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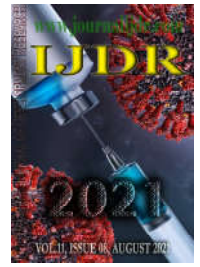
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## SCIENCE DIPLOMACY AND SDG17, ANALYSIS OF SUSTAINABLE DEVELOPMENT IN LATIN AMERICA

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### ABSTRACT

The implementation of new strategies for sustainable adaptation is considered a global challenge, markedly in developing countries across the globe. The past decade has witnessed the urgency of taking action to find solutions to the most pressing challenges of globalization; climate change, public health, economic growth, access to basic services and equity of opportunities. To develop implementable solutions in Latin America, it is necessary to analyze the progress in the last decade in the Sustainable Development Goals, specifically SDG 17 and Scientific Diplomacy. This research paper focuses on science diplomacy, SDG17 and advocating for sustainable development in Latin America. The variant definitions and the exercise of diplomacy will be analyzed by country, in order to ensure transitions with social and economic benefits. This collaborative work in Latin America is expected to clarify and analyze the problematic conditions by identifying multiple factors from different sectors that hinder sustainable development and the achievement of Agenda 2030. The article will also elaborate on the relationship between science diplomacy and sustainable development and its implications in Latin American development, while considering the role of the youth. The progress and role of SDG17 in Latin America will be addressed, as well as the role of diplomacy in achieving it.

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## INTRODUCTION

The current paper analyzes the implementation of the 2030 Agenda across the social, economic and environmental dimensions of sustainable development in Latin America. The research undertaken here seeks to strengthen the science-diplomacy interface as an evidence-based instrument to support Sustainable Development Goal (SDG) 17, namely, "strengthen the means of implementation and revitalize the global partnership for sustainable development" with emphasis on the Latin America region.

The research is intended as not only a product but also a process for advancing collaboration among actors in science, diplomacy, government, the private sector, civil society, and, in particular, the youth in Latin America towards identifying and realizing concrete pathways for transformation driven by evidence. In doing so, the authors draw upon an extensive and diverse knowledge base, including numerous published articles in scholarly literature; and international assessments, reports, and other peer-reviewed publications. This paper is composed of four sections. In addition to the introduction, the following section describes the methodology of this study. Section 3 provides an analysis and the results. Section 4

seeks to elaborate on the discussion and conclusions regarding the relationship between science, diplomacy, and sustainable development in Latin America; and, in particular, its implications, while considering the role of the youth in the 2030 Agenda.

## METHODOLOGY

Latin America is a group of countries located in western hemisphere consisting of 20 countries and 14 dependent territories divided into four different sub regions; North America, Central America, Caribbean and South America. The Spanish is the dominant language in Latin America followed by Portuguese and French. In these regions of various cultural and social differences, policy making is considered to be the main way for addressing social problems. In September, 2015, the United Nations General Assembly adopted Agenda 2030 towards a sustainable transformation by the year 2030 in developed and developing countries (UN, 2015). The 2030 Agenda includes 230 indicators with 17 Sustainable Development Goals (SDGs) and seeks to address economic, environmental and social aspects (Costanza et al., 2016). The Latin America and Caribbean (LAC) region holds sixty percent of global terrestrial biodiversity and some of the most biodiverse countries such as Brazil, Colombia, Ecuador, Mexico, Peru and Venezuela (UNEP-WCMC, 2016). Countries in the Latin America and Caribbean (LAC) region are varied in terms of economy, governance and policies, education, population, and living standards, which have changed over the last decades. This paper addresses the integrated role of science diplomacy towards the Sustainable Development Goals (SDGs) in Latin America.

