



09

Analysis
Paper



Centro de
Investigación
Internacional



SCIENCE AND TECHNOLOGY DIPLOMACY

SEPTEMBER 2020

The content of this document does not reflect the official opinion of the Ministry of Foreign Affairs.



RELACIONES EXTERIORES
SECRETARÍA DE RELACIONES EXTERIORES



**INSTITUTO
MATÍAS
ROMERO**



Science and Technology Diplomacy

Dr. Alexis Roig, CEO of SciTech DiploHub, the Barcelona Science and Technology Diplomacy Hub, and the International Research Center at Matías Romero Institute

Introduction

Science has become a strategic instrument of diplomacy and international affairs. Its new role is the result of the redefinition of challenges that affect us all, like climate change, food and water security, global health and digitalization. Scientific values like rationality, transparency and universality help improve global governance—bearing in mind the number and diversity of actors in the international system—and build trust between nations and societies.

The *soft power* of science fosters participation and the free exchange of ideas, thereby contributing to progress, innovation and peace.¹ And to the extent that a country's prosperity and economic success come to depend more and more on its ability to attract talent and capital, so it requires more effective strategies that use its scientific and technological assets to secure competitive advantages in the new world order.²

In this context, the concept of science diplomacy—understood as the set of activities performed to promote bilateral and multilateral cooperation via know-how, science, technology and innovation—takes on importance. The covid-19 pandemic has shed light on the enormous potential of science and science diplomacy in the long term,³ and the importance of making decisions and drawing up international mitigation, response and recovery strategies based on scientific research and data management and analysis in diverse fields of knowledge. The scientific community, in cooperation with policymakers and enforcers, has been involved in the management, organization and communication of scientific knowledge throughout this global health crisis. However, we need to take efforts to the next level by defining good international practices and implementing coordinated research and exchange programs and multilevel governance mechanisms.

This paper, a collaborative project between the International Research Center at the Instituto Matías Romero and SciTech DiploHub (Barcelona Science and Technology Diplomacy Hub), aims to analyze the importance of science diplomacy, the

[1] Alexis Roig, *Towards a City-Led Science Diplomacy: The Rise of Cities in a Multilateral World and Their Role in a Science-Driven Global Governance*, Ginebra, United Nations Institute for Training and Research (UNITAR), 2018.

[2] Tim Flink and Ulrich Schreiterer, "Science Diplomacy at the Intersection of S&T Policies and Foreign Affairs: Toward a Typology of National Approaches", in *Science and Public Policy*, vol. 37, no. 9, November 2010, pp. 665-677.

[3] A. Roig, "Science Diplomacy Against the Pandemic", in INGSA, March 30, 2020, at <https://www.ingsa.org/covid-tag/covid-19-commentary/scitech-webinar-1/> (consulted on: August 18, 2020).

strategies certain countries have deployed for the sharing of best practices and the ideas they have put forward for the development of a science diplomacy. Our central argument is that science diplomacy has a valuable role to play in finding solutions to common problems and settling disputes, while facilitating the mobility of research talent, strengthening scientific, technological and industrial capacities, and contributing to the drawing up of evidence-based public policies.

Foundations and aspects of science diplomacy

Science diplomacy can be defined as the use of scientific, technological and academic collaborations between countries, regions and societies to solve common problems and build solid, constructive international relations.⁴ It is necessarily a collaborative effort between multiple stakeholders (government and non-government, public and private) and allows for the drawing up of a strategy to position scientific knowledge and new technologies as geopolitical tools.⁵ Broadly speaking,



science and technology diplomacy are based on three main pillars of action: *science in diplomacy*, *science for diplomacy* and *diplomacy for science*.⁶

Science in diplomacy highlights science's role in providing accurate data and scientific evidence to support the design and implementation of foreign policies. Perhaps the most well-known examples are the Intergovernmental Panel on Climate Change (IPCC) created in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), whose purpose is to provide scientific knowledge on climate change and its environmental, social and economic repercussions.⁷

[4] Nina V. Fedoroff, "Advocate for Science Diplomacy", interview by Claudia Dreifus, *The New York Times*, August 18, 2008, at <https://www.nytimes.com/2008/08/19/science/19conv.html> (consulted on: August 18, 2020); N. V. Fedoroff, "Science Diplomacy in the 21st Century", in *Cell*, vol. 136, no. 1, January 2009, pp. 9-11, at <https://doi.org/10.1016/j.cell.2008.12.030> (consulted on: August 18, 2020); Peter D. Gluckman, Vaughan C. Turekian, Robin W. Grimes and Teruo Kishi, "Science Diplomacy: A Pragmatic Perspective from the Inside", in *Science & Diplomacy*, vol. 6, no. 4, December 2017, at <http://www.sciencediplomacy.org/article/2018/pragmatic-perspective> (consulted on: August 18, 2020); Kristin M. Lord and V. C. Turekian, "Time for a New Era of Science Diplomacy", in *Science*, vol. 315, no. 5813, February 9, 2007, pp. 769-770.

[5] P. D. Gluckman, V. C. Turekian, R. W. Grimes and T. Kishi, *op. cit.*; K. M. Lord and V. C. Turekian, *op. cit.*

[6] American Association for the Advancement of Science (AAAS) and The Royal Society, *New Frontiers in Science Diplomacy: Navigating the Changing Balance of Power*, London, The Royal Society (RS Policy document 01/10), 2010, p. 15.

[7] Other more recent examples include the use of scientific evidence during the pre-negotiation phase of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP); declarations on the acidification of the oceans and deforestation made by the InterAcademy Partnership (IAP), which represents more than one-hundred national science academies from all over the world; the UN's 2030 Agenda for Sustainable Development; and the Paris Agreement.



Science for diplomacy is based on the deployment of science as a tool of soft power to strengthen international cooperation and establish new channels of communication between countries, regions and societies. Two prime examples are the European Organization for Nuclear Research (CERN), established after World War II;⁸ and the Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME) project.⁹

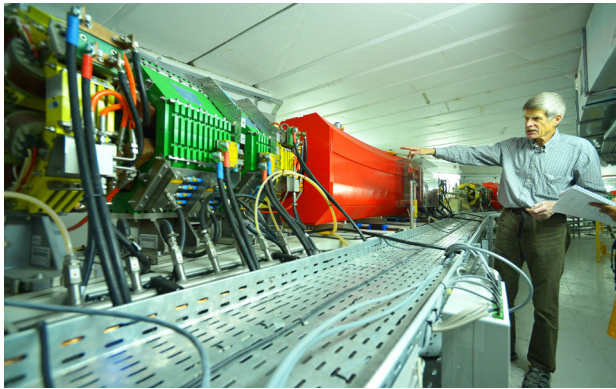
[8] The European Organization for Nuclear Research (CERN) is a European research body that operates the world's largest particle physics laboratory. The organization has 22 member states and is officially overseen by the United Nations.

