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The scientific community in support of the SDG: the case of São Paulo Research Foundation

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Abstract

This paper aims to present how the scientific community has been adopting the 17 Sustainable Development Goals agenda, with special emphasis on the case of the São Paulo Research Foundation. The research was carried out based on bibliographic reviews and access to data published by the funding agency itself. The following results are highlighted: previously to the launch of Agenda 2030, the agency already presented several projects that incorporated the theme of sustainable development; over the years, it was possible to observe a significant growth in relation to the granting of scholarships linked to SDG and sustainable development issues, as well as a significant quantitative grow on cooperation agreements and partnerships on those matters; other types of contributions from the agency could be observed, such as with the public sector and with companies.

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Keywords

SUSTAINABLE DEVELOPMENT GOALS – SCIENTIFIC COMMUNITY – FAPESP – BRAZIL

Introduction

The aim of this paper is to present how the scientific community has been adopting the 17 Sustainable Development Goals (SDG) agenda, focusing on the Fundação de Amparo à Pesquisa do Estado de São Paulo (São Paulo Research Foundation – FAPESP/Brazil). According to Dinu and Posch "the SDG represent a paradigm newly introduced in 2015, and therefore there does not exist extensive literature related to the SDG in the context of universities" (Dinu and Posch, 2019: 12), as well as within the role performed by research funding agencies (Dibbern, 2023). Therefore, it is expected to contribute to the recent debates on how these research funding agencies, in particular FAPESP, are adopting this global development agenda, considering their support for research.

In general, the methodological procedures were based on exploratory activities of bibliographic review on the topic addressed, access to documents and reports developed by the International Scientific Associations that deal with the SDG and their relationship with the Higher Education Institutions (HEI), as well as by consulting the FAPESP Virtual Library database, where it is possible to obtain information about all the scholarships and grants that the agency has financed and is financing. The data linked to the "FAPESP and the Sustainable Development Goals" portal were also analyzed in this study. As a form of organization, in addition to this introduction and final considerations, the paper presents three main parts: the first concerns the panorama

of the emergence of the SDG as a global research agenda. The second part of this paper aims to contextualize the debate on how the scientific community can collaborate with the implementation of the 2030 Agenda, according to the bibliographic literature. The third part of the paper focuses on the presentation of how FAPESP has included the SDG into its research agenda. It is important to highlight that the case of FAPESP was chosen due to its importance with respect to the Brazilian science and technology system, its role and influence in relation to the other agencies in the system, as well as its institutional autonomy regarding the Government of São Paulo. As can be seen in the table below, FAPESP's budget is larger than that of the national agency, the Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq, which adds to the importance of its work not just for the Brazilian case, but also for the Latin American one.

Table 1. Budget of main Brazilian R&D funding agencies

Brazilian main R&D funding agencies	Budget (R$)		
	2020	2021	2022
CAPES (Ministry of Education/Presidency of the Brazilian Republic)	3,08 billions	3,01 billions	3,84 billions
CNPq (Ministry of Science, Technology, and Innovations/Presidency of the Brazilian Republic)	1,37 billions	1,23 billions	1,32 billions
FAPESP (São Paulo)	1,44 billions	1,78 billions	1,85 billions

Source: Author's elaboration according to the Portal da Transparência (Brazil).

In this study, we propose that the adoption of these goals can be justified by considering two factors. First, we hypothesize that the influence of foreign funding agencies on FAPESP plays a significant role. Second, we attribute the adoption of these goals to an internal movement within FAPESP led by the professors and researchers who are part of the Foundation. The theoretical framework of the Latin American

perspective of Social Studies in Science and Technology and the Geopolitics of Knowledge are used in the data analysis.

An overview on SDG

The 17 Sustainable Development Goals (SDG), approved in September 2015 by the United Nations Heads of State and Government, present a series of goals aimed to guide decision making in the fifteen-year period (2015-2030). These announce the scale and ambition of a new global agenda based on the balance between four dimensions: economic, social, environmental, and institutional (Sachs, 2012). Among its various interconnected topics, the SDG aim to combat hunger and poverty; promoting inclusive and equitable education; gender equality; full employment and decent work; access to water and sanitation; among others (UN, 2016).

Therefore, it is a question of continuing the commitments incorporated in the 8 Millennium Development Goals (MDG) launched in 2000 that, despite not having reached their fullness, contributed to the resolution of some social problems, especially in the context of developing countries (Sachs, 2012). However, this new global agenda differs from the previous one. The MDG were originally developed by the OECD in 1996 as part of its development strategy for the 21st Century. These ended up being integrated into the UN agenda and, after an "iterated distillation, extracted from a wide array of global processes, with many actions involved over several years" (McArthur, 2014: 6), were approved by the Heads of State and Government under the so-called "United Nations Millennium Summit". In words of McArthur, the MDG constitute themselves as the "world's first explicit development partnership framework between developed and developing countries" (McArthur, 2014: 20), having as one of its main

objectives the eradication of extreme poverty and hunger in the world. Guimarães and Ferreira (2020) argue that the intergovernmental actions in favor of human development during the beginning of the 21st Century, had as base guidelines the MDG, whose focus was on the provision of basic services such as access to sanitation water and drinking water, in addition to the fight against extreme poverty, especially in the context of developing countries.

Even though the SDG are based on some successes achieved through the MDG, the new global agenda stands out for the inclusion of new priority areas such as climate change, sustainable consumption, and innovation. As well as through SDG 17, which requires the participation of several actors through the establishment of collaborative partnerships between countries and other stakeholders, this specific SDG seeks to promote partnerships between developed and developing countries, considering reducing disparities between them, the implementation of strategies that range from information sharing and technology transfer, even opportunities for research development (Addo-Atuah *et al*., 2020). Among the actors called to contribute, some groups stand out: Non-Governmental Organizations; local authorities; unions; women, children, and youth; enterprise and industry and the scientific and technological community.

The goals demand an advance in access to technology, as well as scientific knowledge, aiming at the sharing of ideas and global research partnerships in several areas of knowledge. In other words, SDG 17 refers to an important objective in the context of consolidating global partnerships that aim to contribute to the achievement of other objectives (Addo-Atuah *et al*., 2020), especially concerning the scope of education. In this regard, it is also possible to point out some changes that occurred in relation to the previous agenda, such as secondary and higher education, which, unlike the MDG, ended up gaining greater notoriety in the 2030 Agenda.

On the subject of HEI, the role attributed to universities, research centers and laboratories, as well as research funding agencies is highlighted. This issue will be further addressed in topic 3 of this paper, however, it is possible to pose the following beforehand: in addition to the contributions made by such actors in relation to the SDG, the opposite is also evident, that is, the contributions of the SDG to these institutions. Such contributions, as presented by the Sustainable Development Solutions Network (SDSN) Australia/Pacific (2017), may be due to the establishment of new partnerships, access to new internal and external financing within the scope of financing agencies, as well as through the capture of demand for education associated with the SDG and demonstration of the social impact of universities on society (SDSN Australia/Pacific, 2017).

According to the literature, a university and research center and, by extension, a research funding agency that incorporates the SDG as a guideline, tends to problematize the inequalities present in society to train professionals capable of reasoning critically, preparing them to participate in the economy and contribute to the public good (Leal Filho *et al*., 2017). Thus, these institutions perform research and seek to produce new knowledge, in view of their sharing with the external community, contributing directly to their locality. In this regard, Leal Filho *et al.* (2017) shows that several universities around the world are trying to transform their institutional structures in line with the SDG, considering the proposal of new curricular and pedagogical approaches, the establishment of new collaborations with other Higher Education Institutions and research funding agencies, in addition to the implementation of good practices of co-existence between the internal and external communities of these institutions.