## ANALYSIS AND RESULTS

It is clear that under current conditions, the trinomial Science, Technology and Innovation is absolutely necessary to face the global crises that humanity is experiencing primarily focused on the issues of sustainability, food security, clean energy, health, climate change, among others. A clear example of this great crisis has been the pandemic caused by COVID-19, which has shown the fragility of the human being to face this unexpected crisis. Faced with these global challenges, science does not turn out to be the only element for the solution and approach to the crises that we must solve; an additional effort in political will, which is constantly discussed by various fields of science, is required. This political will to converge in the common and global search to solve our great challenges is translated in terms of Diplomacy, conceived as “the science of knowledge of the interests and relations of some nations with others” and is also considered as the service of the States in their international relations. In many countries this lies under the structure of Secretaries or Ministries of Foreign Affairs. Both concepts, Science and Diplomacy, have recently come together in Latin America to face the great challenges aforementioned. The concept of Science and Diplomacy was first used a little over a decade ago particularly in English-speaking countries. Scientific diplomacy emerges as a need to transform once-unilateral decision-making into a scientifically based activity, hence diplomacy responds to those needs by leading the creation of a new discipline that considers science and politics at a local, national, regional and global level, to give a new approach for decision making.

Until a few years ago, in most Latin American countries, Science and Diplomacy developed in parallel or separate paths. It was not until recently that in the face of global crises such as Climate Change and pandemics, the moment arose for Latin America to unite its science and diplomacy to form a common front. Marga Gual Soler, 2020, in her report on “Scientific Diplomacy in Latin America and the Caribbean: strategies, mechanisms and perspectives”, expresses the following: “Several countries took the issue of scientific diplomacy in their foreign policy agenda and scientific, it was introduced in Chancelleries and academies, and now there is a critical mass of activities to document.”

### Level of development in some Latin American countries

**Perú and Ecuador:** Each country has the freedom to choose the level of commitment to the sustainability Agenda. This issue causes a huge challenge for the achievement of the SDGs, as the commitment and compliance with the Agenda need to happen everywhere in the world to be successful. In the cases of Peru and Ecuador, both countries have adopted tangible commitments to the 2030 Agenda by including the goals within their national planning programs. In the case of Ecuador, this has been done on the basis of a legally binding framework. This level of national commitment smoothens the path towards the achievement of the SDGs. However, it is certainly not the case in every country. Several countries are still struggling to mainstream adoption of the SDGs as part of their national priorities for various reasons, including a lack of resources or even lack of political will. Historically, economic growth and sustainable development have not been very compatible. This situation gets even more complex in developing countries like Peru and Ecuador where the main economic activities are generally based on traditional exports of oil and ores. In this economic model, promoting sustainable development while protecting natural resources leads to conflicting objectives. A shift in the economic model from merely extractive activities to nontraditional ones and the sustainable production of goods and services with high value added would be critical for the achievement of the SDGs. This shift could only take place, with some difficulty, in the long term. Such a change requires strong political commitment, consensus among stakeholders and even a cultural shift in the manner that things are done.

The Andean region shares common challenges to be overcome regarding economic development. Some countries of the region, such as Colombia have achieved important progress having set-up a national framework of competence and skills. However Peru and Ecuador are still trying to decide the most appropriate model to align to that can lead to a virtuous cycle of skilled workforce and productive business, based on market needs and skill development. Specifically, with regards to SDG 9: “Industry, innovation and infrastructure”, Latin-American countries face a huge challenge because of corrupt practices that undermine economic development related to this SDG. It is believed that sustainable development will not be achieved if corruption keeps eroding the basis of the industrial and economical model. Regarding SDG 10: “Reduced inequalities”, economic growth in Latin America and the Caribbean (LAC) has been insufficient and has delayed the reduction of poverty and income inequality. Also, if population growth is considered, the number of people living below the poverty line in LAC countries is likely to increase rather than decrease. In this sense, countries like Peru and Ecuador need to continue making an effort to design public policies that see multidimensional progress and not relying merely on income measurement as the only indicator of success. Therefore, to reduce the inequality gap it is fundamental that parameters like quality jobs, health, education, democracy, and human security, acquire equal or greater importance.

Observing development through a multidimensional lens is a very useful tool to design, implement, monitor and evaluate public policies to improve the quality of life. Another important issue to reflect on is that even though some developing countries, such as Ecuador and Peru, have accomplished remarkable progress at national levels to implement the 2030 Agenda, local participation is still less than satisfactory. The complexity of these countries, which arises from the geographical and cultural diversity, exacerbates the low participation and engagement on local levels as each community has different needs and realities that need to be fully grasped to accomplish local community involvement. In this regard, the participation of local stakeholders should be the cornerstone of the achievement of national objectives. In other words, SDGs implementation should not be a top-down process, but on the contrary, a bottom-up strategy since achieving national goals is not possible without the participation of local actors. Moreover, it is important to remember that traditionally, indigenous community participation was central to these cultures. Such participation supported a deep understanding and commitment

to the preservation of nature. For instance, one of the reasons why the Inca civilization was able to expand all over South America was the solid community-based structure, as well as impressive knowledge and management of natural resources. Unfortunately, the strong connection with nature and the existence of solid community linkages got lost at some point of "modern development". In this context, the role model of development should be a return to the roots of society leading to community participation along with responsible consumption and usage of natural resources that may be restored as the key to a fulfilling and prosperous life.