[9] The Chinese Scientists Group on Arms Control (CSGAC) and the Committee on International Security and Arms Control (CISAC) formed by the U.S. National Academy of Sciences collaborated on the first Chinese-English glossary of nuclear security terms "to eliminate barriers to progress in exchanges, diplomatic cooperation and other activities where unequivocal understanding is essential." *National Research Council, English-Chinese, Chinese-English Nuclear Security Glossary*, Washington, D. C. The National Academies Press, 2008, p. x, en <https://doi.org/10.17226/12186> (consulted on: August 18, 2020). In the Arctic, a collaborative project headed by the Geological Survey of Canada and that involves researchers from Denmark, Norway, Sweden, Russia and the United States, published the first comprehensive geological map of the Arctic, which has implications for sovereignty claims and territorial disputes.

Diplomacy for science refers to the efforts of governments to promote science and innovation in their foreign policy via agreements for the transfer of know-how and technology, the mobility of international researchers and the financing of transnational projects, among other initiatives. By way of example, in 2015, Spain's State Secretariat for International Cooperation and Ibero-America at the Ministry of Foreign Affairs and Cooperation and the State Secretariat of Research, Development and Innovation of the Ministry of Economy and Competitiveness created an advisory group formed by representatives of sectors interested in science diplomacy.

Countless studies have acknowledged the historic relationship between scientific progress, its applications via technological developments and international politics.¹⁰ In fact, since the second half of the twentieth century, science has been at the center of literature on international

[10] Carolin Kaltofen, Madeline Carr and Michele Acuto (eds.), *Technologies of International Relations: Continuity and Change*, London, Palgrave, 2018; Maximilian Mayer and M. Acuto, "The Global Governance of Large Technical Systems", in *Millennium: Journal of International Studies*, vol. 43, no. 2, 2015, pp. 660-683.



relations,¹¹ although it was only after World War II and the devastating use of the atomic bomb that scientists became more proactive in their efforts to abate international conflicts.¹²

Organizations that have played a major role in the history of science diplomacy include

[11] John Cawood, “The Magnetic Crusade: Science and Politics in Early Victorian Britain”, in *Isis*, vol. 70, no. 4, December 1979, pp. 493-518. The first accredited scientific representative of the United Kingdom overseas, Sir Charles Galton Darwin, the grandson of Charles Darwin, was appointed director of the Central Scientific Office in Washington in 1941. His function was to cooperate with American research agencies and facilitate the sharing of scientific information. Shortly afterwards, between 1942 and 1946, Joseph Needham was named head of the British Scientific Mission in China, which he used as a platform to promote an “International Scientific Cooperation Service” that paved the way for the inclusion of the natural sciences in the mandate of the United Nations Educational, Scientific and Cultural Organization (UNESCO).

[12] On July 9, 1955, Bertrand Russell and Albert Einstein published a manifesto calling on scientists of all political leanings to address the threat posed by the advent of nuclear weapons. A few days later, the philanthropist Cyrus S. Eaton offered to sponsor a conference on the subject in Pugwash, Nova Scotia. Thanks to the efforts of a larger group of scientists, which included Sir Joseph Rotblat, the only physicist to leave the Manhattan Projects on grounds of conscience, this meeting finally took place in July 1957, marking the first Pugwash Conference on Science and World Affairs. The Pugwash conferences remain a key pillar in international debates on pacification, the non-proliferation of nuclear weapons and security, and were awarded the Nobel Prize for Peace in 1995.

the North Atlantic Treaty Organization (NATO), which established a scientific program in 1957, America’s National Academy of Sciences (NAS) and the Academy of Sciences of the Soviet Union, which organized parallel committees on international security and arms control in the 1980s. Continual communication between the scientists on these committees laid the groundwork for later dialogue between presidents Reagan and Gorbachov.¹³

Science diplomacy in the new global scenario

While science diplomacy is not a new discipline, we have seen more interest in it recently, especially from the 1990s on. Cases in point are the creation of the Foreign Ministries Science and Technology Advice Network (FMSTAN) and the Science Diplomacy Center at the American Association for the Advancement of Science (AAAS), the setting up of scientific advisory networks like the International Network for Government Science Advice (INGSA), the science diplomacy program at Tufts University, and academic research projects financed by the European Commission, like European Leadership in Cultural, Science and Innovation Diplomacy (EL-CSID), Inventing a Shared Science Diplomacy for Europe (InsSciDE) and Using Science for/in Diplomacy for Addressing Global Challenges (S4D4C). Likewise, the main diplomatic corps have relatively well-structured networks of scientific advisors and consultants at

[13] Dennis Normile, “NSF Celebrates 50 Years of U.S. Japan Collaborations”, in *sciencemag.org*, October 7, 2010, at <http://www.sciencemag.org/news/2010/10/nsf-celebrates-50-years-us-japan-collaborations> (consulted on: August 18, 2020).

their embassies and consulates overseas, working to improve their science, technology, innovation and higher education networks.

Diplomacy is currently undergoing far-reaching changes as a result of digitalization, the fast pace of technological progress, the multiplicity of actors involved and the rise of non-state diplomacy, hand-in-hand with sub-national regions, cities, multilateral organizations and tech companies, among others.¹⁴ Economic globalization and greater international competition on markets for goods and services continue to broaden the playing field of international relations. Concomitantly, international cooperation in science and technology is being promoted from the bottom up (driven by researchers) and the top down (driven by public policies and financing by international organizations),¹⁵ which has led to the globalization of scientific research.¹⁶

By the same token, research and development (R&D) activities have taken on greater importance as a means of acquiring soft power, defined as the ability to attract sympathy, talent, capital and political support that can enhance the influence of geopolitical actors and their international standing.¹⁷ As such, science



diplomacy can be described as a “diplomacy of influence” of sorts, as an instrument of coopting, and a means by which countries can share and transmit their values and reproduce their own cultural models.¹⁸ This way, countries can mobilize resources such as their reputation, prestige, cultural attractions and communication skills, their scientific knowledge and technological capital included.¹⁹

Meanwhile, foreign policy is being increasingly shaped by challenges related to global sustainability and the 2030 Agenda for Sustainable

[14] Rebecca Adler-Nissen, “Towards a Practice Turn in EU Studies: The Everyday of European Integration”, in *JCMS Journal of Common Market Studies*, vol. 54, no. 1, 2016, pp. 87-103.

[15] AAAS and The Royal Society, *op. cit.*, p. 9.

[16] Caroline Wagner and Loett Leydesdorff, “Network Structure, Self-organization, and the Growth of International Collaboration in Science”, in *Research Policy*, vol. 34, no. 10, December 2005, pp. 1608-1618.

