In many countries in the region, there are national programmes that centralise and manage subscriptions to large publishers. The obligation to disseminate research results, including primary publication data, in open access through digital repositories is law in Argentina, Peru, and Mexico. In several countries, there are commissions, manifestos, and other open science and citizen science initiatives.⁹ During the 2018 Open Science Forum Latin America and the Caribbean (CILAC Forum), the Panama Declaration on Open Science was drafted, highlighting the importance of open science in building more just and sustainable societies and offering recommendations for the implementation of tools and policies that promote Open Science.¹⁰ It is worth mentioning that several Latin American countries, and especially Argentina, actively participated in the process of formulating the UNESCO Recommendation on Open Science 2021.

1.2 Europe

Compared to Latin America, open access to scientific publications is less developed in Europe so far. However, the Open Access movement has become increasingly popular in recent years. University, regional and national repositories of scientific publications have been established in many European countries. One example of this, which was presented during the virtual dialogue, is TDX (Tesis Doctorals en Xarxa), a cooperative repository that contains, in digital format, doctoral theses read in the universities of Catalonia and other autonomous communities.¹¹ The electronic thesis portal DART-Europe has been in existence since 2005. This platform provides access to almost 1.2 million electronic theses from 572 universities in 29 European countries.¹²

The EU has defined and currently implements its own Open Science policy. In 2018, the European Commission (EC) participated in the publication of a recommendation to member states on scientific access and preservation, recommending member states adopt such policies (European Commission 2018). The EC Directorate-General for Research and Innovation has included Open Science as part of its "2020-2024 Strategy" through eight action lines that are key to fulfilling its Open Science policy. These action lines relate, for example, to open data/FAIR (findability, accessibility, interoperability and re-usability of data), the European Open Science Cloud (a platform for storing, sharing, processing and re-using digital research objects), next-generation metrics and citizen science.

The EC has different roles in pushing for Open Science, for example through legislative initiatives, recommendations to member states, and also through the research and a research funding framework programme. In the current programme, Horizon Europe, which covers the period 2021-2027, with approximately 95 billion Euros in funding, it strives for an ambitious Open Science policy, with one of the main pillars being immediate open access to scientific publications via open licences and with retention of intellectual property by authors. Entities or researchers who receive European funding are held to manage their data in line with the FAIR (findable, accessible, interoperable and re-usable) principles.

⁹ Recent overviews of the development in Open Science in Latin America can be found in Babini/Rovelli (2020), Becerril-García/Córdoba González (2021) and Borges/Sanz Casado (2021).

¹⁰ See: <http://forocilac.org/declaracion-de-panama-sobre-ciencia-abierta/>

¹¹ See: <https://www.tdx.cat/>

¹² See: <https://www.dart-europe.org>

Europe's main university associations have taken a position on Open Science. Analyses were produced based on the fundamental pillars of Open Science, as well as recommendations and roadmaps for universities to facilitate the transition to Open Science.¹³ Based on the assumption that immediate free access to research results is of great importance for the progress of science and for society, and that the faster and more widely research results are received and discussed, the faster other scientists can build on them, some EU Member States and Research Councils have adopted ambitious policies in this area, facilitating the unhindered dissemination of the results, methods and products of scientific research.¹⁴

1.3 Bi-regional cooperation

Both the EU and CELAC (Community of Latin American and Caribbean States) attach central importance to the scientific dimension within the respective regional integration processes and share a strong aspiration to cooperate in science at the international level. In terms of scientific cooperation between the two regions, Europe and LAC can refer to a long tradition of exchanges between individual researchers, universities and non-university research institutions. Since the mid-1980s, the degree of institutionalisation of bi-regional cooperation in the fields of science, research and innovation has steadily increased. Today it takes the form of a variety of cooperation at bi-regional, sub-regional and national levels. With the aim of developing and implementing the EU-LAC Knowledge Area, and in order to consolidate the respective bi-regional dialogue as well as the common cooperation approach, the Joint Initiative on Research and Innovation (JIRI) was launched in 2010. The EU-LAC Knowledge Area was redefined in 2016 as the Common Research Area, emphasising the thematic pillars researcher mobility, research infrastructures and societal challenges (Birle et al. 2020, 32ff.).

At the level of bi-regional CELAC-EU cooperation, Open Science has been assigned an important role. During the Eighth Meeting of Senior Officials on the Joint Initiative for Research and Innovation (JIRI-SOM) in 2020, the "Strategic Roadmap 2021-2023 for the implementation of the Brussels Declaration and the CELAC-EU Action Plan on Science, Technology and Innovation" was adopted; section 12 focuses on Open Science (CELAC/European Commission 2020 and 2021).