**Guatemala:** Since its inception, the United Nations and Guatemala have had a very close relationship, as Guatemala is one of the 51 states that founded the UN. Since then, the United Nations in Guatemala has collaborated with the State, creating a strong link with civil society organizations and other organized sectors to achieve sustainable development and national peace. Today there are 20 agencies, funds, programs, and specialized organizations that work to accompany national efforts to leave no one behind. (United Nations, 2021). Guatemala is a country that has made an effort to implement actions and strategies for sustainable development. In 2015, Guatemala committed to the 2030 Agenda for Sustainable Development. Since then, the SDGs have been followed up, with the results reflected in four progress reports. In the last report, it was evidenced that Guatemala made significant but insufficient progress in achieving some of the goals and other goals had unsatisfactory progress to achieve the minimum development standards set. (United Nations, 2019). Despite having insufficient results in the implementation of the 2030 Agenda, Guatemala continues the hardwork and creates strategic plans for Sustainable Development. In 2014, Guatemala approved the National Development Plan K'atun: Our Guatemala 2032 (PND), and in 2016 it prioritized the Agenda 2030 integrating 99 goals to the PND, these two initiatives demonstrate a great approach to meet Agenda 2030. (United Nations, 2017). Science Diplomacy continues to be a great challenge in Latin America and the Caribbean. Political instability, ideological fragmentation, budget problems, and the multiplicity and redundancy of high-level forums have limited the effectiveness and relevance of multilateral scientific initiatives in political and social decisions in the region. Despite this, Guatemala has worked on different projects for Science Diplomacy such as in the preparation of a Diploma in Scientific Diplomacy from the National Secretariat of Science and Technology (SENACYT) and the Ministry of Foreign Affairs, directed to officials of the country. (Gual, 2020). During the last decade, permanent campaigns focused on developing a scientific culture in the country, aimed at the productive and academic sectors, the education system, the press and public administration, among others. From 2004 to 2012, Guatemala established a Presidential Commissioner for Science and Technology, as well as the preparation of the National Plan for Science, Technology and Innovation 2005-2014 (Fernández, et. al., 2016). Guatemala has the SENACYT and CONCYT (National Council of Science) whose objective is the development of a scientific culture in the country. Some of the implemented instruments, programs and projects are the National Fund for Science and Technology (FONACYT), the Science and Technology Support Fund - FACYT, the National Science Olympiad, the Technology and Innovation Regional Science Congresses, and among others. (Fernández, et. al., 2016). The effort required to meet the 2030 Agenda in Guatemala implies a renewal of the national information system. There is a need to further strengthen information systems, so that the current situation can be better understood, as well as the need to adopt interventions that better contribute to achieving development priorities and knowing the positive results in the country. Guatemala was part of the High-level Political Forum on Sustainable Development in 2019 which promotes the full and effective participation of all Member States of the UN and State members of specialized agencies, making reference to the SDGs, specially SDG 17.

**Venezuela:** In Venezuela, the United Nations system is led by a Resident Coordinator, who seeks to promote the joint programming process and operational issues, creating synergy between the

mandates of each agency and the national priorities agreed in a Cooperation Framework. For this reason, it acts in a collegial manner and always through consensus with the Representatives and Heads of Agency with a presence in the country. Likewise, the United Nations in Venezuela works jointly with the State, strengthening ties with civil society organizations and other organized sectors to achieve sustainable development together. Today there are 10 agencies, funds, programs and specialized organizations that work to accompany the national efforts to leave no one behind. Thanks to the policies implemented by the Venezuelan State, the country managed to stand out with the Millennium Goals, positioning Venezuela in the first places in overcoming poverty levels, quality education, inclusion, and food. The country now aims to consolidate and expand the impact of the achievements made by continuing progress on SDGs. The *Plan de la Patria*, Second Plan for Economic and Social Development of the Nation 2013 - 2019, is combined with the SDGs. It is assumed that the time horizon of the *Plan de la Patria* and the National Plan of Human Rights will expand until 2030 through its link with the Sustainable Development Agenda 2015-2030.