[17] Joseph S. Nye, Jr, “Soft power”, in *Foreign Policy*, no. 80, Fall 1990, pp. 153-171; Eugene B. Skolnikoff, *The Elusive Transformation: Science, Technology, and the Evolution of International Politics*, Princeton, Princeton University

Press, 1993; Caroline S. Wagner, “The Elusive Partnership: Science and Foreign Policy”, in *Science and Public Policy*, vol. 29, no. 6, December 2002, pp. 409-417, at <https://doi.org/10.3152/147154302781780741> (consulted on: August 8, 2020).

[18] Pierre-Bruno Ruffini, *Science and Diplomacy: A New Relationship of International Relations*, London, Springer, 2017.

[19] Andrew F. Cooper, Jorge Heine y Ramesh Thakur, “Introduction: The Challenges of 21st-Century Diplomacy”, in A. F. Cooper, J. Heine and R. Thakur (ed.), *The Oxford Handbook of Modern Diplomacy*, Oxford, Oxford University Press, 2013, pp. 1-31.

Development.²⁰ Science and technology will be essential to addressing these challenges and, in this regard, science diplomacy will help ensure policymakers make informed decisions based on quality scientific advice.

Today's challenges require a change of paradigm in global governance. New forms of exchange and forums that support interaction between governments and civil society actors need to be created, including the scientific community whose task is to advise policymakers and provide updated information on the dynamics of the Earth's natural and socioeconomic systems. Scientists also need to identify cases in which there is uncertainty or where there is not enough scientific evidence.

Science diplomacy broadens the rationale of foreign policy to encompass a "collective action" theory, which understands diplomatic action as a way of responding to international challenges and global problems. Science diplomacy has also been increasingly associated with the building of scientific capacities in less developed countries (education, research, corporation and industry), which, in turn, would enable their governments to participate in the collective actions of science diplomacy, especially in

the areas of environmental protection and global health.²¹

Trends, success cases and good practices

After analyzing the importance and utility of science diplomacy, the aim of this section is to look at concrete examples and suggest some lines of action for its development. Factors that facilitate the development of a national, regional or local science diplomacy strategy are the existence of science, technology and higher education ecosystems with international competitiveness assets on the one hand and a decisive commitment by institutions to contribute to the great global challenges via knowledge and innovation on the other.

Success cases in science diplomacy

Countries that lead the way in R&D—like the United States, the United Kingdom, Japan and New Zealand—have created the position of scientific advisor at their respective foreign affairs ministries. Likewise, the European Union is promoting a science diplomacy strategy within the framework of efforts to integrate its research system in the area of international cooperation.

International scientific and technological cooperation has become a priority of U.S. foreign policy. The Secretary of State has a State-Department-appointed scientific advisor and the AAAS is developing a political sciences and technology scholarship program to train members of the U.S. government administration, while the country's science diplomacy strategy is focused

[20] John Beddington, "Food, Energy, Water and the Climate: A Perfect Storm of Global Events?", in Sustainable Development UK Annual Conference, London, March 19 2009, at <https://webarchive.nationalarchives.gov.uk/20121206120858/http://www.bis.gov.uk/assets/goscience/docs/p/perfect-storm-paper.pdf> (consulted on: August 18 2020); Bernice Lee, "Managing the Interlocking Climate and Resource Challenges," in *International Affairs*, vol. 85, no. 6, November 2009, pp. 1101-1116, at <https://doi.org/10.1111/j.1468-2346.2009.00851.x> (consulted on: August 18, 2020).

[21] P. D. Gluckman, V. C. Turekian, R. W. Grimes and T. Kishi, *op. cit.*

on fostering the generalized participation of public- and private-sector organizations in scientific and technological matters.²²

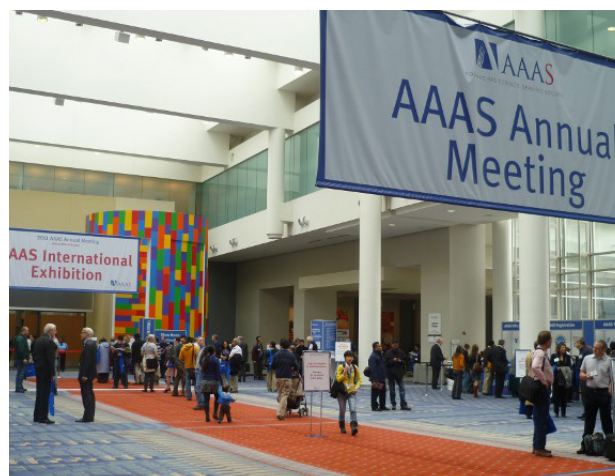
Germany has invested heavily in international cooperation in education and science through its Ministry of Foreign Affairs. Since 2009, the government has been building “Science Houses” in different parts of the world to showcase German innovation and science, and in 2008 a section dedicated to the internationalization of science was created at its Ministry of Education and Science.²³

The United Kingdom has taken several lines of action within the framework of its science diplomacy strategy, the most noteworthy of which are: the Science and Innovation Network, a network of 90 professionals spanning 28 countries and 47 cities, co-financed by the Department for Business, Energy and Industrial Strategy (BEIS) and the Foreign and Commonwealth Office (FCO), which promotes cooperation between the United Kingdom and the scientific and innovation communities of other countries; the Newton Fund, which provides scholarships and assistance for the transfer of know-how for scientific projects with 15 developing countries; and the Global Challenges Research Fund, a £1.5-billion fund for international scientific collaborations focused on development cooperation.²⁴

[22] Fundación Española para la Ciencia y la Tecnología (FECYT), *Informe sobre diplomacia científica, tecnológica y de innovación*, Madrid, Government of Spain, 2016, p. 10, at http://www.ciencia.gob.es/stfls/MICINN/Investigacion/FICHEROS/Informe_Diplomacia-Cientifica.pdf (consulted on: August 18, 2020).

[23] *Ibid.*, p. 11

[24] *Ibid.*, p. 10.



Another case deserving of mention is that of Denmark. The Ministry of Foreign Affairs oversees three agencies engaged in science diplomacy: the Danish Foreign Trade Board, which coordinates the activities of the Innovation Centre Denmark (ICDK) and Invest in Denmark; the Office of the Technological Ambassador of Denmark; and the Danish Agency for International Development (DANIDA).²⁵ The Danish government has Innovation Centers (ICDK) in Shanghai,

[25] Ministry of Industry, Business and Financial Affairs, *Strategy for Denmark's Digital Growth*, Copenhagen, Danish Government, 2018, at https://eng.em.dk/media/10566/digital-growth-strategy-report_uk_web-2.pdf (consulted on: August 18, 2020).