1.4 Cross-regional perspectives: India and Kenya

As Krishna Ganesh, Director of the Indian Institute of Science Education and Research (IISER), made clear during one of the virtual dialogues, as a matter of policy, India strongly supports Open Science. The country's current Science, Technology and Innovation policy aims to make academic knowledge openly accessible to all. There are three main Open Access resources in India: Shodhganga, created in 2011, provides a platform for depositing doctoral theses and making them available to the entire academic community in open access.¹⁵ The National Digital Library of India (NDLI) is a virtual repository of learning resources that provides a range of

¹³ See, among others: <https://eua.eu/issues/21:open-science.html> and <https://www.leru.org/publications/open-science-and-its-role-in-universities-a-roadmap-for-cultural-change>

¹⁴ See, for example: <https://www.openscience.nl/en/national-platform-open-science/national-plan-open-science>, https://www.bmbf.de/bmbf/de/forschung/digitale-wirtschaft-und-gesellschaft/open-access/open-access_node, https://www.wissenschaftsrat.de/download/2022/9477-22.pdf?_blob=publicationFile&v=12 and <https://www.ouvrirelascience.fr/second-national-plan-for-open-science/>

¹⁵ See: <https://shodhganga.inflibnet.ac.in/>

services for the learner community.¹⁶ The third repository is called Science Central. This is a nationwide institutional repository hosting service.¹⁷ A major Open Access initiative of the Indian government is the "One nation one subscription" scheme. The formula states that the Indian government negotiates with journal publishers for a single subscription scheme where, in return for a centrally negotiated payment, all individuals in India will have access to journal articles.

Joy Owango, Executive Director, Communication Training Centre, University of Nairobi, Kenya, reported on the AfricArXiv repository, a community-led digital archive for African research, which is working to build an African-owned open scholarly repository. It is a knowledge pool of African scholarly works to catalyse an "African Renaissance". AfricArXiv partners with established academic repository services to provide a platform for African scientists from any discipline to present their research results and connect with other researchers on the African continent and around the world.¹⁸ An overview of existing digital repositories in Africa can be found on the website of the International African Institute.¹⁹

2. Challenges and concerns

2.1 Latin America and the Caribbean

Despite the many achievements over the past two decades, participants in the virtual dialogue also highlighted that many challenges remain in relation to the topic of Open Science. Karina Pombo, National Director of Science Policy Promotion at the Ministry of Science, Technology and Innovation of Argentina, pointed out that in its international discussion process, before and after its adoption by UNESCO, the Recommendation on Open Science echoed the historical inequalities affecting universal access to the benefits of science. According to Pombo, the effects of the pandemic, economic inequalities, geopolitical diatribes, and the thirst for profit have conditioned each society's possibilities for resilience. For this reason, one of the main concerns raised in Open Science discussions is the gap between technologically advanced countries and poorer countries with precarious digital infrastructure. In this context, the unilateral growth of Open Science platforms in dominant countries would not only increase inequalities in access to science, but would also enable different forms of extraction and commercialisation of data from the periphery.

According to Pombo, one of the most palpable tensions of the transition to Open Access recently assimilated in Europe is the communications that are rapidly changing a business model that charges authors. These trends promoted by large European publishers will deepen inequalities with researchers working in institutions that cannot afford such payments. Alongside these risks of asymmetries, another central concern for Open Science relates to biblio-diversity and multilingualism. An Open Science driven by the mainstream circuit and striving for commodification may reduce the interculturality of science and cement the use of English as a code of interoperability.

It is therefore essential to stimulate the diversity of formats and media, including books, typically more developed by the social and human sciences, while supporting models of non-profit, community-managed publishing. In the same vein, it is urgent to preserve multilingualism, both in the practice of science and in scholarly communications. Latin America has collaborative

¹⁶ See: <https://ndl.iitkgp.ac.in/>

¹⁷ See: <http://sciencecentral.in/>

¹⁸ See: <https://info.africarxiv.org/>

¹⁹ See: <https://www.internationalafricaninstitute.org/repositories>

public domain infrastructures and thousands of diamond-access scientific journals, i.e. those that do not charge for reading or publishing. A pending task thus consists of finding ways of integrating information systems to enhance their visibility, while preserving the specificity and needs of each academic community and institution.