On October 28, 2005, educational efforts resulted in the recognition of the Bolivarian Republic of Venezuela by the United Nations Organization for Education and Diversification, Science and Culture (UNESCO) as a territory free of illiteracy. The Ministry of Popular Power for Science and Technology finances research projects in a wide range of topics related to Ecosocialism such as complementary energies, sustainable agricultural production, education, housing, emissions inventory, basic information, predictive models, and conservation and sustainable use of biological diversity. Some examples of the instruments and programs implemented in Venezuela are the 2030 agenda for sustainable development, the Paris Agreement, the London Convention, the Aichi Targets - Convention on Biodiversity, the Global Program of Action for the Protection of the Marine Environment from land based Activities (GPA UNEP), FAO, IMO MARPOL, UNFCCC, UNESCO (ICO). Additional global instruments and programs that will be needed to make a strong and solid framework for a commitment to change this prejudicial trend. Venezuela also has been working on making some alliances with other countries and assisting to forums to learn from them. In 2016, Venezuela was part of the High-level Political Forum on Sustainable Development, which is the most inclusive and participatory forum at the United Nations, bringing all States Members of the United Nations and States members of specialized agencies together, ensuring that no one is left behind. Science and Diplomacy has not been totally implemented in Venezuela, the currently political crisis is challenging. There are tools in Venezuela but the corruption, social conflicts and the continuous economic deterioration impacts negatively on the Science and Diplomacy development.

**Mexico:** Mexico is one of the countries that has consolidated instruments in scientific advice and, more recently, in science diplomacy at the national and subnational level. The development of science, technology and innovation (CTI) in Mexico is generally a veiled matter in relation to other matters of national interest, however, recent events confirm that it is a unique issue that deserves further analysis and involvement. This is made clear by the election of Mexico as the guest of honor at Hannover Messe 2018, the largest industrial technology fair in the world, where more than a hundred national entities, institutions and companies disseminated their strengths in terms of industry 4.0, energy and environmental technologies, human capital, and high-tech manufacturing. Likewise, the Talent Land, an event held in Guadalajara aimed to promote technological projects focused on solving problems of energy, agriculture, health, education and poverty by linking the government, academia and companies with young Mexicans in order to create spaces for innovation, entrepreneurship, talent and technology. Moreover, highlighting the recognition granted in recent years to Mexican scientists, both in the field of exceptional scientists and emerging talents, within the framework of the L'Oréal-UNESCO Prize "Women and Science". (Gutiérrez, 2018). In 2017 the Secretariat of Education, Science, Technology and Innovation of the Government of Mexico City (SECTEI) recognized the need for city-

level science diplomacy in favor of national, subnational and regional development and issued a joint statement with the UNESCO to promote science diplomacy to address the COVID-19 pandemic. Mexico has coordinated forums and debates with scientists and academics from several countries such as the United States, France, and the Netherlands, where scenarios and possible solutions to this regional contingency are discussed. In October 2019, the French government organized the International Sargassum Conference that brought together more than 19 countries. The participation of the Association of Caribbean States (ACS), the Caribbean Community (CARICOM) and Mexico was instrumental in addressing economic, health and ecological challenges. The result of this international conference, which was attended by former French Prime Minister Edouard Philippe and the Head of Cabinet of the Mexican Foreign Ministry, Mr. Fabián Medina Hernández, was the presentation of a declaration which contains a global strategy agreed upon by the countries suffering from this phenomenon. The Office of Scientific and Technological Information for the Congress of the Union, in charge of the Scientific and Technological Consultative Forum, was designed in collaboration with the British Parliamentary Office of Science and Technology, following its model. Another notable example is the experience of the Science Advisory Council of the Presidency of the Republic, contemplated in the General Law of Science and Technology, with the function of advising and linking the executive with the community of winners of the National Science Award.

