Bridging Science Diplomacy and Science Communication: Recommendations for the Latin American and the Caribbean (LAC) Region

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Introduction

Science, Technology and Innovation (STI) are becoming increasingly prominent in international affairs, significantly influencing geopolitical dynamics and every nation's global standing. Concurrently, international scientific collaboration and science diplomacy are crucial in facilitating the discovery and application of relevant knowledge to address today's global challenges and enhance relations between countries.[1] Science diplomacy can thus be defined as a tool that intersects scientific collaboration, technology, international relations, and public policy, emphasising the role of science in fostering international cooperation and addressing global challenges.[2]

Science communication emerges as an essential tool for advancing foreign policy objectives through science diplomacy[3], especially during complex and challenging situations. It facilitates informed decision-making and aids in negotiating international agreements and treaties. Disseminating scientific knowledge beyond academia is crucial for addressing global and regional challenges and contributing to evidence-informed policymaking. Transdisciplinary collaboration in this context is needed to produce relevant, legitimate, and salient knowledge to assist decision-making in crucial moments posed by environmental and global problems, such as the COVID-19 pandemic. However, a survey conducted in Latin America in 2020 confirmed that scientific knowledge does not effectively reach decision-makers[4], highlighting the imperative need to leverage effective science communication in policy and diplomacy.

This article explores the synergies between science communication and science diplomacy, highlighting culturally relevant and effective science communication within the Latin American and the Caribbean (LAC) region. We will focus on this region as a unique context where emergent efforts to build capacities in science diplomacy and science communication are built. Finally, this article provides recommendations for building bridges between scientists, diplomats, policymakers, and the public by offering insights on addressing global and regional challenges through science communication and science diplomacy.

Science Diplomacy in the LAC Region: Challenges and Opportunities

In LAC countries, science diplomacy reflects the region's diverse socio-economic, political, and environmental landscapes. These complexities pose challenges in implementing and developing science diplomacy initiatives, often linked to funding constraints, resource limitations, inequality, political and economic instability, and institutional fragmentation.[5] Since the UNESCO Regional Office of Science for Latin America and the Caribbean introduced science diplomacy into its 2015 sustainable development agenda[6], it has gained prominence among LAC countries and multilateral organisations. Furthermore, the relevance of science diplomacy has notably grown in fields such as environmental sciences, public health, agriculture, and renewable energy, as these sectors require international collaboration to address common challenges and meet mutual needs effectively.[7]

Interest in science diplomacy, public policies, and public engagement is rapidly growing within the LAC region despite ongoing disparities in human, financial, and institutional capacities among countries.[8] In recent years, several key science diplomacy efforts and capacity-building initiatives have been launched (Table 1), signalling a stronger commitment to scientific collaboration, training in science diplomacy, international knowledge exchange, and developing national scientific policies. These initiatives are designed to address region-specific challenges and incorporate science communication as a central component to strengthen the connections between science, policy, and society. This training is essential for enhancing scientific and diplomatic skills and helping the public grasp the importance of STI in improving societal well-being.

The expansion of these initiatives highlights the growing significance of science diplomacy and science communication in the region. It empowers nations to participate actively in global and regional scientific cooperation, negotiations, and evidence-informed policymaking. These capacity-building efforts, although hosted in different countries, are centred on regional training for policymakers and scientists. By promoting open and effective exchange of scientific advancements and engagement in capacity-building training, these initiatives foster transparency, reduce misunderstandings, and strengthen diplomatic relations among LAC countries.

Table 1. Recent science diplomacy efforts and capacity-building initiatives in the LAC region

Country	Initiatives
Panama	1. National Strategic Plan for Science, Technology, and Innovation Diplomacy 2. Inter-American Institute for Global Change Research (IAI) Science Diplomacy Center (SDC) 3. Science Diplomacy Training Program for Policy Makers in the Americas 4. Building Bridges between Science and Sustainable Public Policies
Colombia	1. National Science Diplomacy Strategy in progress 2. Virtual science diplomacy course from Universidad Externado 3. Introduction to Science Diplomacy virtual course from Corporación Universitaria del Caribe (CECAR) 4. Virtual science diplomacy and strategic engagement course from Universidad de Antioquia
Brazil	1. São Paulo Innovation and Science Diplomacy School (InnSciD SP)
Chile	1. Virtual science diplomacy course from Universidad de Chile 2. Science diplomacy course at the Diplomatic Academy of Chile
Mexico	1. Critical Introduction to Science Diplomacy course at Universidad Nacional Autónoma de México

Uruguay	1. Science Diplomacy Applied to Neurosciences for the Global South hybrid course
Argentina	1. Graduate Program in Science Diplomacy from Universidad Nacional de la Plata 2. Climate, Environment, and Health for the Americas workshop 3. Seminar on Science Diplomacy in the Southern Common Market (MERCOSUR)

Science Communication as a Fundamental Component of Science Diplomacy in the LAC Region