In this context, Dominique Babini, Open Science Advisor to the Latin American Council of Social Sciences (CLACSO), pointed out that the contents of Open Access journals and repositories in Latin America and the Caribbean are practically invisible in the evaluation processes, while what is published in English and in the so-called mainstream is being overvalued. Therefore, a major challenge for the region is to adapt the evaluation processes to the requirements of Open Science. Another challenge is to make openly available Latin American research results more visible at the global level and to improve their perception by the international research community.

Babini stressed that Open Science principles also play an important role in the context of debates on the Sustainable Development Goals. According to her, there is not even one of these goals that does not have to do with local knowledge generated in context: Access to water, securing the food chain to achieve food security, - any issue related to the SDGs requires both local knowledge and international knowledge. Local knowledge should not be rendered invisible as a consequence of prioritising what is published in English and in the mainstream. While what is published in English in the mainstream is indispensable, it is also indispensable to be aware of local knowledge disseminated and generated in open access and open science platforms at the local level.

The lack of resources, or at least the scarcity of resources, is another challenge to fully implement Open Science in Latin America. According to Óscar Domínguez, President of the Latin American and Caribbean Space for Higher Education (ENLACES), in many Latin American countries less than 1% of GDP is allocated to science and research, despite UNESCO's recommendation that at least 1% of GDP should be allocated to Open Science alone. Despite good intentions and policy approaches, there is often not enough money to implement them.

Domínguez also pointed out that in the region different ideas exist on how to deal with large international publishers. While the more radical currents want to break completely with these publishers in order to break the chains of dependency, others see that cutting-edge research is threatened by this approach. Therefore, a compromise must be found that allows for a realistic transition from commercial stakes in access to information to Open Science.

Lautaro Matas, Executive Secretary of LA Referencia, pointed out that there is still a long way to go in Latin America, especially regarding the availability of research data. The region does not dispose of an institution like the European Commission able to fund projects like OpenAIRE²⁰ or the Open Science Cloud²¹ in Europe. But this is precisely what needs to be built, with dialogue from governments, agreements, and jointly funding regional public goods to sustain the necessary infrastructure, training, and cultural changes in the research community, so that they not only share data but learn how to use research data.

Other challenges raised by participants in the virtual dialogue include a) the need for training and capacity building in science and technology agencies and universities; b) raising awareness of the importance of open access and open science; c) increasing knowledge of national laws

²⁰ See: <https://www.openaire.eu/>

²¹ See: https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/open-science/european-open-science-cloud-eosc_en

and institutional mandates; d) improving national and regional institutional infrastructures for repositories, data release schemes, data management, collaborative working platforms and persistent identifiers; and e) working with thematic repositories.

2.2 Europe

Ms Alea López de San Román, Policy Officer at the Open Science Unit of the European Commission's Directorate-General for Research and Innovation, stressed that the EU supports Open Science, among other things because it is expected to help overcome some of the problems and shortcomings of the current scientific system. These include hyper-authorship (many authors behind a scientific publication), pressure to publish, pressure on researchers for funding, sometimes low-quality, non-reproducible science whose methods are not scrutinised, the existence of a concentrated market for scientific publications with a vertical interplay of services that often falls into commercial hands, combined with the low bargaining power of researchers.

Despite some progress in the development and provision of Open Science tools, a key challenge is to further promote Open Science practices and culture. To be effective, Open Science requires the coordinated action of both funders and the identities that carry out knowledge management and production, of researchers, and of all the different actors in the research system, not only in local, national, European, but also international level. All participants in the virtual dialogues agreed on the point that Open Science would not be able to unfold its potential without a fundamental reform of the scientific evaluation systems.

Paul Ayris, Co-President of the INFO Community of the League of European Research Universities (LERU), pointed out that while many scientists are in favour of the principle of Open Science, they consider the implementation of the respective policies in Europe so far to be too bureaucratic. Scientists wanted to have more control over their own work than was offered in the course of Open Science. For Open Science to become the norm in the future, scientists should be rewarded and incentivised for complying with Open Science principles.

Ignasi Labastida, Chair of LERU's Information Policy and Open Access Group, drew attention to the fact that not all data can be open without any restrictions. What is needed is a sound management of data so that they can be re-used even under more restricted rules of access. For this to happen, universities and public policies must support researchers in making this change.