Note that the idea of the SDG gained rapid worldwide relevance due to the growing urgency for sustainable development and, although the definitions of this term still vary

in the academic sphere, it encompasses a triple approach to human well-being that the 193 UN Nation-States aim to aim (Sachs, 2012). However, even though many stakeholders are committed to reaching them (UN, 2016) and the SDG share a global approach and dimension, the political strategy for its implementation has national emphasis, and it is up to each country to determine its priorities, forms of financing, evaluation and monitoring of results. Then, “by not presenting strong global governance and financing proposals that effectively support national governments, Agenda 2030 deals with the risk that the SDG will be unevenly met throughout the world, with some not even achieving partial results” (Moreira *et al.*, 2019: 23).

Among the critical perspectives on the SDG, we highlight the production of De Menezes (2020), Gómez Gil (2018), Persson, Weitz and Nilsson (2016) and Schneider *et al.* (2019).

When performing a critical review, Gómez Gil (2018) argues that the complex architecture, the technical limitations, and criticism by the international community, end up projecting some limitations to achieve the objectives of this new global agenda. Thus, the author presents that several scientific institutions and development organizations criticize it for its numerous objectives, since many of the goals are seen as ambitious, in addition to the problems related to the viability of the approved indicators. Despite this, the author recognizes that its innovative element refers to its universal character that overlaps and reinforces each other through a multilevel performance in local, regional, national, and global spaces.

Another element addressed concerns the problem of the lack and quality of basic data for monitoring the implementation of this agenda in most of the poorest countries. Similarly, Persson, Weitz and Nilsson (2016) adds that due to the low level of obligation and the lack of specific enforcement and compliance mechanisms, efforts to monitor and evaluate the implementation of the SDG become critical elements considering the

conservation of the credibility of the agenda and the commitments assumed, resulting in little effort to achieve them.

In the perspective of Schneider *et al.* (2019), although the 2030 Agenda represents a universal vision regarding sustainability, it needs to be explored critically, especially in relation to the dynamics of power, values and perspectives involved in its development process. “Key questions about whose voices were influential in the formulation of the 2030 Agenda, whose perspectives were taken into account, and who stands to win or to lose are as urgent as they are complex” (Schneider *et al.*, 2019: 1598).

De Menezes (2020) highlights the fragile aspects of some goals and targets of the agenda, as is the case of knowledge and technology transfer, especially those listed in SDG 17. The author considers that such goals are “exhortatory, which proclaim, in a generic way, the need to foster international cooperation” (De Menezes, 2020: 12, own translation). Such transfers, however, should be analyzed with caution, in view of the "miracles" promised from a linear view of scientific progress. This linear view must be deconstructed in view of the Social Studies of Science and Technology (Conde and Araújo-Jorge, 2003; Dagnino, Thomas and Davyt, 1996).

Corroborating such criticisms, we add an issue: several SDG are at odds with each other. This means that to achieve a specific goal, for example, achieving strong GDP growth, we will have a negative impact on terms of environmental preservation. Therefore, because it is a hegemonic agenda, the SDG do not share an approach that transcends the current economic model. The agenda preserves a kind of "socio-technical gatopardism", that is, despite addressing issues such as the reduction of inequalities, there is no thought of changing the current productive and financial system (Dibbern, 2023).

In addition, we also add the issue concerning the specifics of each region of the globe. The socioeconomic problems experienced by Latin American countries, for example, differ from those of the Global North countries. Therefore, the question is whether a global development agenda incorporates the particularities of each region. Or, considering the theoretical framework of the STS field, it is up to Latin American countries, for example, to create their own development agenda.

However, despite the criticisms exposed, the SDG agenda has become globally diffused as strategic north for various stakeholders, including the scientific community. Therefore, studying how this agenda has been adopted by various actors becomes important, to precisely understand their motivations, particularities, and behavior.

SDG and the scientific community

As discussed in the previous section, 2030 Agenda demands the participation of several stakeholders, with a view to establish partnerships and collaborations. One of these actors refers to the scientific community, which is represented by universities, research centers and laboratories, in addition to research funding agencies. This community is called to contribute to the development of new ideas and information in the context of solving global problems, being necessary and beneficial to the establishment of new scientific cooperation (Schmalzbauer, and Visbeck, 2016).

Regarding the promotion and production of new research, the SDG demand the following: SDG 2.a, 3.b, 7.a and 12.a point to the need for the development of research and scientific contributions over sustainable agriculture, vaccine development and sustainable production and consumption issues; SDG 14.3, 14.4, 14.5 and 14.a, indicate the need for new scientific contributions to address fisheries management and

ocean treatment; SDG 9.5 demands the improvement of scientific research, in order to update the technological capabilities of various industrial sectors in the world, especially in developing countries; SDG 9.b demands supporting development of research and innovation in developing countries, providing an environment favorable to industrial diversification and adding value to commodities; other SDG can also be highlighted as SDG 17.6, which refers to the establishment of regional and international cooperation in the scope of access to science, technology and innovation; as well as SDG 17.8 that aimed to operationalize "the Technology Bank and the training mechanism in science, technology and innovation for the least developed countries by 2017, and to increase the use of training technologies" (UN, 2016).

The SDSN Australia/Pacific Report presents collaboration with regard to how such a community can contribute to these Goals. According to this document, although teaching, research, governance, and external engagement are addressed separately, they are directly interconnected (SDSN Australia/Pacific, 2017). The SDG, therefore, represent a great opportunity to create, strengthen and reveal the links that exist between them, being an approach to be integrated by the entire scientific community, especially universities, considering a better involvement with this global research agenda.

SDSN Australia/Pacific also presents an overview of the main contributions that this community can make in relation to the SDG. The first one refers to the teaching and learning dimension. Therefore, because it is one of the foundations of the SDG, quality education produces significant benefits in relation to sustainable development for individuals, communities, and countries. Thus, considering undergraduate, graduate, professional education, distance education, extracurricular activities, and student movements, they play an important role in the implementation of the SDG. The second contribution mentioned concerns research development. This contemplates the role to

be played by research centers and laboratories, as well as research funding agencies, since they constitute themselves as institutions capable of implementing the SDG through their funding notices and institutional research agenda, considering the objectives and goals mentioned at the beginning of this section. Thus, the academic community, through its research capacity, has a relevant role regarding the production of knowledge, solutions, and innovations, constituting itself as a key element to address and implement the SDG.

As for the third contribution, the dimensions of governance and organizational operations within universities, development centers and agencies are emphasized. In this case, the impact related to the incorporation of the SDG in relation to their sphere of operational influence is observed. In other words, it recognizes the impact on the plan of the internal community within the university and agency, and externally. The report presents the possibility of aligning the governance structures of these institutions and their operational policies with the objectives and goals of the SDG. Such alignment can be accomplished through a mapping in relation to the strategies, policies and indicators present in university reports, assessing the level of congruence in relation to the SDG, as well as through their incorporation in the organizational reports of universities and funding agencies. Finally, the dimension of external leadership stands out, with a view to strengthening the engagement and participation of actors internal and external to the university in the SDG plan. In addition, such a community can also contribute toward facilitating dialogue and intersectoral actions, as well as contribute to the monitoring and development of public policies in the defense of sustainable development and in the implementation of the SDG (SDSN Australia/Pacific, 2017).

