A submission to the UNESCO consultation of Open Science from the Inter-American Institute for Global Change Research (IAI)

Open Science and the potential for South-South cooperation: lessons learned from Latin America and the Caribbean

The IAI is an intergovernmental institute supported by 19 states in the Americas. Its purpose is to coordinate scientific and economic research on the extent, causes and consequences of global change in the Americas. Its vision is to enable a well-informed, inclusive and sustainable Americas, which collaboratively meets the challenges posed by global change by supporting flexible science-based policies and actions. Its mission requires scientific excellence and integrity, international cooperation, science outreach and capacity building, and the full and open exchange of scientific information relevant to global change to reach the vision of a sustainable Americas.

Latin American and Caribbean Perspectives on Open Science

The Latin American and Caribbean (LAC) region is uniquely receptive to the principles guiding open science and open data. The reasons for this context are unique, multifaceted and interrelated. It is possible, however, to highlight in particular three key factors contributing to the embrace of open science and open data and to the implementation of several successful initiatives in the region.

The first key factor is that most research and development in the region are derived from public funds. Approximately two thirds of investments for research and development in LAC comes from the public sector[1], such as national funding mechanisms or ministries to public universities and research centers. This non-commercial approach to research may be unique to LAC and has promoted the growth of sustainable, world-class research.

An example of this public research partnership is the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), a public foundation established through state taxes by the State of São Paulo[2], Brazil. FAPESP has the mission to promote and financially support research projects in higher education and research institutions. Considerable public financial support is provided to FAPESP, as 1% of all state taxes must be invested in the foundation. This investment represents the largest national and state public science funding mechanism in LAC. Given that the state of São Paulo has the highest GDP in Brazil, whose economy is estimated to be the 7th largest in the world, this is a sizeable public investment that serves as a successful model of science funding for other regions in the Global South.

This public financial support for research and development has created an expectation in LAC that the data, documentation, and results (including publications) that arise from scientific inquiry are public

[1] United Nations Educational, Scientific and Cultural Organization. Global Open Access Portal: Latin America and the Caribbean (http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/access-by-region/latin-america-and-the-caribbean/)

[2] The state constitution of São Paulo estipulates that 1% of all state taxes must be invested in FAPESP. See: constituição estadual de 05 de outubro de 1989, capítulo IV, Da Ciência e Tecnologia, Artigo 271.

goods. As such, access is likewise expected to be open. This expectation led the establishment of robust networks and projects dedicated to facilitating and promoting open access – the second key factor.

LAC is a pioneer in the Global South with regard to open access initiatives. Beginning in the 1970s, regional collaborations established databases to provide information on journals published in the region including CLASE in 1975, PERIODICA in 1978 and Latindex in 1995. This led to a series of contemporary initiatives to promote and provide open access to scientific literature and to foster a collaborative public culture for the funding and implementation of scientific projects in LAC[3] such as the Latin American Council of Social Sciences (CLACSO), the Scientific Electronic Library Online (SciELO), the Redalyc network of scientific journals, and the Federated Network of Institutional Repositories of Scientific Publications (LA REFERENCIA). Arguably, these initiatives have contributed greatly to the growth of open access publishing in LAC.

The third key factor in LAC is the development of regional governance instruments to promote open science and open data. Among these instruments, is the hallmark *Regional agreement on access to information, public participation and justice in environmental matters in Latin America and the Caribbean*[4] (Escazú Agreement), is the first environmental treaty for LAC which was recently adopted on 4 March 2018. The preamble of the Agreement notes,

> "the progress made in international and regional agreements, in domestic legislation and practice on rights of access to environmental information, public participation in the environmental decision-making process and access to justice in environmental matters."

Building on this progress, the Agreement aims to,

> "guarantee the full and effective implementation in Latin America and the Caribbean of the rights of access to environmental information, public participation in the environmental decision-making process and access to justice in environmental matters, and the creation and strengthening of capacities and cooperation, contributing to the protection of the right of every person of present and future generations to live in a healthy environment and to sustainable development" (Article 1, Objective).

The Escazú Agreement exemplifies the receptiveness of LAC to open access, the cultural underpinnings responsible for public support of research, and the understanding that open access is a prerequisite to environmental justice. At the time of writing, the Escazú Agreement has received 22 signatures and 9 ratifications.