Likewise, Mexico plays a leading role in the international scene for the protection of the oceans and has the responsibility of working on the proposal of a regional center of satellite surveillance and alert with the latest technology for the benefit of the Caribbean and Central America. Mexico stated the importance of the 2030 Agenda for Sustainable Development and highlighted the number of landmark events that were scheduled this year across the globe. *“For Mexico, it is a time of the year that will allow us to learn and share the fulfilment of our commitments for the 2030 Agenda and its 17 objectives.”* (Martha Delgado, WSDF 2020). These events, instruments and strategies confirm that despite the limitations and the slow strengthening of the CTI highlighted by reports and news - national spending on CTI, postgraduate scholarships, number of researchers, articles in recognized publications, scientific and technological infrastructure, production of high-tech goods, number of patents - Mexico has a fundamental tool to strengthen such areas and position itself internationally by resorting to what has been used by other nations for years: scientific diplomacy. (Gutiérrez, 2018)

**Chile:** Chile is commonly defined by global scientists as a “Natural Laboratory”, offering unique conditions for scientific exploration and research and making the country very attractive for international institutions and scientists. During the inauguration of the Science Diplomacy cycle in Chile, the Minister of Science, Andrés Couve, spoke about the importance of international collaboration for better scientific results (González, 2019). Chile is currently establishing Centers of Excellence in research, development, and innovation while strengthening strategic alliances such as the Chile-California and the Chile-Sao Paulo plans. Collaboration on these three key themes will be important for Chile in the upcoming decades (González, 2019). In the past thirty years, Chile has experienced continued economic growth as well as a decrease in unemployment rates and levels of poverty. To continue growing and developing in a sustainable manner, Chile implemented the 2030 Agenda as a state policy while understanding the importance of partnerships and collaborations between the private sector, governance, civil society, and academia in order to adopt it. (Sustainable Development Goals Knowledge Platform, 2019) The SDG Index measures the advancements of each country towards the goals and targets of the 2030 Agenda. Chile’s SDG Index is the highest in Latin America at 63.73 out of 100. (SDG Index, 2019) The main challenges the country is focusing on are integral development, the inclusion of indigenous communities, infancy, and a new model for healthcare. (Sustainable Development Goals Knowledge Platform, 2019). The “Chilean Policy of International Cooperation for Development towards 2030” establishes

that one of the main challenges Chile faces when implementing the 2030 Agenda is changing short term and reactive policies for a long term approach with strategic goals that align with foreign affairs. The policy aims to incentivize collective action to improve the livelihoods of Chilean residents through a multidimensional scope that strengthens social coherence and sustainability. (Rueda Fiorentino, 2019). The process of aligning SDGs with national goals is defined through four essential themes: reaching sustainable and inclusive development, reducing poverty and inequality, facing climate change, and strengthening institutions for democracy. (Rueda Fiorentino, Op. Cit.). Between 2016 and 2018, over forty laws, ten policies and twenty-three action plans were implemented in Chile to promote SDGs. In order to continue advancing with the 2030 Agenda, Chile implemented committees and working groups composed of civil society and the private and public sector. These committees are in charge of analyzing advances towards the seventeen SDGs. (Rueda Fiorentino, Op. Cit.)

**Dominican Republic:** Dominican Republic’s 2030 National Development Strategy aims to promote inclusive and sustainable development in alignment with the United Nations’ 2030 Agenda through collaborations and planification. The National Development Strategy’s goals and lines of action are 72% aligned with the goals and targets of the SDGs. (Alianza ONG, 2019). The SDG Global Index of Dominican Republic is 63.93, ranking thirteenth in the Latin America Caribbean Region. (SDG Index, 2019). The Dominican Republic has experienced significant economic growth during the last three decades, with GDP increasing 6.5% yearly during the last four years. Poverty dropped 14.5% in seventeen years, the unemployment rate decreased, and the average income per capita increased. Currently, only 12.1% of the population live in informal households which are vulnerable to extreme weather. However, the homicide and crime rates have increased recently, there are barriers to access justice, and there is evidence of corruption and mistrust within organizations. The Dominican Republic is working towards becoming more transparent in order to address these issues. (Sustainable Development Goals Knowledge Platform, 2019).