Ramón Torrent, President of OBREAL Global, pointed out a blind spot in the debates on Open Science: patents. He recalled the global disputes over patents on COVID 19 vaccines. Limiting the scope of Open Science towards academic publications is understandable, but this avoids an important, less visible challenge. Alea López de San Román agreed with this point. According to her, it is very important in all discussions on Open Science to consider intellectual property, the role it plays in enabling or hindering Open Science and in empowering researchers and research institutions. Intellectual property and Open Science do not stand in opposition to one another, but it is very important to have proper management of intellectual property rights (including patents) and an appropriate legislative framework for research.²²

²² On this issue, see also CEDEPI (2018); European Commission (2022).

2.3 India and Kenya

Krishna Ganesh pointed out that while advances in information technology have led to exponential growth in the scientific literature, the costs of electronic journals have risen rapidly. Only a few institutions in the world have access to all the journals they want. Many institutions are deprived of unrestricted access to scientific knowledge because they cannot afford it. According to Ganesh, a sustainable open access policy should provide researchers not only with access to high-quality peer-reviewed research publications but also with the opportunity to contribute to these publications. India's central government spends only one percent of the country's GDP on research, but it has about 900 universities and other institutions of higher learning. This is not enough. Open access is an essential need.

Depositing journal articles, along with research data, in public repositories creates problems. So far, many researchers and research managers in institutes and universities are not well informed about the legal issues. They know neither about copyright nor about the duty to share their research results immediately. Moreover, up to now, monitoring committees in universities and institutes rate publications according to the journal's impact factor. It is well known that many open access journals do not have a high impact factor. This results in many scientists not publishing articles in open access journals. Of the 2.2 million Indian publications indexed in Scopus, only 0.3 million publications are published in Open Access journals. India's contribution to Open Access journals is, therefore, very modest.

Despite efforts by government agencies and institutions to compel researchers to adopt Open Access publishing, its uptake remains quite low among Indian researchers. One reason is that high author fees, which are disproportionately high for a country like India with high exchange rates, make it difficult for scientists to publish in quality open access journals. Funding agencies in India still do not provide financial assistance to authors for payment of article processing charges, despite the mandate that research be deposited in open access repositories. In summary, it can be said that the concepts of Open Science must be carried through from project funding and knowledge production to dissemination, affordability and associability to open education.

Ganesh pointed out another issue that he sees as a major challenge: quality control of knowledge production and data quality. He fears that if there is insufficient quality control in the context of Open Science strategies, a lot of low-quality information could circulate freely. This is not only useless but also leads to the generation of other low-quality results. In a country like India, and in Latin America, Africa, and South Asian countries, where researchers cannot afford subscription models, according to Ganesh, Open Science, Open Access is most desirable, but both funding for researchers and issues of quality and data availability are major challenges.

For Kenya and Africa as a whole, Joy Owango stressed above all the need for greater research sovereignty. Unfortunately, government involvement in Open Science is not as active as one would like. Fundamentally, Open Science is of great importance to Africa and the Global South as a whole and brings great benefits.

3. The evaluation of research and Open Science practices

3.1 Latin America and the Caribbean

Marina Larrea, National Directorate of International Cooperation, Ministry of Education, Argentina, highlighted the need of a Latin American voice in the context of this issue, which is a

task for both governments and universities in Latin America. Larrea also spoke of the etymological challenge of not thinking of Open Science only in terms of open access, but of decolonising one's own minds and talking about Open Production. According to her, we must move towards a different spirit towards science, with much more openness and generosity from the beginning, not restricting those who approach the scientific-technological system to the standards, which then lead to each person taking care only of their own production, their own fifth, their own database, and not allowing for its multiplication.

Bianca Amaro, President of LA Referencia, pointed out that there is a working group that is discussing new forms of evaluation that take into account the actions carried out by Open Science. A summary of all the respective national policies is being drawn up, and on this basis, a proposal will be made that can then be used by all the countries that are part of the Reference. Amaro affirmed that what is being undertaken in Europe is very important because in Latin America and the Caribbean the European evaluation model is more or less used, although the region does not have the same conditions for investment in science and technology as Europe. There is an urgent need to create an evaluation model that takes into account Latin American realities. A look at other regions of the global South, for example, Africa, is also useful in this context.

Laura Rovelli, Coordinator of the Latin American Forum for Scientific Evaluation of the Latin American Council of Social Sciences (FOLEC/CLACSO), reported on the diagnostic documents, proposals and evaluative policy tools developed by FOLEC to promote and support reform processes and new academic evaluation practices in the region. The guiding principle is oriented by the concept that the main goal of academic evaluation is the development of a quality science with social relevance, open, collaborative and participatory and inclusive of the plurality of current approaches; through a situated evaluation, qualitative and quantitative, I understand scientific knowledge as a collective construction.