As related, it can be said that the scientific community is called upon to be involved with the 2030 Agenda at different levels of action: through the identification of what the university and research centers and, by extension, the funding agencies come

developing to contribute to the SDG; by recognizing the importance and usefulness of the SDG in conducting teaching, research, governance and extension activities as a general strategy to be incorporated; and, through the integration of the SDG into institutional governance structures (SDSN Australia/Pacific, 2017). As such, this community has the role of assisting in translating such a global agenda into practical agendas to be implemented at national and local levels (Salvia *et al.*, 2019).

Reaffirming these elements, Owens (2017) adds about the existence of two main areas in which this community can work together between governments and other HEI and agencies that promote research and development, they are: through public investment in research and development, as well as through the establishment of new collaborative and coordination partnerships between such actors. These areas, in turn, can be implemented through regional cooperation, because "regional networks help governments to understand how other countries in a similar situation have responded and to guide them in their next steps" (Owens, 2017: 418), which can be a starting point for public policy makers (ICSU, 2017).

Therefore, a new global research agenda is already being incorporated through collaborations between national and international funding agencies, as well as between scientific associations and higher education institutions. That is, it concerns "a common agenda [*which*] opens the door to more partnerships and different points of view on education and training" (Akkari, 2017: 941), illustrating the growing influence on the part of international organizations in the scope of national public policies on education and other areas of knowledge (Dibbern and Serafim, 2021).

Leal Filho *et al.* (2017) adds that, as it is a matter of global concern, several initiatives on the SDG have emerged within the scientific community from different areas of knowledge, such as the educational platform "SDG Academy", which offers online courses on the SDG; the initiatives of the "International Science Council", which

coordinates international actions on issues of great academic importance present in the SDG; the actions developed by the Sustainable Development Solutions Network, which aim to promote projects that integrate the SDG, and the Paris Agreement on Climate Change, through education, research and analysis of public policies; among others.

In the context of Latin America and the Caribbean, the actions and activities carried out within the framework of the Economic Commission for Latin America and the Caribbean (ECLAC) stand out. ECLAC has played an important role in the creation and coordination of the "Foro de los Países de América Latina y el Caribe sobre el Desarrollo Sostenible", as a regional mechanism for monitoring and tracking the implementation of the 2030 Agenda; in addition to participating in the "High Level Political Forum", an intergovernmental mechanism that meets annually –at Ministerial level– within the Economic and Social Council and, every four years –at the level of Heads of State– within the scope of the UN General Assembly. The next section of the article presents the FAPESP case study.

Although such initiatives in higher education context are important, we cannon disregard the criticisms indicated in the previous section. Although the goals and targets that make up the SDG agenda are highly scientific and technological in nature –going beyond the dimensions of public administration–, it is necessary to be careful with their impasses and problems related to the economic and environmental dimension (Alves and Fernandes, 2020; De Menezes, 2020; Dibbern, 2023; Galvão and de Menezes, 2020).

The case of the São Paulo Research Foundation

The case study to be presented in this paper refers to the Fundação de Amparo à Pesquisa do Estado de São Paulo (São Paulo Research Foundation – FAPESP). For that, a bibliographic review was performed on its institutionalization and roles. In addition, as a methodological part of the study, exploratory research was carried out within the scope of the FAPESP Virtual Library in relation to the grants and scholarships provided by this institutional website, being related to the major topic of sustainable development, as well as those referring explicitly to the SDG.It is important to highlight that researchers funded by FAPESP have been conducted research on this major theme even before the launch of the SDG agenda. Therefore, this study has identified a series of research projects funded by the agency that focus on this theme before 2015.As an example, we can mention the case of the three main strategic programs of FAPESP, as shown in the table below:

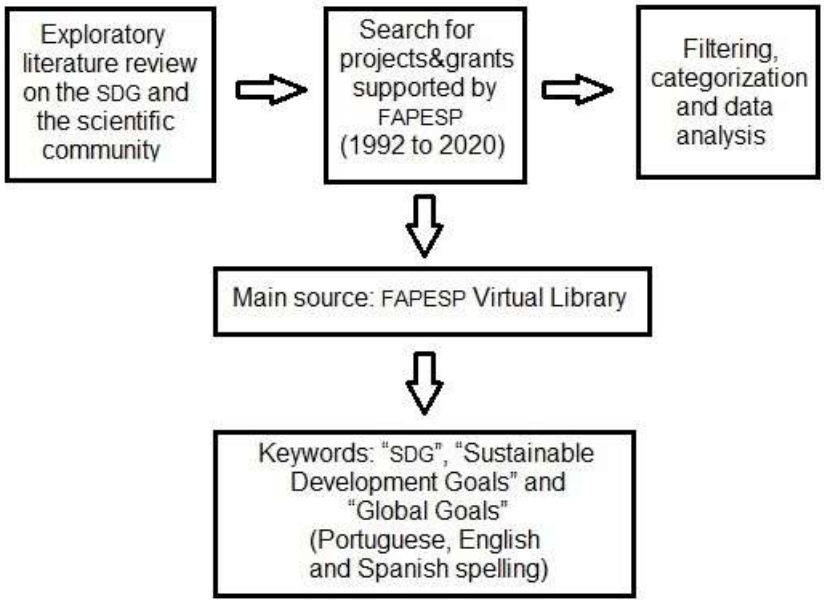
Table 2. FAPESP's Programs

Programs	Released Year	Aims	Total scholarships and grants (concluded and in progress)
Research Program in Characterization, Conservation, Restoration and Sustainable Use of Biodiversity – BIOTA	1999	Its purpose is to map and analyze biodiversity, including fauna, flora and microorganisms, but also to evaluate the possibilities of sustainable exploitation of plants or animals with economic potential and to subsidize the formulation of conservation policies for forest remnants. The projects are developed under the responsibility of a Principal Researcher linked to higher education and research institutions in the State of São Paulo. The selection is peer reviewed.	347
Bioenergy Research Program – BIOEN	2008	Supports research and development activities, using academic and industrial laboratories to promote the advancement of knowledge and its application in areas related to the production of Bioenergy in Brazil. The projects are developed under the responsibility of a Principal Researcher linked to higher education and research institutions in the State of São Paulo. The selection is peer reviewed.	293
FAPESP Research Program on Global Climate Change – PFPMCG	2008	It aims to advance knowledge on this topic. The program's research results are expected to assist in scientifically informed decision making with respect to risk assessments and mitigation and adaptation strategies. The projects are developed under the responsibility of a Principal Researcher linked to higher education and research institutions in the State of São Paulo. The selection is peer reviewed.	158

Source: Author's elaboration according to FAPESP (2022a).

To identify the grants and scholarships, we used the terms: "SDG", "Sustainable Development Goals" and "Global Goals" as keywords, and from these, we performed a filter in relation to the results found.

Figure 1. Research design



Source: Own elaboration.

Therefore, before the presentation of the results, a brief context related to the history of FAPESP is exposed. Formally created in 1960 by means of Law No. 5,918, October 18th, 1960, the São Paulo Research Foundation started operating only in 1962, through Decree Law No. 40,132, of May 23rd, 1962 (ALESP, 1947). Within the scope of the law that institutes it, the purpose of the Foundation refers precisely to the "support for scientific research" in its birthplace (São Paulo State), showing by its competence domain the strategic role and the importance of such a Brazilian development agency within the scope of the national S&T Policy, as well as regarding to its potential in the establishment of new collaborations and cooperation between national and international researchers.

Lafer (2015) states that the promotion carried out by the Foundation assess three main objectives: the advancement of scientific knowledge; applied research; support for research infrastructure. The first objective is related to the offer of regular scholarships and assistance with a view to train human resources, in addition to

thematic projects and various programs. The second refers to the financing of research with great potential for application, as well as of economic and social interest, being developed through projects such as Pesquisa Inovativa em Pequenas Empresas (Innovative Research in Small Companies – PIPE). In the case of the third objective, resources allocation is foreseen to provide adequate infrastructure for carrying out research, such as modernization of laboratories and internet access.