The Dominican Republic has made significant advancements regarding SDGs: electricity coverage is at 97% and the use of renewable energies at 13.7%; access to potable water is at 87% in urban areas and 61.8% in rural areas; the population living in slums declined from 28% in 1990 to 12.1% in 2014; households with access to waste collection systems increased 4% in four years; and contrary to the regional tendency, forest coverage increased from 30.8% to 41% in fifteen years. However, the gaps between urban and rural areas regarding electricity and portable water are still significant and only a fraction of forests are protected. Fiscal restrictions are the main barrier towards achieving SDG 17: Partnership for The Goals in Dominican Republic as tax revenues only account for 14% of the GDP. (Santana López, 2018) The Dominican Republic is an upper middle-income country, but it could become a high-income country as soon as 2030 if it overcomes certain setbacks to its sustainable development. (OECD, 2019) According to the Latin American Economic Outlook, the four main setbacks to development faced in Latin America are social vulnerability and poverty, low work productivity, low trust on institutions, and threats to the environment. The Dominican Republic has advanced significantly in overcoming these setbacks to development, but is not close to the most advanced economies yet. (OECD, Op. Cit.). A multilateral agenda with transcending international relations is crucial to overcoming these threats and setbacks to development. It will be necessary to form multilateral alliances with countries of diverse income levels, to promote development strategies for national and local development, as well as to find more ways to collaborate such as exchanges of knowledge and political dialogues. (OECD, Op. Cit.). To promote collaboration and knowledge sharing on science, technology, and innovation, the Foreign Affairs Minister of the Dominican Republic announced in February of 2020 that a Science, Technology, and Innovation Diplomacy Program will be launched in collaboration with the Italo-Latin American Institute (IILA). The strategies and priorities will align with the SDGs to promote social and

environmental prosperity while presenting opportunities for collaboration in the different areas. (IILA, 2020)

**Brazil:** In Brazil, a process for the Institutionalization of Scientific Diplomacy has been carried out in the Ministry of Foreign Affairs where a Department of Science and Technology has been created. Likewise, an Innovation Diplomacy Program (Science, Innovation and Technology companies) was developed, hosted in the Ministry of Science, Technology, Innovations and Communications. Based on these two programs, Brazil has organized “diasporas” meetings abroad. This concept of scientific Diplomacy has been taken to the University of Sao Paulo to organize the first Edition of the Meeting "Foreign Policy and Science", whose central axis was Climate Change. The proposal suggested by Brazil was to include this figure of Scientific Diplomacy in the Embassies and Foreign Ministries of Latin American countries (Brazil and Chile already have it included). Among the activities related to Science and Diplomacy, Brazil organizes an annual meeting on diplomacy and scientific-technological innovation with the support of the Ministries of Foreign Affairs and of Science, Technology, Innovations and Communications, as well as with the participation of other governments and international organizations to strengthen the productive sector of their country and insert Brazil in the production chains worldwide.

Brazil has a strategy designed to meet the 2030 Agenda and the Sustainable Development Goals. The initiative's objective is to involve and raise awareness among civil society about their responsibility and participation to achieve compliance with the 2030 Agenda. The three lines of action of the strategy are:

- Communication and training of different actors on the 2030 Agenda
- Promote the insertion of the SDGs in the political Agenda
- Strategic projects for the implementation of the SDGs.

**Bolivia:** Bolivia is aligned with the 2030 Agenda mainly through two State initiatives: the Economic and Social Development Plan 2016-2020, and the Patriotic Agenda 2025; both initiatives also align with the concept of Good Living. The Patriotic Agenda has thirteen main pillars that focus on social, economic and environmental improvement, many of which are closely aligned to SDGs. (Sistema de las Naciones Unidas en Bolivia, 2018). Four pillars of the Patriotic Agenda align with SDG 17. This serves as an indication that the State initiative is also focused on creating partnerships to increase science, technology, and innovation. Additionally, three pillars align with SDGs focused on harmony, five with SDGs focused on people, six with SDGs focused on prosperity, and four with SDGs focused on the planet (Sistema de las Naciones Unidas en Bolivia, Op. Cit.). United Nations Bolivia recognizes the close relationship between sustainability and resilience as well as with peace and security. Increasing resilience in the economy, environment and social context will create benefits for the population, especially those who live in vulnerable situations. The United Nations Development Assistance Frameworks (UNDAF) will support the implementation of the Patriotic Agenda with international policy in relation to the SDGs. (United Nations Bolivia, 2017). In February of 2020, Dr. Mostajo was appointed as Ambassador of Science, Technology and Innovation against international organizations. He has been tasked with projects such as the creation of a science and technology observatory, which reflect growing emphasis in Bolivian Scientific Diplomacy. Jeanine Áñez Chávez, former president of Bolivia, stated that the appointment emerged from the growing necessity of the government to support the development of science, technology, and innovation among the youth of the country. (Ministerio de la Presidencia: Viceministerio de Comunicación, 2020)