Silicon Valley, Boston, Munich, São Paulo, New Delhi, Seoul and Tel Aviv, the goal being to make it easier for Danish institutions and research companies to access the know-how, networks, technology, capital and market opportunities of other countries.²⁶ One success story presented by the Danish Foreign Trade Board is the "Cities that Change Diabetes" project by the pharmaceutical company Novo Nordisk, in which Mexico City participated in 2014 as the project's first city. By 2018, five Chinese cities and more than 100 international associations were involved.²⁷

[26] The ICDC operated by the Ministry of Foreign Affairs and the Ministry of Higher Education and Science were set up at embassies and consulates in selected countries as part of Denmark's diplomatic missions.

[27] The Trade Council, "The Trade Council og Novo Nordisk Kaemper Sammen for at Knaekke Diabetes", March 1, 2018,



Meanwhile, within the framework of its 2017-2018 Foreign Policy and Security Strategy, the Danish government refashioned its traditional model of diplomatic representation with the launch of "Tech Ambassador" Casper Klyngø, the world's first digital ambassador. This diplomatic position is intended to represent Denmark's interests with the tech giants of Silicon Valley, like Facebook and Google. According to the Danish Ministry of Foreign Affairs, the concept of "TechPlomacy" is acknowledgment of the essential role technology and digitalization play and will increasingly play in the future of our societies. It should be noted that Denmark's TechPlomacy strategy is closely tied in with national innovation policies like: "Ready to Make the Most of the Future", "Danish Digital Growth" and "The Artificial Intelligence Strategy", among others.²⁸

at <https://thetradecouncil.dk/cases/the-trade-council-og-novo-nordisk-kaemper-sammen-for-at-knaekke-diabetes> (consulted on: August 18, 2020).

[28] Volker Stanzel (ed.), *New Realities in Foreign Affairs: Diplomacy in the 21st Century*, Berlin, German Institute for International and Security Affairs (SWP Research Paper, 11), November 2018, at https://www.swp-berlin.org/fileadmin/contents/products/research_papers/2018RP11_sze.pdf (consulted on: August 18, 2020).

The development of technologies like artificial intelligence (AI), the Internet of Things (IoT) and cybersecurity has changed the face of policymaking and global governance, forcing governments to analyze how these innovations will shape societies of the future. With this end in mind, formal diplomatic instruments have been introduced to facilitate dialogue and cooperation with the information technologies (ICTs) industry, and steps have been taken to forge strategic partnerships with tech companies and universities, among other relevant actors.²⁹ Countries like France, Germany and Australia have recently taken a leaf out of Denmark's book and appointed their own "digital ambassadors".

Science diplomacy in Latin America

Science diplomacy has traveled a long path in Latin America. In Mexico's case, which we will look at in more detail later, the journey began in 1874, when a group of Mexican scientists was sent to Yokohama, Japan, to record the passage of Venus across the Sun. Following an extensive analysis of the Japanese economy and culture, the engineer Francisco Díaz Covarrubias, who was leading the project, recommended Mexico approach Japan and establish formal diplomatic ties, a suggestion that came to fruition years later with the signing of the Friendship, Trade and Navigation Treaty between the two countries.³⁰

[29] C. Kaltofen, M. Carr and M. Acuto (eds.), *op. cit.*

[30] José Vergara Laguna, "El descubrimiento de México por los japoneses. Una mirada a través de sus textos geográficos", in *Trace*, no. 63, June 2013, pp. 35-49.

Another excellent example is the science diplomacy of Cuba. The island's Science Academy has been promoting international scientific cooperation since the nineteenth century, but it was not until 1959 that science came to take on greater weight in Cuban foreign policy.³¹

Other Latin American countries have recently adopted science diplomacy policies. One of the most successful practices has been the training of professionals in international relations.³² The Chilean case is exemplary in that its diplomatic academy incorporates science diplomacy in the training of its corps,³³ and has published extensive papers on the subject. This has long-term implications for the country's diplomatic strategy and is backed by a cross-cutting, inter-departmental strategy in which the ministries of Sciences and Foreign Affairs and the Presidency take deliberate, coordinated science diplomacy actions.³⁴ As a result, Chile has entered into bilateral cooperation agreements with Spain, attracted

[31] Julie M. Feinsilver, "La diplomacia médica cubana: cuando la izquierda lo ha hecho bien", in *Foreign Affairs en Español*, vol. 6, no. 4, October-December 2006, pp. 81-94.; Sergio Jorge-Pastrana, Marga Gual-Soler and Tom C. Wang, "Promoting Scientific Cooperation in Times of Diplomatic Challenges: Sustained Partnership between the Cuban Academy of Sciences and the American Association for the Advancement of Science", in *MEDICC Review*, vol. 20, no. 2, April 2018, pp. 23-26.

[32] V. C. Turekian and Tom C. Wang, "Educating for Science Diplomacy", in *Science & Diplomacy*, vol. 3, no. 1, March 2014, at <http://www.sciencediplomacy.org/editorial/2014/educating-for-science-diplomacy> (consulted on: August 18, 2020).

[33] "Diplomacia del I+D+I Investigación Desarrollo, Innovación: las opciones de APEC", in *Diplomacia*, no. 140, April 2019, in https://issuu.com/apuntesinternacionales/docs/diplomacia_140_v2-240419 (consulted on: August 18, 2020).

[34] P. D. Gluckman, V. C. Turekian, R. W. Grimes and T. Kishi, *op. cit.*



international events like “Our Ocean” conference in Valparaíso in 2015, the Asia-Pacific Economic Cooperation Forum (APEC) in 2019 and COP25,³⁵ as well as large-scale international astronomy research projects like the Atacama Large Millimeter Array (ALMA), the Giant Magallanes Telescope (GMT) and the Extremely Large Telescope (ELT). Greater awareness as to the importance of science and technology to development has also shaped local policies affecting, for example, the development of the Magallanes region.³⁶

[35] COP25 was held in Madrid due to the political and social crisis in Chile in 2019 that sparked off protests and riots nationwide.

[36] Ximena Riquelme (coord.), *Región de Magallanes y Antártica Chilena: diagnóstico de las capacidades y oportunidades de desarrollo de la ciencia, la tecnología y la innovación*,

Like Chile, Argentina places emphasis on the training of professionals in science diplomacy, except in this case, the focus is on the interdisciplinary training of scientists via two institutions: the International Institute for Interdisciplinary Innovation (I4) and the Latin American Center for Interdisciplinary Training (CELCI). These institutions have signed important regional and international agreements with Germany and Italy. Argentina has also implemented programs for the repatriation of scientific capital and taken multiple diplomatic actions that have paved the way for bilateral agreements with the European Union and the United States.