With respect to the evaluation of researchers' merits, FOLEC promotes that the information systems of public Science and Technology organisations, as well as research funding agencies, reflect the diversity of the trajectory of people who carry out teaching, research, extension, liaison and social intervention, as well as the complete scientific production of each researcher, university and/or research centre and country, respecting the diversity of institutional and disciplinary cultures and their diverse communication formats. In addition, it is recommended that some international trends and institutional practices related to more holistic evaluative practices that include qualitative methodologies, such as the curriculum or narrative self-evaluation or descriptive portfolios, be taken up.

FOLEC considers it very important to ensure the inclusion of under-represented groups in scientific ecosystems (for example, the representation of women in evaluation bodies and processes, in minimum parity and in research priorities and themes) and of early career researchers, among others. It also points out the need to revalue the evaluation of the collaboration and/or participation of researchers in the processes of production and circulation of knowledge. To this end, evaluation processes must be transparent and participatory, not only for the scientific community but also for citizens, including social and community representatives in their development if appropriate and pertinent.

Rovelli also referred to FOLEC's proposals in relation to indexing and knowledge production. FOLEC promotes a review of evaluation policies based on incentives for publication with impact factor because they affect the local autonomy of agendas while discouraging Open Access practices and research processes in interaction with society. This implies the adoption of

scientific production models that favour Open Access publication and the construction of open evaluation indicators, taking advantage of and strengthening the capacities installed in Latin America and the Caribbean. It also considers it important to redefine the notion of “impact” of scientific research, orienting it towards the social relevance of knowledge, with specific definitions for the social sciences, humanities and arts, which produce crucial contributions for any democratic society that values diverse cultures, multiple knowledge and interdisciplinary dialogues, seeking to recognize the knowledge of indigenous and Afro-descendant peoples in the region. Furthermore, it is vitally important to promote biblio-diversity and defend multilingualism. Writing in English does not confer merit per se over publications in other languages. Multilingualism favours the development of socially relevant research and contributes to sustaining cultural diversity.

Daniel Antenucci, CONICET / University of Mar del Plata, Argentina, stressed that open access and Open Science are two completely different concepts. Since 2013, Argentina has had a law that obliges all scientific institutions to maintain repositories. However, evaluation practices have changed little. They still rely on the impact index, the h-index, and not on the new metrics developed in the context of Open Science. This shows that there is a political will to democratise the system, to evaluate in terms of Open Science, but the inertia of the system means that not much has changed yet.

3.2 Europe

Jean-Emmanuel Faure, Open Science Unit, Directorate-General for Research and Innovation, European Commission, explained the main EU policies related to research evaluation and Open Science practices. This includes firstly the EC Recommendation on access to and preservation of scientific information, first developed in 2012 and revised in 2018 (European Commission 2018). In 2018, the recommendation also focused on rewarding the practice of Open Science, rewarding the culture of collaboration and rewarding the culture of knowledge and data sharing, crucial requirements to enable the mainstreaming of Open Science.

Subsequently, the Commission's Communication on a new European Research Area (ERA) for Research and Innovation of September 2020 included improving research evaluation systems as a priority, moving away from reliance on the number of publications and where they are published.²³ The communication also identifies other priorities related to Open Science: firstly the development of a European Open Science Cloud as a fair data network; an Open Access publication platform for the beneficiaries of Horizon 2020 and Horizon Europe, i.e. the beneficiaries of the EU Research and Innovation Framework Programme. Such a platform, called ORE (Open Research Europe), was launched in 2021.

More recently, the European Council's conclusions on research careers have invited the Commission to work with stakeholders to reform research evaluation. In November 2021, the Council adopted the Pact for Research and Innovation in Europe. The conclusions include an ERA Agenda 2022-2024 with priority actions related to research evaluation and Open Science. One action aims to reform the evaluation systems of research, researchers and research institutions to improve their quality, enhance their performance and improve their impact. Another action aims to enable open knowledge sharing.

Tools to strengthen Open Science practices include funding conditions under the Horizon Europe programme. The quality of Open Science practices is part of the criterion of excellence for

²³ See: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1749

evaluating research proposals. Publications and other outputs are evaluated on the basis of qualitative assessment, not journal impact factor. Open Science practices were integrated throughout the programme.