**Costa Rica:** Costa Rica's sustainable tourism is highly active, yielding 5.8% of the country's GDP. Despite the significant population and economic activity, much of the country remains in poverty and lacking knowledge through several environmental

aspects. Costa Rica has addressed various SDGs. SDG 14, “Life below Water”, should be considered as one of the most critical since the impact of coastal tourism poses several threats. In general, SDG 14 addresses major physical and anthropogenic pressures on the marine environment and in the coastal communities. Great progress on SDG 14 should be achieved from 2020-2030. In addition to aforementioned SDG 14, the impacts of climate change on the oceans such as sea level rise, storms, and fisheries should be addressed by 2100 (Noone et al., 2012). Moreover, coastal communities and marine ecosystem should be linked with SDG 1 “No Poverty”, SDG 2 “Zero Hunger”, SDG 3 “Good Health and Well-Being” and SDG 6 “Clean Water and Sanitation” as stated by Wood et al (2015). Cormier and Elliot researched coastal environmental management through SMART analysis -specific, measurable, achievable, realistic and time bounded- to frame and manipulate- to address the marine indicators. Based on these schemes, Costa Rica should adopt more advanced targets based on SDG 14 and also towards attaining sustainable tourism through various environmental objectives.

Some assessment studies conducted on the 2030 Agenda report the necessities to identify missing interlinkages among the targets and indicators. (Le Blanc et al., 2015). Since Costa Rica faces a lot of challenges, it needs a holistic approach to elucidate the dependency of the various targets and goals to gain their effective implementation. However, for qualitative results, the implementation of modelling for different sets of goals should be achieved, (Mainali et al., 2018) and direct interactions among SDG policy should be manifested between stakeholder's knowledge (Khalili et al., 2017). On the basis of the Millennium Declaration, the rights of indigenous people must be ensured by addressing current challenges and commitments of indigenous communities, as well as related solutions. Along with the present pandemic, the preexisting challenges such as financial, climate change and several environmental crises pose a hurdle towards achieving sustainable goals. The COVID-19 pandemic has worsened the progress of SDG 3 which aimed to ensure healthy lives and well-being. In Bolivia and Costa Rica, the underdeveloped countries, COVID-19 has reduced basic life standards by continuously ceasing economic activities, posing many health issues, and tumbling into more poverty, affecting the SDG's primary goal (SDG report, 2020). The 2030 Agenda requires transformation through education with long- term and cooperative management plans.

**Panama:** Panama is the first country in Latin America to incorporate Scientific Diplomacy in the development of the National Strategy for Scientific, Technological and Innovation Diplomacy. This resulted from the effort and commitment of the National Secretariat for Science, Technology and Innovation, and the Ministry of Foreign Affairs. It is through education and within the framework of the SDGs and the 2030 Agenda that Panama hopes to face the commitments made to comply with the SDGs, developing legal instruments of public policy to strengthen the most vulnerable in society. It is worth mentioning that Panama incorporates Scientific Diplomacy, precisely through its Ministry of Foreign Affairs, as a unifying element between science, technology and innovation on the one hand, and diplomatic management on the other. To achieve the development and dissemination of the concept of scientific diplomacy among various sectors of society, the Ministry carried out various activities such as workshops, meetings and other tools that allowed it to strengthen the relationship between different organizations in the science and education sector, and government representatives, among others. (SENACYT-Ministry of Foreign Relations-Panama, 2018).