Brazil’s Ministry of Foreign Affairs has an Innovation Diplomacy Program (PDI) and the country complements its national science and technology capacities with international cooperation activities and projects within the framework of its 2016-2022 National Science, Technology and Innovation Strategy. Some examples include Brazil-Sweden Innovation Week, the Meeting of the Brazilian Diaspora for Science, Technology and Innovation in Washington; the Brazilian technology parks mission to Russia; the Think Brazil event in London; and the BrasilTech tradeshow in Paris, Berlin, Miami and Lisbon.

Panama outlined its science diplomacy strategy in 2019 in a document that sets precise, concrete goals and makes clear recommendations. Bolivia recently took steps to promote science diplomacy by replicating the scientific ambassador model that has proven successful in leading R&D countries, while Colombia has

Santiago, Comisión Nacional de Investigación Científica y Tecnológica, 2010, at <https://www.conicyt.cl/wp-content/blogs.dir/21/files/2013/06/Magallanes.pdf> (consulted on: August 18, 2020).



opted for the internationalization of research and innovation at its higher education institutions.³⁷

Aside from national initiatives, science diplomacy in Latin America has made a major contribution to the regional integration process in recent years. The Ibero-American Science and Technology for Development Program (CYTED) is the regional institution with the longest track record, boasting 680 projects financed and 28,800 scientists working on over 8,400 research groups throughout Ibero-America.³⁸ Another influential institution is the Inter-American Institute for Global Change Research (IAI), which finances collaborative research projects based on a competitive peer review process. The IAI takes an international and interdisciplinary approach, promoting scientific projects that address social issues affecting the continent's most vulnerable communities and ecosystems.

Regional integration in science and technology has also been embraced by Mercosur, Unasur and the Ibero-American General Secretariat. By the same token, we have seen new international sub-regional collaborations in science and technology (especially in Central

America) and the emergence of new private regional actors. Numerous regional integration proposals have been put forward in areas that are strategic to the continent, including the recurring proposition for the creation of a Latin-American Space Agency.³⁹ During its Pro Tempore Presidency of the Community of Latin American and Caribbean States (Celac), Mexico suggested a work program centered on science diplomacy. A total of 14 projects were proposed, from space and aeronautical cooperation to comprehensive disaster risk management, science and technology for societies, the sustainable management of ocean resources and the monitoring of resistance to antimicrobials, among others.⁴⁰

A city-led science diplomacy: the Barcelona case

Cities, new actors on the international diplomacy scene

States are not the only ones engaged in science diplomacy activities. The number of actors practicing diplomacy and their international influence is on the rise. Multinationals, international organizations, NGOs, regions and cities

[37] Gonzalo Ordóñez, María Piedad Villaveces and Juan Pablo Isaza, "Diplomacia científica", in *Innovación y Ciencia*, vol. XXVI, no. 2, 2019, at https://innovacionyciencia.com/articulos_cientificos/diplomacia-cientifica (consulted on: August 18, 2020).

[38] M. Gual-Soler, "Intergovernmental Scientific Networks in Latin America: Supporting Broader Regional Relationships and Integration," in *Science & Diplomacy*, vol. 3, no. 4, December 2014, en <https://www.sciencediplomacy.org/article/2014/intergovernmental-scientific-networks-in-latin-america> (consulted on: August 18, 2020).

[39] See the abstract of the speech "Agencia Espacial Latinoamericana, posible modelo de integración regional" by Raúl Eduardo Gutiérrez Gómez, in G. Ordóñez, M. P. Villaveces and J. P. Isaza, *op. cit.*

[40] Mexico's Pro Tempore Presidency (PPT) of the Community of Latin American and Caribbean States (Celac) 2020, "Plan de Trabajo 2020", at <https://ppt-celac.org/plan-de-trabajo> (consulted on: May 20, 2020).

are reclaiming their space on the international arena.⁴¹ Cities in particular are transforming the international scene and pushing the boundaries of the traditional nation-state concept. Those that aspire to become global cities have understood that their value resides in their capacity to leverage human, technological and financial capital, build networks of influence and create symbolic power with the aid of intangible assets like science, culture and knowledge.⁴²

Rogier Van der Pluijm defines city diplomacy as “the institutions and processes by which cities engage in relations with actors on an international political stage with the aim of representing themselves and their interests to one another.”⁴³ Thus, cities are emerging as the main actors in the development of diplomatic action. Their activities fit the classic definitions of public diplomacy,⁴⁴ even though they have no effective claim to this international jurisdiction. Cities have a broader agenda of interests and greater flexibility in the design and execution of communications campaigns. The value of their actions

dovetails with the management of intangibles and reputation.⁴⁵

In terms of diplomatic action, deserving of mention are city networks like C40, Local Governments for Sustainability (ICLEI), United Cities and Local Governments (UCLG), Network of Regional Governments for Sustainable Development (nrg4SD) and the WHO European Healthy Cities Network. The goal of these networks is to transform urban environments via multilevel regulatory initiatives and the promotion of public policies in support of the protection of biodiversity, sustainable development, global health and the combating of climate change.

Likewise, cities have become epicenters of scientific and technological innovation. They are cashing in on urban dynamics to attract a large portion of the wealth and resources of the global economy,⁴⁶ because in a global economy competitive advantages are often heavily weighted toward the local, due to a concentration of talent, skills and highly specialized knowledge. Geographical, cultural and institutional proximity lead to greater

[41] Noé Cornago, *Plural Diplomacies: Normative Predicaments and Functional Imperatives*, Leiden, Martinus Nijhoff, (Diplomatic Studies, 8), 2013.

[42] M. Acuto, Mika Morissette and Agis Tsouros, “City Diplomacy: Towards More Strategic Networking? Learning with WHO Healthy Cities”, in *Global Policy*, vol. 8, no. 1, February 2017, pp. 14-22.

[43] Rogier van der Pluijm, *City Diplomacy. The Expanding Role of Cities in International Politics*, The Hague, Netherlands Institute of International Relations “Clingendael” (Clingendael Diplomacy Papers, 10), April 2007, p. 11.

[44] Nicholas J. Cull, “Public Diplomacy: Taxonomies and Histories”, in *The ANNALS of the American Academy of Political and Social Science*, vol. 616, no. 1, March 2008, pp. 31-54; J. S. Nye, Jr., *La paradoja del poder norteamericano*, Madrid, Taurus, 2003; Philip Seib, *Real-Time Diplomacy: Politics and Power in the Social Media Era*, New York, Palgrave Macmillan, 2012.

[45] Benjamin R. Barber, *If Mayors Ruled the World: Dysfunctional Nations, Rising Cities*, New Haven, Yale University Press, 2013; Richard Schragger, *City Power: Urban Governance in a Global Age*, Oxford, Oxford University Press, 2016.