Specifically, in relation to the offer of scholarships, the Foundation classifies as follows: scholarships in the country, which can be: Scientific Initiation, Master's, Doctorate, Direct Doctorate, Post-Doctorate, Technical Training, Public Education, Scientific Journalism, Participation in Course and Young Researcher; and scholarships abroad, such as: Research Internship Scholarship Abroad and Research Scholarship Abroad. Associated with these types of scholarships, the policy of public notices and calls made by the funding agency stands out, being these periodically called for wide competition, which may include research projects, projects for training courses and/or training of human resources, scholarships studies in the country and abroad, publishing and publication of journals, that is, contemplating various financing mechanisms provided by the Foundation.

This policy, however, can be spontaneous or induced demand. The first ones refer to the submission of research projects of different levels and modalities sent spontaneously, that is, at any time of the year, covering all areas of knowledge. In other words, it is about offering the researcher the possibility of choosing and proposing the theme to be researched, which can be free or delimited in thematic axes. The second type of demand concerns projects submitted in response to specific notices and calls, therefore, thematic lines, resources and defined execution time are determined. As discussed above, the allocation of such grants will be analyzed within the scope of this paper, with special emphasis on those that explicitly refer to the SDG.

It should be noted that, as attested by Lafer (2015), FAPESP has been going through a process of constant internationalization recently. This process is carried out through agreements with similar entities –such as HEI and other development agencies– around the world, constituting itself as "an answer to the challenge of the importance for the advancement of knowledge, the potential for interaction between researchers national and foreign", as well as its insertion into the "new molds on the agenda of the world agenda" of research (Lafer, 2015: 8-9). In this sense, within the scope of the results presented below, an increase in this interaction with international institutions over the years can be seen, at least in the field of research related to sustainable development and the SDG.

Before presenting the results obtained, it should be noted that FAPESP had already financed projects addressing the topic of sustainable development and the sustainability issues, even before SDG approval, thus, demonstrating engagement in funding research related to the theme (see Table 2). These initiatives developed by FAPESP show its commitment to issues related to sustainability and sustainable development, with an internal movement of support from the professor-researchers that compose the Foundation.

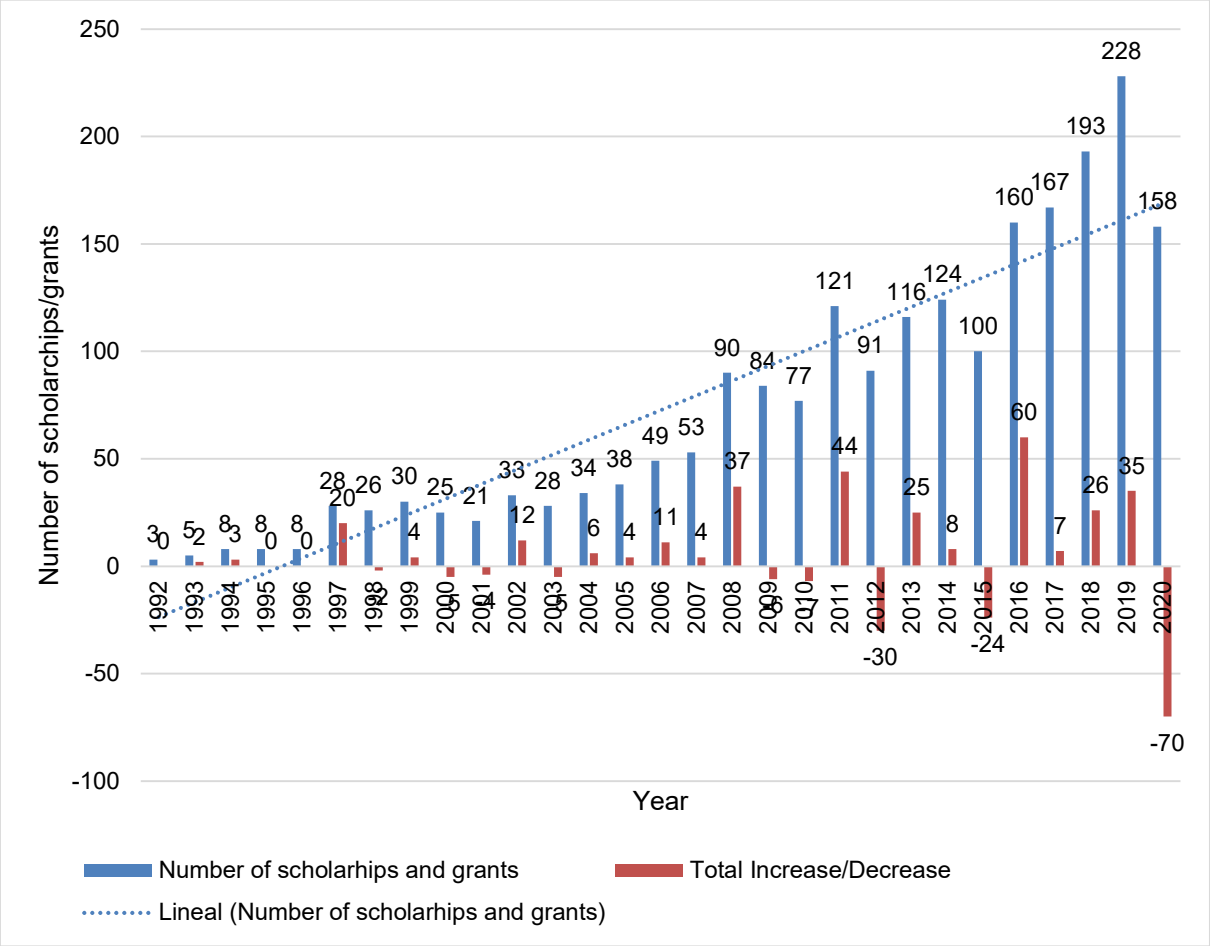
From this context, we will present the results obtained by consulting the institutional portal of the FAPESP Virtual Library, carried out in October-December 2020. On the Virtual Library portal, all scholarships financed by the institution are available with the following data available: year start of the grant award; area of knowledge; line of support; agreement or agreement signed –if any–; linked institution; partner institution –if any–; and partner company –if any. In addition, it is also possible to identify the location of the research, if it was performed through a cooperation agreement with institutions abroad and, by extension, the main continents that carry

out this type of partnership with the Foundation, with a view to the theme researched in this paper.

It was possible to identify a total of 2,107 research grants and scholarships awarded between the period 1992 to 2020, which included at least one of the keywords or terms provided at the beginning of this section. Corresponding 0,82% of all research supported by the agency, this value represents a low number of research studies and projects funded by the agency concerning this topic, even though the agency has the aforementioned strategic programs. It is important to emphasize that the agency funds research in all areas and fields of knowledge.

The Graph 1 shows the total number of grants and scholarships identified according to the year in which they started. These, in turn, refer specifically to those who presented one or more words or key terms from our consultation to the previously indicated database. The increase in funded research over the years is related to the growing significance of the theme, particularly concerning environmental issues, climate change, and sustainability, especially from the year 2000 onwards. In 2008, there was a notable initial increase in the funding of these research projects, which gained further momentum over the subsequent years. 2016 also stands out for the increase in the number of scholarships and grants awarded specifically on this theme. Our hypothesis for this issue refers to the approval of the SDG as a guide to be reached by different actors, as well as in relation to the number of agreements and cooperation established between FAPESP and other institutions abroad in the same period.