Regional governance mechanisms in LAC that promote open data and open science are supported by established inter-governmental organizations, such as the Inter-American Institute for Global Change Research (IAI). The IAI was created via treaty in 1992 by 19 countries of the Americas to pursue the principles of scientific excellence, international cooperation, and the full and open exchange of scientific

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[3] More information on these databases and initiatives is available in: Babini, Dominique & Machin-Mastromatteo, Juan D. (2015). *Latin American science is meant to be open access: Initiatives and current challenges*. Information Development. V. 31(5) 477–481.

[4] United Nations *Regional agreement on access to information, public participation and justice in environmental matters in Latin America and the Caribbean*.
(https://repositorio.cepal.org/bitstream/handle/11362/43583/1/S1800428_en.pdf)

information, relevant to global change. The IAI is perhaps the only inter-governmental organization established solely to promote regional collaboration via transdisciplinary research at the global change science-policy interface. This approach to collaborative research, however, is predicated by the receptiveness of LAC to open science and open data. For example, scientific research supported by the IAI must (1) adhere to the principles of transdisciplinary research, including effective equitable participation of key stakeholders and end users, (2) be comprised of multi-national teams, with a minimum of three different countries represented, and (3) provide open access to scientific data and results.

Inter-governmental efforts are paralleled by civil society initiatives, such as the Panama Declaration on Open Science (October 2018). The Declaration recognizes that, "open science requires going beyond open access; we need to regain the protagonist role of society and claim the legitimate right of citizens to produce and harness science, technology and the innovation[5]." Comprised of 11 articles, the Declaration reinforces the LAC culture of public support for research and open access to information.

Current challenges

Despite these laudable advances in open science and open data in LAC, there are challenges that remain such as discussions centered on article processing charges, a business model that may be inappropriate for the region. There is also the need to increase awareness of scientific publication in regional and national open access journals. Additionally, the financial situation of many LAC countries is challenging. This situation will most likely worsen given the advent of Covid-19 and impact negatively on the region's ability to support research.

The IAI supports the priorities for open science as expressed by the International Science Council (ISC) in its submission to the UNESCO consultation. In particular we strongly support for efforts to reform the processes and economic models of scientific publishing. The LAC region has created its own solutions, but we work in a global setting where the interests of the global south, and therefore of international science are currently not well served.

We also strongly support that "openness to society", as expressed in the ISC submission and in its definition of open science:

> *Science that is open to scrutiny and challenge, and to the knowledge needs and interests of wider publics. Open science makes the record of science, its evolving stock of knowledge, ideas and possibilities accessible and free to all, irrespective of geography, gender, ethnicity or financial circumstance. It makes the data and evidence of science accessible and re-usable by all, subject to constraints of safety, security and privacy. It is open to engagement with other societal actors in the common pursuit of new knowledge, and to support humanity in achieving sustainable and equitable life on planet Earth.*

The Global South

Other regions in the Global South provide insights to guide future efforts in LAC. For example, the rapid growth of excellent scientific research in Asia is much admired by universities and research centers in LAC, and where the development of open science initiatives amongst the ASEAN countries is of

[5] Panama Declaration on Open Science. (https://web.karisma.org.co/wp-content/uploads/download-manager-files/declaracion_panama_ciencia_abierta.pdf)

particular note. Additionally, the development of an African Open Science Platform, is an exciting innovation which may provide a possible model for LAC. South-south collaboration in open science has the potential to articulate a stronger voice of the global south as part of the international science community, to the benefit of all and in triangular collaboration as an appropriate means of advancing open science, and potentially as a basis for a global open science commons.

Conclusion

Three key factors make LAC uniquely positioned to adopt the principles of open science and open data. First, there are strong public sector investments in science funding accounting for most of the scientific research in LAC., noting that many smaller countries face serious challenges in accessing such support., Second, the culture of public funding for science has seeded a number of pioneering and innovative open access networks and initiatives. And lastly, LAC has supported a multi-lateral approach to access to information and environmental justice reflected by a number of regional and international treaties.

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Montevideo, Uruguay
11 June 2020