[46] David B. Audretsch and Maryann P. Feldman, “R&D Spillovers and the Geography of Innovation and Production”, in *The American Economic Review*, vol. 86, no. 3, June 1996, pp. 630-640; Naomi Hausman, *University Innovation, Local Economic Growth, and Entrepreneurship*, Washington, D. C., U.S. Census Bureau Center for Economic Studies, (Paper No. CES-WP-12-10), June 2012; Enrico Moretti, “Workers Education, Spillovers and Productivity: Evidence from Plant-Level Production Functions”, in *The American Economic Review*, vol. 94, no. 3, June 2004, pp. 656-690; Edward L. Glaeser y Albert Saiz, *The Rise of the Skilled City*, Cambridge, Harvard University (Harvard Institute of Economic Research Discussion Paper, 2025), 2004.



productivity and innovation through the generation of “network externalities”.⁴⁷

The United Nations has documented how the number of cities in the world with populations larger than one million grew from 75 in 1950 to 447 in 2011, while the average population of the world’s 100 largest cities increased from 2 to 7.6 million in the same period. The London School of Economics estimates that, for example, 65 new inhabitants move to Shanghai and 56 to Lagos every hour. By 2025, the world’s

600 largest urban economies will account for 65% of global economic growth and by 2050 almost 70% of the planet will be urbanized.

Clearly, a new international dynamic is gathering momentum around cities and their markets. New challenges like climate change, global health, migration, water management and food security, along with the rapid development of technologies like artificial intelligence, robotics and gene editing, require greater interaction between the world’s scientific communities. In this new context, cities need to act as laboratories in the solution of challenges that respond to a global logic, but that manifest on a local level.⁴⁸

Barcelona: the first city in the world with a science diplomacy strategy

In light of the increasingly important role of science and technology on the international arena on the one hand and the emergence of cities as geopolitical actors on the other, Barcelona

[47] Ronald L. Moomaw, “Spatial Productivity Variations in Manufacturing: A Critical Survey of Cross-Sectional Analyses”, in *International Regional Science Review*, vol.8, no. 1, 1983, pp. 1-22.; Stuart S. Rosenthal y William C. Strange, “Evidence on the Nature and Sources of Agglomeration Economies”, in J. Vernon Henderson and Jacques-François Thisse (eds.), *Handbook of Urban and Regional Economics*, vol. 4. *Cities and Geography*, Amsterdam, Elsevier, 2004, pp. 2119-2171.

[48] A. Roig, “A Science Diplomacy for Barcelona: Global Cities Take the Lead”, in American Association for the Advancement of Science, in *Medium*, November 30, 2018, at <https://medium.com/sciencediplomacy/a-science-diplomacy-for-barcelona-global-cities-take-the-lead-c41a4a2a9493> (consulted on: August 18, 2020).

decided to mobilize its scientific knowledge and capital in favor of a global approach and become the first city in the world to formulate a science diplomacy strategy.

To implement this strategy and represent Barcelona's knowledge and innovation ecosystem worldwide, the Barcelona Science and Technology Diplomacy Hub, otherwise known as the SciTech DiploHub, was created. This non-profit organization is a joint effort between the public and private sectors and enjoys the support of the city's main research centers, universities, NGOs, startups, corporations and government institutions, positioning it as the main interface between Barcelona's knowledge and innovation ecosystem, policymakers and international organizations.⁴⁹

Within the framework of its science diplomacy strategy, Barcelona connects diplomatic missions and the city's innovation ecosystem, with a view to developing joint projects via its Diplomatic Circle—a platform that links diplomatic corps and international organizations that render services to the city's scientific and technological sector by means of regular visits to its main research centers, scientific facilities, universities and tech companies, the idea being to foster the sharing of ideas and promote international cooperation.

In recent years, more attention has been paid to the role of higher education and the mobility of talent in the area of public diplomacy. Some academics have underscored the influence of human capital and networks of global talent

as elements of “soft power” that contribute to political, cultural and social leadership.⁵⁰

Fueling this mobility is the Barcelona Alumni network, a global community of over 1,000 scientists, technology experts, researchers and entrepreneurs in the innovation sector, all trained in Barcelona, but who currently reside abroad in more than 30 countries. The alumni play a key role as intercultural communicators, ambassadors of the city's knowledge ecosystem and promoters of higher education, investment and trade, thereby contributing to the international recognition and visibility of the Barcelona ecosystem. The network also affords better understanding of international trends and strategic markets, enabling the Barcelona ecosystem to anticipate priorities, research programs and public policies.

As the diplomatic arm of the city's scientific ecosystem, SciTech DiploHub represents Barcelona at international forums and agencies, like the World Science Forum, the United Nations Conference on Climate Change, the Planetary Health Alliance and the United Nations Sustainable Development Solutions Network (SDSN), among others.

Throughout the Covid-19 pandemic, SciTech DiploHub has spearheaded several international initiatives to position Barcelona at the forefront of

[49] “The Barcelona Manifesto for a City-Led Science and Technology Diplomacy”, in SciTech DiploHub, at <http://www.scitechdiplohub.org/manifesto/> (consulted on: August 18, 2020).

[50] Yin Cheong Cheng, Alan Cheung, Timothy W.W. Yeun, “Development of a Regional Education Hub: The Case of Hong Kong”, in *International Journal of Educational Management*, vol. 25, no. 5, June 2011, pp. 474-493; Ka Ho Mok, “The Rise of Transnational Higher Education in Asia: Student Mobility and Studying Experiences in Singapore and Malaysia”, in *Higher Education Policy*, vol. 25, no. 2, May 2012, pp. 225-241; Robin Shields and Rebecca M. Edwards, “Student Mobility and Emerging Hubs in Global Higher Education”, in Laura M. Portnoi, Val D. Rust and Sylvia S. Bagley (eds.), *Higher Education, Policy, and the Global Competition Phenomenon*, New York, Palgrave Macmillan, 2010, pp. 235-248.

the global battle against SARS-CoV-2 via its participation in the International Science Council's (ISC) International Network for Government Science Advice (INGSA) and groups on global health, working alongside institutions like the Harvard University, The Graduate Institute Geneva, the AAAS and the Barcelona Institute of Global Health.

SciTech DiploHub is also involved in training and educational programs in science diplomacy targeting diplomatic corps, professionals at the ministries of Science, Education and Foreign Affairs and internationalization departments at universities and research centers. Another of its functions is to advise local governments on public policy issues and collaborate with international organizations, working as a think-tank where scientific knowledge is put to the service of evidence-based policies.