In 2021, the EC conducted a broad stakeholder consultation on how to move forward in improving research assessments. Several points of convergence could be identified. First, as a primary objective, research evaluation should contribute to a healthy research process. It should increase the quality, performance and impact of research, in particular the societal impact, while fostering trust in science. The consultation also stressed that evaluation should promote qualitative judgement with peer review, supported by the responsible use of quantitative indicators. It should take into account the diversity of research outputs, including not only publications, but also data, software, protocols, etc. It should also value the diversity of research tasks. It should also value the diversity of researchers' tasks, such as training, mentoring, leadership. It should reward teamwork, collaboration, and support different researcher profiles and career paths. It should also take into account the quality of research practices, including rewarding open collaboration and the sharing of knowledge and data at an early stage.

To stimulate and accelerate reforms, the EC is now facilitating the creation of a coalition of research organisations willing to reform the research evaluation system. Jean-Emmanuel Faure explicitly underlined that the changes needed are both systemic and cultural. It is therefore very important that all stakeholders work together and share ownership of the initiative. Coalition members are expected to agree on principles, but also on commitments to action, so the outcome should not be just another declaration, but a contribution to the implementation of the necessary changes. Mutual learning among members will be a very important component of the initiative. It will help to design, pilot and implement assessment criteria and processes according to the agreed principles. The initiative will remain open to new signatories and, very importantly, to entities outside Europe, because any reform changes in Europe must be made in coherence with the rest of the world.

Rainer Lange, Head of the Research Policy Department of the German Council for Science and Humanities (Wissenschaftsrat), spoke about the consequences of new forms of evaluation for evaluators. As important as the change pushed for example by the EC is, it also means that the data for evaluation processes are becoming more complex and heterogeneous, more difficult to evaluate. Increasingly, evaluators are observed to make more or less autonomous use of quantitative indicators. To counteract this and to prevent evaluators from falling back on outdated evaluation criteria in the face of time constraints, common evaluation standards need to be developed to address the related problems, so that not everyone does what he or she wants. Moreover, as data collection and sharing and data analysis by algorithmic means become increasingly common and central to science and its impact on society, 'digital and data literacy' needs to be built within and outside science.

A similar assessment was articulated by Pastora Martínez Samper, Vice President for Globalisation and Cooperation at the Universitat Oberta de Catalunya (UOC). Although many evaluators are already on board the Open Science train, in practice it is not so easy. Fortunately, there are concrete proposals to change this trend. There are proposals from Dutch universities (Universiteiten van Nederland 2020) and Norwegian universities (Universities Norway 2021). The European University Association has also carried out studies (European University Association 2021b, 2021c). The UOC is now trying not to rely too much on standard bibliometrics in its evaluation processes. It relies more on narrative curricula, for example. But this also requires a lot of care. We have to explain to scientists how to prepare these narrative CVs so

that they don't go away. We also have to accompany the reviewers, so that they don't go for what they are used to, such as the impact factor.

Bert Overlaet, Chair of the Human Resources and Research Careers Policy Group of the League of European Research Universities (LERU), referred to a recently published paper on research evaluation (Overlaet 2022). The study basically deals with the question of how research evaluation is carried out today and where it wants to go. A key aspect is to get rid of the obsession in science with past performance. While it is interesting to know what kind of publications candidates have published in the past, there is much more you want to know about them. In some universities, there are experiences with narrative curricula for more than ten years. In the past, the question was asked about their most important publications. Now you ask what are the most important achievements, because it can be all sorts of things besides publications, and what are the candidates' ambitions and aspirations. It also asks what they have learned from their mistakes and how they have developed as people. There are a number of dimensions that need to be taken into account in assessing scientific performance, one is leadership, and another is collaboration. Open Science needs people who are able to collaborate. Therefore, more attention needs to be paid to these personal elements in the evaluations.

4. Closing Remarks

The virtual dialogues underlined that Open Science means much more than open access to scientific publications and research data, although these are important elements of Open Science. The concept of Open Science implies rethinking current evaluation and indexing processes. It also means understanding that sharing scientific advances with all people is a fundamental human right (Rathenau Instituut 2021). This also implies the question of how Open Science can contribute to the democratisation of science and society. At the same time, it is important to realise that the openness or closure of data and research results, as well as the form of evaluation and indexing processes are issues linked to questions of power, such as the management of institutions and the design and implementation of policies. As Ramón Torrent aptly put it in one of the dialogues: It is an exercise in power: who gets a tenure, who gets promoted? We must understand that talking about evaluating research means discussing who, based on which values, and how political power is being practiced in Higher Education and Research.