Graph 1. Total scholarships and grants per year, according to the consulted keywords

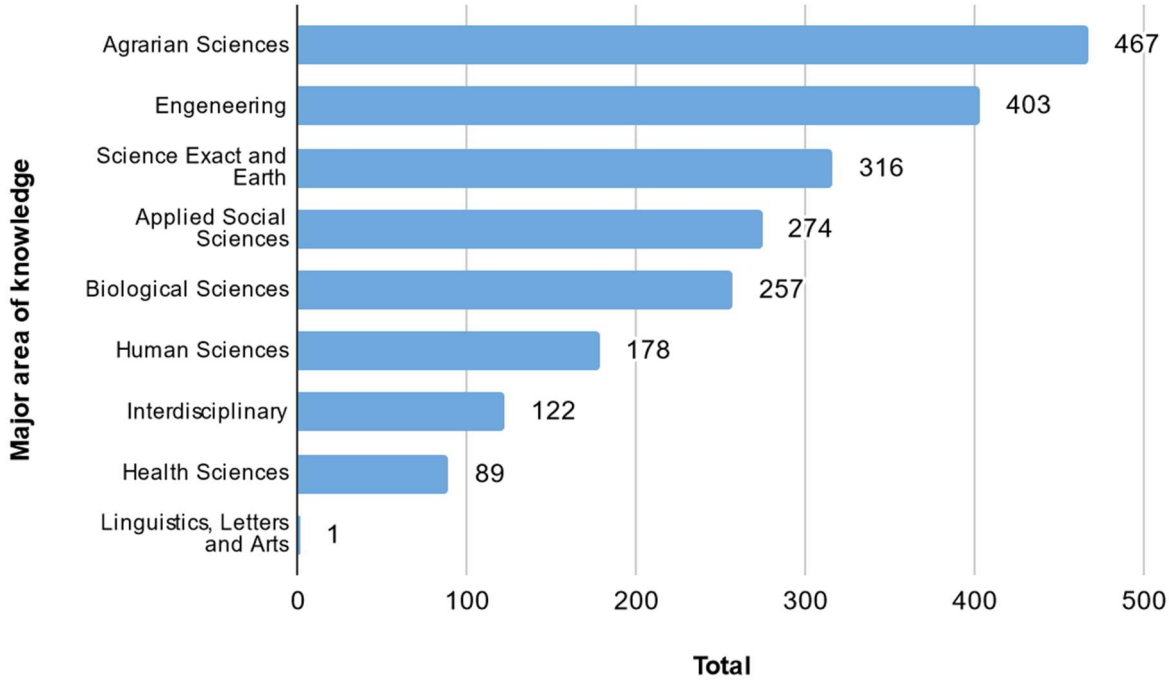


Source: Own elaboration.

Other elements can also be exposed in relation to the data collection performed, such as the data provided by Graph 2, showing the list of scholarships and grants provided by FAPESP according to the areas of knowledge. Therefore, we use the FAPESP'S classification of areas: Agrarian Sciences, Biological Sciences, Health Sciences, Exacts and Earth Sciences, Human Sciences, Applied Social Sciences, Engineering, Interdisciplinary and, Linguistics, Letters and Arts. Thus, as can be seen in the figure indicated, the areas that stand out most in terms of the award of grants and

scholarships in relation to sustainable development and SDG, refer to Exacts and Earth Sciences, Agrarian Sciences, and Engineering.

Graph 2. Total scholarships and grants provided by major area of knowledge, according to the keywords consulted



Source: Own elaboration.

At Table 1, funding lines provided by FAPESP with regard to the investigated subject are also highlighted. Regarding research grants, it is evident that Regular Grant (296), Organization of Scientific Meetings (122) and Innovative Research in Small Companies (120) stand out. Regarding scholarships in the country, the attribution of Scientific Initiations (355), the Qualification/Technical Training Program (191), Master's (187), Doctorate (127) and Postdoctoral (171) stands out. Finally, in terms of scholarships abroad, research grants (43), Post-Doctorate (28) and Doctorate (25) are

noteworthy. Therefore, a total of 1,256 scholarships are declared in the country and abroad and 851 research grants were provided between 1992 and 2020, considering the theme addressed here.

Specifically, in relation to the awarding of grants by promotion line and area of knowledge, the Agrarian Sciences, Engineering and Exact and Earth Sciences stand out again (see Table 3). As for the other areas, only Linguistics, Languages and Arts did not present any scholarship granted in relation to the theme, since the only assignment mentioned in the consultation was a research grant.

Table 3. Scholarship's allocation by promotion line and area of knowledge, regarding to the keywords consulted

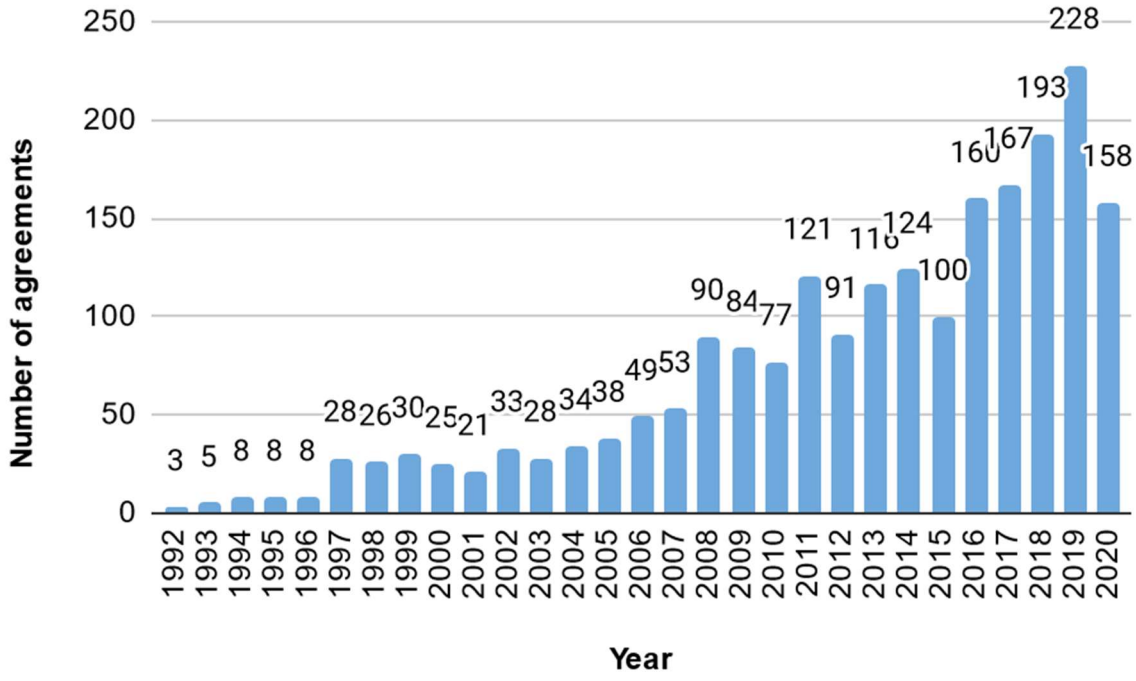
Lines of support		Area of Knowledge										
		Agrarian Sciences	Biological Sciences	Health Sciences	Exact and Earth Sciences	Humanities	Applied Social Sciences	Engineering	Interdisciplinary	Linguistics, Languages and Arts	**Total**	**%**
Scholarships in Brazil	Support for Young Researchers	1	2	-	2	2	-	-	-	-	7	0,5
	Doctorate degree	28	20	2	18	18	15	24	2	-	127	10,1
	Directed Doctorate	3	4		6		3	7	1	-	24	1,9
	Scientific research	65	43	6	44	44	74	64	15	-	355	28,2
	Master's degree	31	21	9	24	33	35	28	6	-	187	14,8
	Innovative Research in Small Business – PIPE	23	12	4	6	-	1	19	4	-	69	5,4
	Post doctoral	34	20	2	46	11	13	30	15	-	171	13,6
	BIOTA Program – Support for Young Researchers	-	1	-	-	-	-	-	-	-	1	0,07
	Training Program – Technical Training	55	25	20	41	5	11	23	11	-	191	15,2
	ESCIENCE	1	-	-	-	-	-	-	-	-	1	0,07

