Research assessment in change: inclusivity in science systems and mission-oriented projects in research funding initiatives from the Global South. Reshaping quality evaluation through grounded and progressive methodologies

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Table of contents

Abstract

The study analysed different forms of research assessment on a variety of research funding programs/calls at science and technology agencies, scientific councils and universities that promote and fund quality research in the Global South. The research made focus on research assessment criteria, methodologies and processes implemented particularly on the evaluation mission–oriented research proposals in a selection of countries of Latin America and the Caribbean and South Asia. The aim was to explore a variety of initiatives highlighting innovative principles, tools and best practices related to inclusivity in science systems and directing mission-oriented research funds to "grand challenges", proposing new ideas relevant to research assessment and resource allocation, through grounded and responsible research assessment methodologies.

The research involved diverse methodological strategies, as part of a flexible design based on quantitative and qualitative data. First, a web scraping exercise was developed for gathering and structuring metadata from the existing research programs/calls for research funding oriented to development problems in the Global South. The responses facilitated the identification of competitive calls in support of mission-oriented science in different countries. Secondly, a Global South questionnaire on "Forms of evaluation of research proposals aimed at finding solutions to development problems: characteristics, processes and evaluation criteria" was conducted. The questionnaire contributed to delineate some interesting and novel trends around research assessment criteria and practices used in calls/programs targeting development problems in both regions. In addition, it provided substantive inputs for the elaboration a series of recommendations for improving how research is assessed to better suit "grand challenges" and critical situations; promote more inclusive research systems through the participation of traditionally excluded groups and regions and/or institutions with less well-establish research capacities; and strengthen research evaluation systems through a more accessible, transparent, and ethical treatment of research evaluation data drawn from responsible methodologies. Third, a total of ten case studies based on selection of research proposals in the Global South, were developed to contribute to potentially comparative research on science systems and research assessment in Latin America and the Caribbean and in South Asia. To deepen knowledge in each case study, interviews with authorities, research assessment experts from funding agencies and academic institutions and evaluators and/or peer-reviewers involved in each of the calls were conducted. In that sense, the project sought to capture a complex and diversified map of situated research assessment experiences, by applying methodologies that place decision makers, research assessment experts and evaluators/peer- reviewers at center stage.

Moreover, a project webpage was created in CLACSO´s site to disseminate the project and datasets and archives from South Asia and Latin America and the Caribbean are available in open access at a CLACSO-IDRC community in Zenodo´s IDRC-CLACSO community and at the Project's collection in CLACSO's digital repository.

Some of the project results demonstrate that the diversity of funding instruments and the variety of forms of research assessment amplifies and that funding instruments oriented towards specific development problems are an increasing tendency in both regions. Most of the organizations surveyed in the Global South use a combination of qualitative and quantitative assessment methods. The case studies revealed that there are several heterogeneous research evaluation practices, less standardised around the exclusive use of publication impact indicators to allocate funding. In terms of equity and inclusivity, gender, underrepresented early career researchers and/or institutional strengthening, and/or regional balances are present in the different case studies. The gender dimension in research assessment is often addressed through indirect mechanisms related to the composition of research teams and /or panels/ committees in a minimum of female parity, although there are ongoing initiatives implementing affirmative actions. There are some innovative experiences in LAC and SA where research assessment designs are centered in a bottom-up perspective, engaging with diverse knowledge systems and local communities; however top-down managerial and academic orientation research assessment designs are still predominant.

The research problem

This project aimed to comprehend how various approaches to measuring research quality affect how research funds are allocated in the Global South. The study made focus on national science granting councils programs in a selection of countries from Latin American and the Caribbean and South Asia and on a variety of initiatives from funding agencies and universities in those regions, highlighting innovative principles, tools and best practices related to inclusivity in science systems and directing mission-oriented research funds to "grand challenges", proposing new ideas relevant to research assessment and resource allocation, through grounded and progressive research evaluation methodologies.

Three main questions guided the research project:
a. In what ways quality of research proposals for funding could be assessed in order to better suit United Nations 'Sustainable Development Goals (SDGs), global "grand challenges" and critical situations, particularly in the context and socioeconomic imperatives of the Global South?
b. How can responsible research assessment facilitate funding schemes and decisions that promote more inclusive research systems through the participation of traditionally excluded groups and regions and/or institutions with less well-establish research capacities?
c. In what ways discoverable, accessible, interoperable, transparent, and ethical treatment of research evaluation data drawn from progressive methodologies could contribute to expand comparative studies and consolidate research evaluation systems and scientific policy making in the Global South and North?

Methodology

Considering the nature of the proposed objective and interrogations, the research focused on a qualitative approach, based on qualitative and quantitative empirical evidence, that allowed understanding the ways in which research projects are assessed for funding.

As part of a flexible design, the study involved diverse research instances deployed at different times.