The dialogues showed that Latin America is much further ahead than Europe in terms of Open Access. In Europe, Open Access and Open Science have a strong advocate in the EU. Still, despite all the Commission's recommendations, it always comes down to what is implemented at the national level. Large scientific publishers and indexing institutions, mostly based in Europe and the US, struggle to defend their profits even in an environment increasingly marked by Open Science ideas, often through the horrendous costs charged to scientists for publishing their research results, which in wealthy states are often at least partially reimbursed by funding institutions. However, these opportunities are only available to the societies with less resources to a very limited extent, which further reinforces existing global imbalances and asymmetries.

In the last two decades, several Latin American organisations have developed numerous ideas on Open Science that could also be useful for the European debate. Bi-regional and inter-regional dialogue is therefore essential. However, it must be conducted, especially from the European side, with a willingness to really engage with new models of science and to take seriously the idea of advocating in favour of Open Science, also in global terms. The 2030 agenda needs to be implemented in Europe as well. A very important part of that is the transformation of academic institutions, building "universities without walls" (European University Association

2021a) to foster sustainable development through academia (Independent Group of Scientists appointed by the Secretary-General 2019). Open Science can then make a real contribution to achieving the Sustainable Development Goals.

References

- Babini, Dominique y Laura Rovelli. 2020. *Tendencias recientes en las políticas científicas de ciencia abierta y acceso abierto en Iberoamérica*. Buenos Aires: CLACSO.
<https://www.clacso.org/wp-content/uploads/2020/12/Ciencia-Abierta-1.pdf>
- Becerril-García, Arianna y Saray Córdoba González (editoras). 2021. *Conocimiento abierto en América Latina: trayectoria y desafíos*. Buenos Aires: CLACSO.
<https://biblioteca-repositorio.clacso.edu.ar/bitstream/123456789/15177/1/Conocimiento-abierto.pdf>
- Birle, Peter et al. 2020. *Mobility | Diversity | Inequality | Sustainability: Cross-cutting Issues of Cultural, Scientific and Social Relations Between the European Union and Latin America / the Caribbean*. Hamburg: EU-LAC Foundation.
https://eulacfoundation.org/sites/default/files/2021-03/Publication_Mobility_2020.pdf
- Borges, Maria Manuel, y Elias Sanz Casado. 2021. *Sob a lente da ciência aberta: olhares de Portugal, Espanha e Brasil*. Coimbra: Universidade de Coimbra.
<http://hdl.handle.net/10316/93276>
- Budapest Open Access Initiative. 2022. *20th Anniversary Recommendations*.
<https://www.budapestopenaccessinitiative.org/boai20/>
- CELAC / Comisión Europea. 2020. *EU-CELAC Joint Initiative on Research and Innovation (JIRI). Eighth Senior Officials Meeting on Science and Technology 30 October 2020. Joint Press Communiqué. JOINT PRESS COMMUNIQUE* https://ec.europa.eu/info/files/joint-press-communique-8th-senior-officials-meeting-eu-celac-science-and-technology_en
- CELAC / Comisión Europea. 2021. *Strategic Roadmap for the implementation of the Brussels Declaration and EU-CELAC Action Plan on Science, Technology and Innovation*
https://ec.europa.eu/info/sites/default/files/research_and_innovation/strategy_on_research_and_innovation/documents/eu-celac_strategic-roadmap-2021-2023.pdf
- Centro de estudios en Propiedad Intelectual (CEDEPI). 2018. *Hacia una Política de Ciencia Abierta Compatible con el Sistema de Propiedad Intelectual*. Universidad de La Sabana.
<http://repositorio.colciencias.gov.co/handle/11146/34114>
- CESAER. 2020. Next Generation Metrics. White Paper. <http://doi.org/10.5281/zenodo.3874801>.
- Comisión Europea. 2018. *Commission Recommendation (EU) 2018/790 of 25 April 2018 on access to and preservation of scientific information*
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0790&from=EN>
- Council of the European Union. 2021. *Council Recommendation (EU) 2021/2122 of 26 November 2021 on a Pact for Research and Innovation in Europe*.
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2021.431.01.0001.01.ENG
- DORA. *Declaración de San Francisco sobre la evaluación de la investigación*.
<http://dx.doi.org/10.14201/orl.17845>
- European Commission. 2017a. *Next-generation metrics: Responsible metrics and evaluation for open science. Report of the European Commission Expert Group on Altmetrics*. Brussels
<https://data.europa.eu/doi/10.2777/337729>
- European Commission. 2017b. *Providing Researchers with the Skills and Competencies they Need to Practise Open Science. Open Science Skills Working Group Report*. Brussels.
<https://data.europa.eu/doi/10.2777/121253>
- European Commission. 2018. *Mutual Learning Exercise: Open Science — Altmetrics and Rewards*. Brussels. <https://data.europa.eu/doi/10.2777/468970>
- European Commission. 2021a. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Global Approach to Research and Innovation. Europe's strategy for international cooperation in a changing world*. Brussels.
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2021:252:FIN>