	Program - Small Business											
	Scientific Journalism Program	-	-	-	1	-	2	-	1	-	4	0,3
Scholarships abroad	Research Internship – Doctorate	6	6	-	6	3	2	2	-	-	25	1,9
	Research Internship – Direct Doctorate	1	-	-	-	-	2	1	-	-	4	0,3
	Research Internship – Scientific Initiation	1	1	-	-	2	2	3	-	-	9	0,7
	Research Internship – Master	2	2	-	2	2	1	-	-	-	9	0,7
	Research Internship – Postdoctoral	6	4	-	5	-	-	8	5	-	28	2,2
	New Frontiers	-	-	-	-	-	1	-	-	-	1	0,07
	Search	8	3	1	7	5	9	8	2		43	3,4
Total		**265**	**164**	**44**	**208**	**125**	**171**	**217**	**62**	**0**	**1,256**	**100**

Source: Own elaboration.

Regarding the cooperation agreements and agreements signed between FAPESP and other institutions, that is, regarding the induced demands, these ended up expanding quantitatively over the years as pointed out by Lafer (2015). Corroborating this concern, Graph 3 presents a scenario for the growth of such agreements, especially from 2015 onwards, in relation to the theme discussed here. For this result, we again attribute the hypothesis regarding the approval of the SDG, which encourages the establishment of partnerships and collaborations between different institutions and actors.

Graph 3. Signed agreements by FAPESP per year, according to the consulted keywords



Source: Own elabortation.

Among the 327 agreements and covenants signed in the aforementioned period, and related to the subject in question, the projects financed with the Belmont Forum stand out (94), reinforcing the results obtained by Dibbern and Serafim (2022); other agreements with Brazilian funding agencies can also be observed, such as the case of the Coordinação de Aperfeiçoamento de Pessoal de Nível Superior (Coordination for the Improvement of Higher Education Personnel – CAPES) linked to the Ministry of Education (47); the Financiadora de Estudos e Projetos (Financier of Studies and Projects – FINEP) of the Ministry of Science, Technology and Innovations (33); and, the Institutos Nacionais de Ciência e Tecnologia-CNPq (National Institutes of Science and Technology-National Council for Scientific and Technological Development – INCT-CNPq), linked to the Ministry of Science, Technology and Innovations (20). These

agencies, along with FAPESP, constitute the main institutions that finance scientific research within the Brazilian science and technology system. Other agreements can also be visualized, which are established with national and international research institutions[1]. Regarding the relationship between such cooperation agreements/partnerships and the areas of knowledge, the main areas remain between the Exact and Earth Sciences (85), Engineering (51) and Agrarian Sciences (49),

[1] Such as: GlaxoSmithKline (9); CNPq/Brazil (8); Global Alliance for Chronic Diseases (7); Ministêrio de Ciência, Tecnologia e Inovação – MCTI/Brazil (7); Foundation for Science and Technology (6); Vale S.A., Fapespa and Fapemig (6); FINEP/Brazil (5); 4 results each: BBSRC, United Kingdom Research&Innovation – UKRI, Newton Fund; Shell Group; British Council, CONFAP, Newton Fund; 3 results each: BE-Basic Foundation; CONFAP, Newton Fund, ESRC, UKRI; CONFAP, Newton Fund, UK Academies; ESRC, UKRI, Dutch Organization for Scientific Research; German Federal Ministry of Education and Research; 2 results each: French National Research Agency; Australian Technology Network of Universities; Biotechnology and Biological Sciences Research Council, UKRI; National Commission for Scientific and Technological Research; Alberta, Laval, Dalhousie and Ottawa Consortium; Fundação SEADE (2); Global Environment Facility; Imperial College, United Kingdom; Koppert Brazil; Medical Research Council, UKRI, Newton Fund; Newton Fund; Government Secretariat of the State of São Paulo; Secretariat of the Environment; Texas A&M University; 1 result each: Agilent Technologies Laboratory: Chemical Analysis, Lyfe Sciences and Diagnostics; BBSRC, UKRI, National Council for State Research Support Foundations, Newton Fund; British Council, Newton Fund; National Commission for Scientific and Technological Research, Concytec, Conicet, NERC, UKRI, Newton Fund; Concytec; CONFAP, Newton Fund; CONFAP, Newton Fund, EPSRC, UKRI; CONFAP; Newton Fund, NERC, UKRI; CSIC; DAAD; Innovation Fund Denmark; IUPAC; Microsoft Research; National Research Foundation, South Africa; NERC, UKRI, Newton Fund; NWO; Network of Italian Universities; Trans-Atlantic Platform for the Social Sciences and Humanities; Horizon 2020-EU; Universidad de la Frontera; Universidad de Magallanes; University of Illinois; University of Manchester; University of Melbourne; University of Nottingham; University of Queensland; University of Surrey; University of Texas; University of Warwick; VITAE, Support for Culture, Education and Social Promotion; No agreements declared = 1780 results.

followed by the Biological Sciences (48), Applied Social Sciences (30), Interdisciplinary (29), Human Sciences (18), Health Sciences (16) and, Linguistics, Languages and Arts (1).

About the place where the research was carried out, 123 scholarships and grants were carried out at institutions abroad, such as: 76 in European countries; 38 on the American continent, especially in North America; 5 in countries in Oceania; 2 in Asia and 2 in the African continent. The other 1984 scholarships and grants supported by FAPESP were developed within the scope of the Brazilian State, especially in the State of São Paulo, which shows a greater amount of grants and scholarships linked to the Universidade de São Paulo (University of São Paulo – USP; 676), Universidade do Estado de São Paulo (São Paulo State University – UNESP; 441) and the Universidade Estadual de Campinas (State University of Campinas – Unicamp; 216). Other HEI can also be highlighted, as is the case of the Universidade Federal de São Carlos (Federal University of São Carlos; 141), Universidade Federal de São Paulo (Federal University of São Paulo; 28) and the Fundação Getúlio Vargas (Getúlio Vargas Foundation; 20). Also noteworthy are the grants and assistance linked to the Ministries of the Presidency of the Republic and Secretariats of the State of São Paulo, as is the case of the Ministry of Science, Technology, Innovations and Communications and the Secretariat of Agriculture and Supply. In other words, it is possible to observe that in addition to the theme of the SDG and sustainable development incorporating the Foundation's research agenda, these are also present in the political agenda at the federal and state levels.

Other data presented in the scope of the study is the identification of companies linked to the grants and scholarships provided. In this sense, there are the following: 135 scholarships/grants have links with private companies; of these, the companies most involved are “4tree Agroflorestal Ltda”, “BG E&P Brasil Ltda”, “Chemyunion

Química Ltda" and "Decoy Tecnologia em Prague Control Ltda", among others. Other companies are alsodeclared, such as "Accert Pesquisa e Desenvolvimento em Química e Biotecnologia Ltda" and "Água da Mata Desenvolvimento Sustentável Ltda". It should be noted that the area of knowledge with which they are associated refers to Agrarian Sciences, Engineering, Biological Sciences, Exact and Earth Sciences, Health Sciences, Interdisciplinary, Applied Social Sciences and, as for Humanities and Linguistics, Languages and Arts, these did not present any related company.