Science communication is conveying scientific information about science, technology, engineering, mathematics, and medicine (STEMM) in a clear, accessible, and compelling manner.[9] Its purpose is to make complex scientific concepts and findings understandable and relevant to non-experts, including the public, policymakers, and stakeholders in various fields. Previous research has identified capacity-building in science communication as essential for effective evidence-informed policymaking and bridging the gap between scientists, the public, policymakers, and diplomats in the LAC region.[4,10] Communicating with a non-scientific audience requires training, which some Latin American researchers have reported lacking.[4] Without a doubt, these communities have a gap in their practices, expectations, and common language.[11] Although there is no simple solution, science communication stands out as the most crucial skill for bridging this gap.[12,13,14]

Global challenges such as the COVID-19 pandemic and environmental change highlighted the critical role of effective science communication in combating misinformation worldwide and in the LAC region.[15,16] These challenges highlight the responsibility of scientists to disseminate their findings in ways that address global and regional issues through international cooperation, thereby contributing to evidence-informed policymaking.[17,18] To effectively communicate science and advance science diplomacy, scientists must develop skills tailored to engage with diplomats, policymakers, and the public.

Understanding regional challenges and cultural contexts is essential for effective science communication to inform policymaking and advance science diplomacy. In this regard, culturally relevant science communication, defined as connecting science to people's everyday lives, identities, needs, and concerns through their cultural context[19], emerges as a tool to enhance the relevance and impact of science for policymakers, diplomats, and the public in the LAC region. Developing tailored science communication and diplomacy strategies that are culturally and locally relevant and inclusive of different forms of knowledge and expertise is crucial. Therefore, it is imperative to improve and create new training programs for local scientists, policymakers, diplomats, and communicators that address specific cultural and contextual challenges, thereby building their capacity for effective science communication.

Such approaches will facilitate trust and collaboration among countries to tackle common challenges. They will also inform policymaking and encourage international cooperation by helping diplomats and decision-makers understand complex scientific concepts. Moreover, effective science communication will support efforts to address global issues that demand coordinated, cross-border solutions while promoting cultural exchange and engagement through joint scientific initiatives.[5]

By translating complex scientific ideas into clear and accessible language, science communication helps the public grasp the significance of science diplomacy and international scientific collaborations. It illustrates how global research partnerships address critical issues like climate change and pandemics, demonstrating their tangible benefits. Effective communication builds public trust through transparency about research goals and outcomes and engages the public by highlighting the interconnected nature of global scientific efforts. This clarity and openness are crucial for building support for international cooperation and emphasising the role of the public in these efforts.

Recommendations to Build Bridges between the Public, Scientists, Diplomats and Policymakers

Science diplomacy serves as a bridge between nations, leveraging scientific knowledge and expertise to foster cooperation, build public trust, and address shared challenges. Effective science communication is essential, translating complex scientific knowledge into actionable insights that resonate with stakeholders and public opinion and promoting informed decision-making at multiple levels. In today's interconnected world, the synergy between science diplomacy and science communication is vital for strengthening connections among governments, international organisations, civil society, academia, and the private sector, especially when addressing transnational issues like public health, sustainable development, and environmental challenges.

The COVID-19 pandemic underscored the vital role of science diplomacy in coordinating international research, sharing essential data, and developing global health strategies. It also emphasised the need for transparent and effective science communication to combat misinformation, shape public perceptions, and build trust in scientific guidance. To strengthen science communication within the framework of science diplomacy, the following strategies should be prioritised:

1. **Understand local contexts**: Recognise LAC countries' unique socio-political and cultural contexts. Frame scientific content to align with policymakers' priorities and goals, bridging the gap between science and society and ensuring diverse perspectives are considered in decision-making processes.
2. **Show relevance and impact**: Use concrete examples and case studies to demonstrate how scientific findings address local issues like economic development, public health, and environmental protection.
3. **Communicate clearly**: Avoid jargons, use straightforward language, and incorporate local languages and culturally appropriate visual aids for better comprehension.
4. **Build trust and relationships**: Engage in continuous dialogue with policymakers, diplomats, and the public, respecting their perspectives and values and being open to feedback.
5. **Tailor messages to local needs**: Align scientific communication to match local priorities, traditions, and political contexts, ensuring it resonates with the public, policymakers, and diplomats. Community-driven initiatives and non-governmental organisations (NGOs) addressing global challenges through science-based solutions can amplify impact and support broader diplomatic objectives.
6. **Be proactive and responsive**: Anticipate needs and questions, provide timely updates and feedback, and address emerging issues promptly.
7. **Maintain objectivity**: Present evidence transparently, ensuring the message remains unbiased and credible.

Integrating these approaches allows science diplomacy to effectively harness science communication for navigating the complexities of our globalised world and achieving sustainable solutions to urgent issues. This process begins with capacity-building programs that enhance science communication skills and foster intersectoral interactions. Well-trained public officials and community members are better equipped to comprehend complex issues, initiate meaningful dialogues, and make informed decisions. This fosters trust, ensures policies reflect community needs and promotes an inclusive and informed society. Incorporating these elements can help build a more resilient, sustainable, and equitable future for the LAC region.

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