- European Commission. 2021b. *Annex to the Commission Decision on the Approval on Behalf of the European Union of the EU-CELAC 2021-2023 Strategic Roadmap for the Implementation of the Brussels Declaration and EU-CELAC Action Plan on Science, Technology and Innovation*. Brussels. https://intranet.euclacfoundation.org/en/system/files/eu-celac_strategic-roadmap-2021-2023.pdf
- European Commission 2021c. *Towards a Reform of the Research Assessment System. Scoping Report*. Brussels. <https://data.europa.eu/doi/10.2777/707440>
- European Commission. 2022. *Open Science and Intellectual Property Rights. How can they better interact? State of the art and reflections. Report of Study*. Brussels. <https://data.europa.eu/doi/10.2777/347305>
- European University Association. 2021a. *Universities Without Walls. A Vision for 2030*. Brussels. <https://eua.eu/component/attachments/attachments.html?id=3079>
- European University Association. 2021b. *From Principles to Practices: Open Science at Europe's Universities. 2020-2021 EUA Open Science Survey Results*. Brussels. <https://www.eua.eu/component/attachments/attachments.html?id=3262>
- European University Association. 2021c. *Open Science in University Approaches to Academic Assessment. Follow-up to the 2020-21 EUA Open Science Survey*. Brussels. <https://eua.eu/component/attachments/attachments.html?id=3480>
- European University Association. 2022a. *The EUA Open Science Agenda 2025*. Brussels. <https://eua.eu/component/attachments/attachments.html?id=3497>
- European University Association. 2022b. *A closer look at research data practices in European universities. Follow-up to the 2020-21 EUA Open Science survey*. Brussels. <https://eua.eu/component/attachments/attachments.html?id=3597>
- Hightech Forum. 2020. *Offene Wissenschaft und Innovation*. https://www.hightech-forum.de/wp-content/uploads/htf_impulspapier_offene_wissenschaft.pdf
- Independent Group of Scientists appointed by the Secretary-General. 2019. *Global Sustainable Development Report 2019: The Future is Now – Science for Achieving Sustainable Development*. United Nations: New York. <https://sustainabledevelopment.un.org/gsd2019>
- Overlaet, Bert. 2022. *A Pathway Towards Multidimensional Academic Careers. A LERU Framework for the Assessment of Researchers. LERU Position Paper*. Leuven. <https://www.leru.org/publications/a-pathway-towards-multidimensional-academic-careers-a-leru-framework-for-the-assessment-of-researchers>
- Rathenau Instituut. 2021. *Moving forward together with open science – Towards meaningful public engagement with research* (authors: Scholvinck, A.M., W. Scholten, P. Diederer) https://www.rathenau.nl/sites/default/files/2022-02/Moving_further_together_with_open_science_Rathenau_Instituut.pdf
- UNESCO. 2021. *UNESCO Recommendation on Open Science*. Paris. <https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>
- Universiteiten van Nederland. 2020. *Room for Everyone's Talent. Towards a New Balance in the Recognition and Rewards of Academics*. https://www.nwo.nl/sites/nwo/files/media-files/2019-Recognition-Rewards-Position-Paper_EN.pdf
- Universities Norway. 2021. *NOR-CAM - A Toolbox for Recognition and Rewards in Academic Careers*. <https://www.uhr.no/en/front-page-carousel/nor-cam-a-toolbox-for-recognition-and-rewards-in-academic-careers.5780.aspx>
- Wissenschaftsrat/German Science and Humanities Council. 2022. *Recommendations on the Transformation of Academic Publishing: Towards Open Access*. Köln. <https://doi.org/10.57674/Ogtq-b603>