Science diplomacy in Mexico. Priorities and projections

As has already been stated, science diplomacy has come a long way in Mexico. The climate and environmental crisis, cybersecurity and rapid technological progress are just some of the phenomena that are making an economic, political, social and cultural impact on a global scale. Science is one of our greatest allies in addressing these challenges, reason why diplomacy cannot afford to overlook its importance. Broadly speaking, the Mexican government has sought to promote exchanges of academics and scientists, support research projects with other countries and involve science and innovation experts in policy-making aspects. Given the nature and magnitude of the aforementioned challenges, these experts also need to be included in the making of foreign policy.

Mexico's Ministry of Foreign Affairs (SRE) has sought to include human capital trained in science, technology and innovation in the planning and execution of its foreign policy by creating cooperation networks. The two primary institutions responsible for implementing its science diplomacy strategy are: the National Science and Technology Council (Conacyt)⁵¹ and the Mexican Agency for International Development Cooperation (Amexcid),⁵² which reports to the SRE. These institutions work together on international technical and scientific cooperation initiatives and, aside from their own budgets, the activities they perform are financed by the SRE-Conacyt sectorial fund and other international cooperation mechanisms (bilateral international cooperation funds).

Just recently, the SRE set up a Technical Knowledge and Innovation Council as a consultative body that seeks to promote technological development, scientific knowledge and innovation as an exercise in foreign policy via its diplomatic corps.⁵³ Another effort by the Mexi-

[51] "El Conacyt tendrá por objeto ser la entidad asesora del Ejecutivo Federal y especializada para articular las políticas públicas del Gobierno Federal y promover el desarrollo de la investigación científica y tecnológica, la innovación, el desarrollo y la modernización tecnológica del país". Ley Orgánica del Consejo Nacional de Ciencia y Tecnología (última reforma de 28 de abril de 2014), in *Diario Oficial de la Federación*, May 20, 2014, art. 2.

[52] Amexcid is a decentralized agency of the SRE whose function is to design, plan and execute Mexico's international development cooperation policies.

[53] The Instituto Matías Romero is working with Conacyt to train members of the Mexican Foreign Service (SEM). In conjunction with the College of Notaries, the "Public Trust" unit of the online course "Comprehensive Training in Consular Services" was revised and the SRE is considering implementing training courses with the Mexican Academy of Sciences and the National Association of Universities and Higher Education Institutions, in addition to training



can government to promote science, technology and innovation was the creation of the Congressional Office of Scientific and Technological Information (INCYTU) in 2015. Operated by the Scientific and Technological Consultation Forum (FCCYT), its goal is to draw up public policies based on scientific evidence.

Via the Institute of Mexicans Abroad, the SRE has developed the Global Mx Network, which locates highly qualified Mexicans living abroad, with a view to organizing cooperation activities and specific projects that foster social, economic, scientific and technological development and innovation in Mexico.⁵⁴ In the area of higher education, a wide range of academic exchange scholarships are available via Amexcid,

courses for Mexican diplomats in coordination with the National Public Administration Institute (INAP).

[54] The network is formed by people interested in promoting the development of Mexico's economy of knowledge. It has 70 chapters, depending on the region of the world, and 15 Mexico Nodes that make it possible to coordinate initiatives.

from Bachelor's to postgraduate level, including, in some cases, short and medium-term courses. One potential science diplomacy initiative is the Conacyt-OAS-Amexcid Scholarship Program, which is implemented under the Alliances for Education and Training program. Students who are citizens of OAS member countries are eligible for these scholarships, which are for presence-based postgraduate programs in Mexico in the areas of engineering, sciences and health. Through Conacyt, Mexico has sought to broaden its international scientific cooperation ties and has signed agreements with Germany, Austria, Canada, the United States, Spain, France, the United Kingdom and other countries. These instruments put researchers and scientists in contact with prestigious institutions during the early years of their careers, resulting in development and wellbeing for the country.⁵⁵ In the

[55] Conacyt, "Cooperación científica internacional", at <https://www.conacyt.gob.mx/index.php/el-conacyt/desarrollo-cientifico/cooperacion-cientifica-internacional> (consulted on: May 8, 2020).



same vein, Conacyt’s International Cooperation Fund for Science and Technology (FONCICYT) helps finance activities on the international agenda, enabling Mexico to strengthen existing relations with its main science, technology and innovation partners and forge new ties.

At multilateral forums, the Mexican government has stressed the importance of innovation and scientific and technological development as a means of boosting resilience to climate change and natural disasters, and mitigating their impact on the economies of individual countries.⁵⁶ Since

[56] Some noteworthy examples include the Asia-Pacific Economic Cooperation Forum (APEC) and the International Cooperation and Innovation Conference between the European Union, Latin America and the Caribbean (EU-LAC). Equally important is the participation of state science, technology and innovation agencies and councils in promoting the inclusion of science in the design and definition of Mexico’s public policies. The meeting of February 2, 2019 between the National Network of State Science and Technology Councils and Agencies (Rednacecyt) and UNESCO is a prime example of this. Bearing the title “National Science Meeting, a Human Right”, the importance of shoring up science governance in Mexico was discussed and it was suggested a catalogue of good practices be compiled, along with reflections on the obstacles that block access to knowledge in Mexico, and an analysis of

2017, Mexico has been championing an international movement to promote science, technology and innovation in the achievement of the Sustainable Development Goals of the 2030 Agenda and its proposal to analyze the impact of rapid technological change on sustainable development was approved by the U.N. General Assembly as resolution 72/242 “Impact of rapid technological change in the achievement of the Sustainable Development Goals”. That same year, Mexico established a Group of Friends of Exponential Technological Change and Automation within the United Nations, with a view to issuing recommendations and guidelines on an inter-governmental level for the taking of decisions on the impact of such changes.

Finally, in the midst of the SARS-CoV2 pandemic, Mexico has stepped up its science diplomacy efforts and participated in multilateral and other forums. For example, the Mexican molecular biologist Raúl Gómez Román is

the actions being taken by states to achieve the Sustainable Development Goals of the 2030 Agenda.

participating in the development of a Covid-19 vaccine at the Center for Epidemic Preparedness Innovations (CEPI),⁵⁷ and has underlined the importance of sharing information for science diplomacy.⁵⁸

In light of the projects the country has undertaken in the realm of science and technology diplomacy and the good international practices which have been analyzed, Mexico has the potential to take and/or step up the following actions.

Potential opportunities

- *Develop a comprehensive plan of action as part of a science and technology diplomacy strategy.* Modern science diplomacy requires working with a network of many different agents, both governmental and non-governmental. As such, its governance rests on the ability to coordinate and integrate programs and strategies in the common interest. Taking countries like the United States, the United Kingdom, Japan, New Zealand, Spain and Panama as an example, an effective national science diplomacy strategy would

help identify actions already being taken by the various actors involved and align their interests and priorities. Said strategy could be coordinated by the SRE in close cooperation with Conacyt and should be revised and updated regularly in keeping with the country's scientific and technological priorities. Borrowing from the good practices of other countries, Mexico will create the position of scientific advisor at its embassies, consulates and other diplomatic missions overseas.