In addition to the scholarships and grants identified, it was also possible to observe other types of contributions to the theme of the SDG, in view of a partnership established between the Management of Studies and Indicators of the development agency with the Government of São Paulo and the State System of Data Analysis Foundation. This resulted in the publication of the "1st Monitoring Report on the Sustainable Development Goals of the State of São Paulo" (Governo do Estado de São Paulo, Fundação SEADE and FAPESP, 2019), which presents information on the achievement of such Objectives and goals within the scope of the 2016-2019 Pluriannual Plan of the State, as well as explaining indicators that make it possible to portray the conditions in which the State is in and carry out the monitoring of objectives and targets. This document is organized in eleven chapters and presents a series of themes "under which the SDG that have complementary are grouped, and for which integrated actions and solutions are identified" (Governo do Estado de São Paulo, Fundação SEADE and FAPESP, 2019: 9, own translation).

According to José Goldemberg, former president of the Foundation, the report states that the State of São Paulo is on a "good path about to some of the indicators" (Goldemberg, 2019: 5). As an example, the author mentions drop in infant mortality present in the indicator related to SDG 3, drop in crime (SDG 16), improvement in the scope of school attendance (SDG 4), as well as the progress made regarding "forest

cover of the State and marine environmental protection" (SDG 14 and 15). Other indicators are also highlighted by the author, who attaches great importance to this joint work as one of the possible ways to achieve an overview of the achievement of such SDG and the areas by which the State needs to improve. In other words, it is a partnership between a research promotion agency and the state public sector, in compliance with SDG 17 presented in this paper. Other documents can be seen in the scope of the FAPESP Journal, which reports and discusses through papers, the results of research related to the theme, as well as presents the calls for scholarships and grants referring to the SDG and other areas of knowledge. In this sense, it is an attempt to publicize the actions, activities and research concerning the subject in question, highlighting the institutionalization of the SDG as a guide to be reached and incorporated into the Foundation's research agenda.

Such initiatives –among the funding of scholarships, grants and the establishment of international scientific cooperation– demonstrate that FAPESP has been considering the theme of sustainable development and sustainability as a strategic issue, even before the launch of the SDG agenda.

Another way to obtain information about the research funded by the Foundation and its classification by SDG is through the institutional classification carried out by the agency's Virtual Library. This categorization is done through keywords of the funded projects, and it is implemented through a portal linked to FAPESP called "FAPESP and the Sustainable Development Goals". Launched in 2021, this portal is part of the celebrations of the Foundation's 60th anniversary, representing a unique initiative in terms of the agency's approach to the SDG (Dibbern, 2023).

Despite representing an interesting effort in classifying research projects according to the SDG, this classification was carried out in a top-down manner without consulting the researchers. Additionally, it was done based on all funded projects,

without an initial pre-classification of research projects that truly aligned with the themes of the SDG. In other words, every research project funded by FAPESP –even those unrelated to sustainable development– were categorized based on the SDG; in a different way proposed by this paper. Nevertheless, it is still interesting to analyze how they are distributed across different areas of knowledge. The table below presents the number of research projects funded based on the SDG and areas of knowledge.

Table 4: Classification of research projects by area of knowledge and SDG

SDG	Agrarian Sciences	Biological Sciences	Exact and Earth Sciences	Human Sciences	Applied Social Sciences	Health Sciences	Engineering	Interdisciplinary	Linguistics,	Total
SDG 1	95	260	134	478	221	368	58	47	47	1708
SDG 2	1798	728	429	596	373	808	319	284	124	5459
SDG 3	1198	1664	200	191	88	3922	49	68	2	7382
SDG 4	57	270	525	3938	318	1186	109	160	385	6948
SDG 5	190	122	11	687	133	364	3	20	107	1637
SDG 6	501	450	544	114	67	148	1996	101	1	3922
SDG 7	1242	1441	2305	43	73	425	1758	118	7	7412
SDG 8	71	73	71	225	417	26	86	65	2	1036
SDG 9	327	610	1843	211	367	145	1100	218	9	4830
SDG 10	72	27	153	1404	1094	172	129	98	118	3267
SDG 11	65	58	195	181	838	17	250	64	3	1671
SDG 12	437	233	248	16	10	231	679	54	0	1908
SDG 13	783	934	1151	164	227	47	393	226	5	3930
SDG 14	1742	722	386	321	428	98	301	156	16	4170
SDG 15	371	541	194	102	117	12	154	80	0	1571
SDG 16	1	0	6	206	55	8	1	9	11	297
SDG 17	17	19	23	141	116	14	37	42	1	410
Total	8967	8152	8418	9018	4942	7991	7422	1810	838	57558

Source: Own elaboration.

As can be observed, each SDG has several research projects being developed or in progress based on the areas of knowledge. In Agrarian Sciences, SDG 2 and 14 stand out; in Biological Sciences, SDG 3 and 7 are prominent; in Exact and Earth Sciences, SDG 7 and 9 are notable; in Humanities, SDG 4 and 10 are highlighted; in Applied Social

Sciences, SDG 10 and 11 are emphasized; in Health Sciences, SDG 3 and 4 are significant; in Engineering, SDG 6 and 7 are notable; in Interdisciplinary studies, SDG 2 and 13 are prominent; and in Linguistics, Languages, and Arts, SDG 4 and 2 are noteworthy. It is notable the quantity of the research conducted in relation to the SDG 3, 4 and 2.In this regard, the hypothesis is put forward that these SDG are the most researched due to the challenges experienced by the Brazilian context.The various fields of knowledge exhibit varying levels of funded research and financial support, yielding distinct outcomes in relation to each SDG.

These data also allow for cross-reference with other categories, such as the types of partner organizations and the types of host institutions in relation to each SDG. These can be observed below.

Table 5: Classification by SDG and host institutions/types of partners

SDG	Host Institution							Type of partner organizations				
	Public Education Research Program Schools	Hospitals	Non-University Higher Education Institutions	ResearchInstitutes	Museums, Archives, and Information Centers	Professional Societies	Universities	Research funding agencies and bodies	Associations	Companies	Higher education and research institutions	Multinationalorganizations
SDG 1	0	25	43	87	0	3	1501	106	0	0	11	16
SDG 2	0	36	74	442	2	29	4477	324	1	24	48	35
SDG 3	0	347	234	611	0	32	6010	528	19	16	29	25
SDG 4	105	89	196	81	2	31	6312	247	2	14	6	8
SDG 5	1	24	33	88	0	2	1477	76	0	0	6	8
SDG 6	0	2	126	206	0	4	3369	164	0	57	21	19
SDG 7	0	19	172	697	0	2	6193	387	0	92	41	33
SDG 8	3	1	73	69	0	1	840	53	0	3	3	8
SDG 9	0	10	48	2978	0	14	1456	273	0	28	19	28
SDG 10	0	10	129	96	2	18	2865	169	0	6	12	17
SDG 11	0	1	22	64	0	2	1454	135	0	2	13	21
SDG 12	0	10	85	156	0	4	1423	85	0	33	3	9
SDG 13	0	1	37	537	0	8	3198	444	0	70	53	62
SDG 14	0	4	45	475	0	16	3386	230	2	22	21	43
SDG 15	0	0	19	180	0	3	1295	117	0	16	3	24
SDG 16	0	1	14	4	0	0	277	28	0	0	2	1
SDG 17	0	1	31	22	0	0	351	25	0	1	11	4

Source: Own elaboration based on FAPESP (2022b).