**Some of the actions are:**

- Launch of the Strategy for Scientific, Technological and Innovation Diplomacy, as a tool for Diplomacy of the 21st Century, on August 16, 2018.
- Support for the XVII National Congress of Science and Technology organized by the "Panamanian Association for the Advancement of Science" (APANAC) and the CILAC Congress.

- Creation by Executive Decree No. 431 of October 25, 2018, of the Commission for the Formulation, Development and Monitoring of the National Ocean Policy and its installation in December 2018.
- Organization of an inter-institutional workshop on the guidelines of the National Ocean Policy in December 2018.
- Carrying out of a workshop with representatives of civil society, academics and the specialized press on the guidelines of the National Ocean Policy, held in February 2018.

The presentation of the National Strategy under the slogan: "Scientific, Technological and Innovation Diplomacy as an Instrument of Diplomacy of the XXI Century" was developed within the framework of expert panels on four thematic axes: Environment, Climate Change and Sustainability. Science in Diplomacy; Public Policies and Foreign Policy based on evidence and informed by scientific and technological committees and Panama, Connectivity, Innovation and Competitiveness. Panama's leadership in the approach to Scientific Diplomacy is clear, which will allow solid progress in its development, based on 3 fundamental pillars of Diplomacy for Science: Transnational Research Projects; Public Policies and Foreign Policy based on evidence and informed by Scientific Committees and Science Contributes to Good Diplomatic Relations.

## CONCLUSION

It is essential to provide support to the scientific-academic community through agreements and treaties in the diplomatic field to find integral and sustainable solutions and avoid an ecological disaster that would permanently affect ecosystems, economic activities and the future of the region. It is clear that under current conditions, the Science Diplomacy, Technology, Innovation and Global Alliances are absolutely necessary to face the global crises that humanity is experiencing. Scientific studies by the Intergovernmental Panel on Climate Change (IPCC) state that the least developed countries will be the first to suffer from the effects of climate change in primary sector activities such as fishing or tertiary services such as tourism. Adding this to the health crisis generated by COVID-19, the setback will be overwhelming. The collateral effects will be reflected in the increase in migratory flows, food crises, the absence of basic services, among others. Without a collective environmental strategy driven by diplomacy, the social, economic and environmental costs would be unsustainable. To address global challenges, Science is not the only element in the solution, an additional effort from all the sectors should be implemented, as well as increased political will. Is not common to see sectors working together, but this will be crucial to get everyone involved to understand social and environmental needs and achieve solutions to the current challenges. Science and Diplomacy have recently come together in Latin America. Scientific diplomacy emerges as a need to transform once-unilateral decision-making into a scientifically based activity, hence diplomacy responds to those needs by giving lead to the creation of a new discipline that considers science and politics, at all levels, local, national, regional and global to give a new approach for decision making. Until a few years ago, in most Latin American countries, Science and Diplomacy developed on different paths. With recent global challenges, the moment arises for Latin America to unite its science and diplomacy to form a common front and create strategies to take action. Due to limited resources for implementing some of the SDGs, the technical, economic and financial capacities of Latin America should pay special attention to areas related to development strategies. It should be emphasized that the differences in development are more profound in the rural and indigenous population as well as among women and certain territories, who should be the focus of attention of State interventions and actions. It is important to highlight that all the actors of society play a fundamental role in Science Diplomacy, current challenges need an additional intersectoral effort to meet the slogans "With all and for the good of all" and "Leaving no one behind". None of the countries discussed in this work mentions the youth as a key element to address and implement SDGs within the diplomatic sphere. As discussed, Science Diplomacy is essential to facing current global challenges, which are likely to worsen over the coming years

to do delayed international response. The effects of climate change are expected to be experienced by the coming generations, which highlights the importance of implementing science diplomacy among young people so they may face upcoming challenges through international cooperation and seeking scientific, technologic, and innovative solutions. The youth must understand the importance of international cooperation and accomplishing SDG 17 to solve global challenges through partnerships. Science diplomacy must be accessible to all disciplines, not only the ones that are under the same field. Making Science Diplomacy available for all will allow those in scientific fields to think about collaboration when seeking solutions, and those in diplomatic fields to take into account the science of global problems when trying to address them. The authors suggest the countries should incorporate the youth as a key element for addressing global challenges in the future and advancing towards achieving the 2030 Agenda.

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