- *Strengthen training in science diplomacy.* It will be important to consolidate science and technology diplomacy as a professional career and work on related training, competency, skills and knowledge aspects. The primary goal of educational efforts such as these should be to increase the awareness and sensitivity of young professionals representing the country abroad as to the importance of science and technology in bolstering Mexico's international image. Likewise, all members of the Mexican Foreign Service and diplomatic corps need to be provided with ongoing training in science diplomacy in the form of specific courses and programs. Finally, the possibility of replicating the AAAS Science and Technology Policy Fellowships model and implement a pilot scholarship program under which scientists with PhDs spend a period of time at a government ministry, legislative office or embassy could be explored.
- *Capitalize on the international community of scientists and technology experts trained in Mexico.* Building on the excellent work of the Global Mx Network, its goals and impact of the current strategy could be broadened by

[57] The CEPI project was created in 2017 to design vaccines against viruses and reduce the risk of outbreaks of disease and epidemics. It was proposed by Peter Piot at the 2016 meeting of the World Economic Forum. See Tina Rosenberg, "Stopping Pandemics Before They Start", *The New York Times*, July 2, 2017, at <https://www.nytimes.com/2017/06/27/opinion/stopping-pandemics-before-they-start.html> (consulted on: August 18, 2020).

[58] See Raúl Gómez Román, "El científico mexicano que está más cerca de descubrir la vacuna del coronavirus", entrevista de David López Canales, in *GQ México*, May 13, 2020, at <https://www.gq.com.mx/entretenimiento/articulo/cientifico-mexicano-raul-gomez-roman-a-punto-de-crear-vacuna-coronavirus> (consulted on: August 18, 2020).

identifying, assembling and training professionals of all nationalities who have studied, conducted research or worked in Mexico's knowledge and innovation system and who are practicing overseas, including international talent trained in Mexico, and ensure the strategy of this talent network is aligned with Mexico's science diplomacy goals. These science, technology and innovation professionals have a crucial role to play in the country's science diplomacy strategy as ambassadors of their innovation and education ecosystems, intercultural communicators and economic and trade promotion agents. Harnessing the capacities of this extensive network of talents trained in Mexico would help showcase the country's clout in the fields of education, research and innovation; attract investment and promote academic and business ties; maximize opportunities and the value of the activities of Mexican research centers, universities, companies and institutions abroad; and position the country as an open society committed to addressing the global challenges of our times.

- *Find more effective ways to involve Mexico's academic, scientific and technological sectors in the design of international cooperation strategies for development.* The sharing of experiences, good practices and know-how need to be strengthened through cooperation programs. A major challenge—and goal in the years to come—will be to position Mexico's higher education institutions and research centers as a benchmark in Latin America by virtue of their participation in international development cooperation projects. Mexico views science not just as



a means of generating new knowledge that can help solve global problems—health, climate change, cybersecurity, renewable energies, natural disasters, food and agricultural crises, marine and maritime research, smart mobility and digital societies—but believes science diplomacy is a means of getting scientists more involved in policymaking aspects.

- *Develop local science diplomacy programs.* Today's cities are epicenters of scientific and technological development and have emerged as key actors in the implementation of the 2030 Agenda for Sustainable Development. Consequently, we recommend that cities with consolidated science and technology ecosystems—Mexico City, Monterrey, Puebla, Culiacán, Guadalajara and Villahermosa—implement science diplomacy programs in conjunction with their local universities, research institutions and technology centers, with a view to promoting their internationalization and improving their standing abroad. By the same token, these local programs should be aligned with the country's science and technology diplomacy strategy.

Conclusion

Science is the most effective instrument at our disposal for generating new knowledge that can help address the problems that affect us all: global health, climate change, digitalization, cybersecurity, renewable energies, natural disasters, food and agricultural crises, marine and maritime research and smart mobility. Science diplomacy allows for the integration of scientific research and data management and analysis in policymaking, but in the context of international cooperation and relations, it is an opportunity for Mexico to mobilize its scientific and technological capital in favor of a global strategy, contribute to the Sustainable Development Goals and position itself as a reliable, influential partner.

Images

- © Cover: *skeeze*, en Pixabay.
- © Chokniti Khongchum, in Pixabay, p. 3.
- © European Organization for Nuclear Research, p. 4, left.
- © UN Photo, p. 4, right.
- © SESAME, p. 5.
- © Asociación Española para el Avance de la Ciencia, p. 6.
- © European Commission-EU Science Hub, p. 8, above.
- © Regional Heute.de, p. 8, below.
- © Foreign and Commonwealth Office, p. 9, left.
- © Office of Denmark's Tech Ambassador, p. 9, right.
- © MercoPress, p. 11, above.
- © Twitter @Programa_CYTED, p. 11, below.
- © SciTech Diplohub, p. 14.
- © Red Global MX, p. 18.
- © Twitter @MVSNoticias, p. 20.

Alexis Roig

Currently serves as CEO of SciTech DiploHub, the Barcelona Science and Technology Diplomacy Hub, a pioneering nonprofit public-private partnership backed by Barcelona's leading research centers, universities, startups, corporations and public institutions that positions Barcelona as a global lab in science diplomacy for cities and governments around the world.

He is also a Professor at the University of Shanghai for Science and Technology (USST), Associate Research at Barcelona Centre for International Relations (CIDOB), Associate Professor of the Barcelona Institute of International Studies (IBEI), Commissioner for International Affairs of the Barcelona Metropolitan Region strategic plan, and has over 10 years' experience

as senior advisor on science diplomacy for ministries of Foreign Affairs, Science, Research, and Education across Asia and Europe.

Dr. Roig sits on the board of numerous nonprofits and think tanks on Public Diplomacy, Innovation Policy, and Science Advice. He serves as president of the Catalan Institute of China; member of the Council of Catalonia Abroad; member of the advisory board of Digital Future Society, think tank supported by the Ministry of Economic Affairs and Digital Transformation of the Government of Spain; member of the International Network for Government Science Advice of the International Science Council (ISC); and board member of the Space and Aerospace Commission of the Barcelona Chamber of Commerce.

#PódcastIMR



“La actualidad de la diplomacia científica y tecnológica en las relaciones internacionales”, by doctor Alexis Roig, Chief Executive Officer of SciTech DiploHub (Barcelona Science and Technology Diplomacy Hub).

URL: <https://open.spotify.com/episode/183EitC05OUHh0sa8HNdGb>