This table shows that among the host institutions involved in the development of research and grants funded by FAPESP, universities and research institutions emerge as the main actors within this system. As for partners with the highest number of agreements, the involvement of other funding agencies and companies stands out. Specifically in terms of the number of companies, the research conducted on the SDG 7, 13, and 6 stands out. Regarding the involvement of multinational organizations, the SDG 13, 14, and 2 are highlighted, respectively.

Despite the relevance of the data and its demonstration of the agency's alignment with the SDG, caution must be exercised in interpreting this relationship, especially because it is a classification that forces the adherence of funded research to the SDG (Dibbern, 2023).

Observing such movement through the theoretical framework of the Geopolitics of Knowledge and the Latin American perspective of Social Studies of Science and Technology, we can hypothesize that such adoption can refers to the influence of the external community –especially some countries in Europe and the United States–, which has been mobilizing very strongly in relation to the SDG (Dibbern and Serafin, 2021), and also to a mobilization of the research community associated with this funding agency can be envisaged, aiming at the development of research on sustainable development even before the launch of the SDG agenda itself.

When dealing with the dynamics of knowledge production and dissemination at the global level, we come across several works that address power relations and their asymmetries both in the formulation of research agendas and in the analysis of the establishment of international scientific cooperation and partnerships (Connell, 2007; Demeter, 2020; Kreimer and Levin, 2013).

The incorporation and use of the SDG by the Foundation and other institutions in the scientific community, particularly in the Global South, need to be critically examined. It is essential to acknowledge that their implementation has often been oversimplified and imported, neglecting the complex nature of the sustainability challenge. The uncritical adoption and alignment with the SDG by the Brazilian scientific community, as exemplified by FAPESP, fail to question the underlying dependency between the North and South poles, including in the production of scientific knowledge.

While it is important to align with the SDG agenda in order to compete with development agencies, it is crucial not to overlook power relations and asymmetries

(Demeter, 2020). In many cases, these power dynamics and asymmetries are masked and implicit due to the necessity of establishing partnerships, gaining visibility, and being recognized as exemplary within the community. In other words, following Connell (2012) perspective, it becomes necessary to adhere to the discourse produced by dominant actors to be included in the Metropolis discourse.

The pressure to compete and gain recognition within the academic community often leads to a hasty and uncritical adoption of research agendas originating from countries in the Global North. This perpetuates scientific and technological backwardness when the community passively adopts imported agendas that are not align with its own context. The rhetoric of a "magic formula of the SDG " does not align with the substantial efforts required by the Global South community to address its own challenges and, consequently, overcome its scientific dependence.

Based on previous research conducted (Dibbern, 2023), FAPESP's alignment with the SDG has been carried out without meaningful dialog with the local community in São Paulo and without tailoring the SDG agenda to the specific local, national, and regional contexts. While there is evidence of discursive and operational engagement, such as the creation of the Portal and partnerships with the Belmont Forum, there is a lack of contextual framing in the design of the Portal and the calls launched, considering the SDG themselves. The protocol-like and uncritical use of the SDG undermines the critical thinking that should ideally be upheld by the academic community in the pursuit of generating new knowledge.It can be observed that the scientific community is importing a form of "gatopardism," where an imported approach is used to provide an easy recipe or formula for producing and justifying the social relevance of research. In other words, the adoption and use of the SDG by the scientific community align with a sort of "gatopardism" focused on the social relevance agenda of research.

Final considerations

The SDG demand the participation of several actors in order to reach the 2030 Agenda, with the scientific community being called upon to contribute through the promotion and development of new scientific research and cooperation; thus, within the scope of HEI and funding agencies, strategies based on the dimension of teaching-learning, research, governance and external leadership can be employed, especially through the institution of new collaborative and coordinating partnerships between such national actors and international.

Despite the contributions of this community in relation to achieve the SDG agenda, it is necessary to highlight some inherent problems with it. As indicated in the first sections, there are several criticisms regarding the SDG: besides being a very broad and ambitious agenda, the SDG share a positivist and linear approach to knowledge and technology transfer. Other fragile aspects of the agenda also stand out, such as the achievement of economic growth without negative impacts on the environment; the problems of each region of the world –ignoring the dimension of power distribution–; the limits of its funding and scope in almost the entire world; among others. However, despite these critical aspects, the Latin American scientific community has been taking ownership of this agenda (Dibbern and Serafim, 2021), as is the case in our study.

Therefore, in relation to the case of FAPESP, it was noted:

i. the Foundation has presented, over the years, a significant growth in relation to the granting of scholarships and general grants that refer to the theme of the SDG and sustainable development, that is, corroborating with our initial hypothesis;

ii. the main areas of knowledge covered by these grants and scholarships refer to Agrarian Sciences, Engineering and Exact and Earth Sciences;

iii. during the period analyzed, the main lines of promotion in the country refer to Scientific Initiation scholarships, the Qualification/Technical Training Program, Master's and Postdoctoral scholarships;

iv. research, postdoctoral and doctoral scholarships stand out in the other countries;

v. regarding the cooperation agreements and conventions signed, there has been a quantitative expansion over the years, especially after 2015, especially with scientific foundations from abroad –mainly in Europe;

vi. among the 123 scholarships and grants carried out abroad, the vast majority are in countries in Europe and North America;

vii. private companies could also be identified in the research, indicating the existing partnership between the Foundation and civil society institutions;

viii. other contributions by the Foundation could also be verified, as is the case with the partnership with the public sector, and the dissemination of the results of the research promoted through a scientific journal;

ix. within the scope of the grants and grants identified, a large majority refers to the spontaneous demand from scientists and researchers, and there are also those who refer to the demand induced by the Foundation with the other partner institutions.

In other words, it was possible to observe an overview of the adoption of this international agenda through the Foundation, with an increasing number of scholarships and grants offered over the years. Such collaborations, however, involve foreign actors from the scientific community, such as funding agencies from some countries in Europe and North America. Therefore, the reasons for its adoption fall under two hypotheses: the first refers to the influence of foreign funding agencies that

have been incorporating such goals as a strategic north for research funding; the second hypothesis refers to an internal movement within the Foundation itself regarding the theme of sustainable development. For its confirmation, further research must be carried out at the Foundation in order to understand the real motivations for its adoption.

In the end of the paper, a criticism was outlined in this research referring to the "adoption" or "alignment" of FAPESP regarding the SDG, considering our position and dependence on the production of scientific knowledge. First, it should be noted that, due to the criticism inherent to the SDG agenda, a more critical perspective related to this agenda is expected from the scientific community. Considering the Latin American context, an attempt to adapt the agenda to local and regional issues is expected.

The categorization of research projects based on the SDG has become common in the literature, but the unrestricted and masked use of the SDG agenda has drawn criticism. In the case of Fapeps, the categorization was conducted without consultation with the scientific community and lacked clarity in the methodology used (Dibbern, 2023). To address these concerns, it is suggested to involve researchers in identifying the SDG addressed by their funded projects and to implement a more critical classification process, as developed in this research.

By following a protocol-based approach, FAPESP risks pasteurizing the discussion and allowing any research project fit into the SDG agenda without demanding a meaningful contribution. The SDG have become an umbrella, but there are limited practical effects in terms of reorienting existing research, and local and regional goals and indicators are often overlooked in favor of global themes. FAPESP is urged to better qualify expectations for research projects aligned with the SDG and to ensure a clearer alignment with the local context.

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