1. The first consisted of a critical review of the most recent studies on research assessment; inclusivity in science systems, mission-oriented research and evaluation methodologies from a Global South perspective. **There was a general identification of contextual factors regarding funding capabilities of ecosystems and oriented mission-research policies in each region that led to the selection of certain middle and low -income countries where the quantitative and qualitative research tools were applied**. In Latin America and the Caribbean, a first selection of countries included: Argentina, Brazil, Chile, Colombia, Costa Rica, México, Perú, Panama, Uruguay, Ecuador, Venezuela, and Bolivia. In South Asia, due to contact access possibilities of our partners, the Centre of Research Policy at the Indian Institute of Science, India, Sri Lanka and Bangladesh were selected.

2. Secondly, the project team collected data regarding funding calls predominantly from science granting councils and funding agencies in different countries of Latin America

and the Caribbean and South Asia. To complement and expand this information, members from the research team led by Gabriel Vélez Cuartas at the Universidad de Antioquia and the COLAV in Colombia launched a web-scraping strategy for surveying "**Public policy instruments in research and innovation and the role of the 17 Sustainable Development Goals (SDGs)"** to gain an overview of research calls and innovative criteria that addressed United Nations Sustainable Development Goals (SDGs) in both regions. The information obtained was used as a background for designing the Global Questionnaire and selecting the case studies.

3. Thirdly, the research team **conducted a Global South questionnaire on "Forms of evaluation of research proposals aimed at finding solutions to development problems: characteristics, processes and evaluation criteria" as scheduled in the research proposal**. The questionnaire was designed by partners in Sectoral Commission for Scientific Research (CSIC) from the Universidad de la República, Uruguay and led by Natalia Gras with the collaboration from CLACSO-FOLEC.

   Through this questionnaire, we intended to gather information on the forms of evaluation of research proposals oriented to the search for solutions to development problems, their characteristics, processes and evaluation criteria by specialists and/or authorities of scientific and/or higher education organizations in countries of the Global South. In this way, we aimed to highlight and analyze relevant and quality ways of evaluating research proposals for funding to better adapt to the United Nations Sustainable Development Goals (SDGs), global "grand challenges" and local critical situations, as well as to facilitate funding schemes that promote more inclusive research systems. Operationally, the team defined "Development problems" to refer broadly to the problems of social and economic development of the countries (problems in the area of production of goods and services, public policy, health, social exclusion, poverty, environmental, energy, etc.).

   Once the final version of the questionnaire was tested and reached consensus among the project team, the Spanish version was translated into Portuguese in order to incorporate responses from Brazil in the survey. It was also translated into English so that it could be disseminated in the selected South-Asian countries. It was distributed by CLACSO-FOLEC and included the dissemination collaboration of the **Association of the Universities of Latin America and the Caribbean (UDUAL)** in this region.

   In addition, the Global Research Council (GRC) and the International Science Council (ISC) collaborated disseminating the information among their Asian members in middle- and low-income countries (in annex 3 are available the three versions of the questionnaire). Moreover, a piece of news about the opening of the questionnaire, encouraging the participation of interested stakeholders, was also generated through CLACSO's social networks. **Finally, the questionnaire was launched in all three languages via the Survey Monkey platform during august and October 2021**. The call to complete the questionnaire was disseminated through CLACSO´s and the Centre of Research Policy at the Indian Institute of Science networks and five general reminders, for each language version, were sent to be completed. In turn, different experts involved in calls of interest to the project were asked to complete the questionnaire through more personalized emails.

Overall, 38 responses from specialists and/or authorities of organization in charge of a call/program to finance research projects in some of the countries of the Global South, with focus on low- and middle-income nations were received and were processed. The responses to the questionnaire allowed us to identify competitive calls in support of mission-oriented science in the Global South and elaborate a series of preliminary recommendations for improving how research is evaluated. From the 38 responses, **a total of 34 responses were obtained from LAC, of which 19 are from universities (14 public, 4 private and 1 community).** Specialists from Mexico, Argentina, Brazil, Colombia, Costa Rica, Ecuador, Uruguay, Chile, India, Sri Lanka, Nicaragua, Perú and Bolivia participated. The Global South Questionnaire only achieved 4 responses from South Asia; that´s why it needed to be combined with fieldwork questionnaires.

A total of 28 respondents participated in the fieldwork study in South Asia: 16 were from India, 8 from Sri Lanka, and four 4 Bangladesh. 20 respondents participated in the survey questionnaire, and 19 participated in an open-ended questionnaire during combined fieldwork undertaken as part of the research study, which was designed by the project team partners at the DST-CRP-IIS. One survey respondent answered questions on two programs from their organization: **bringing the total survey responses to 21 (of 20 respondents) for questions on program characteristics and evaluation procedures.** 11 respondents responded to both the survey questionnaire as well as participated in the semi-structured interview discussion, and eight respondents participated in the interview discussion alone.

4. Fourth, based on the data collected in the project, **a total of ten case studies based on selection of research proposals in the Global South, were developed in Latin America and the Caribbean and in South Asia by CLACSO-FOLEC and the DST-CRP-IIS respectively to contribute to potentially comparative research on science systems and research assessment.** To deepen knowledge in each case study, interviews with authorities, research assessment experts from funding agencies and academic institutions and evaluators and/or peer-reviewers involved in each of the calls were conducted. Moreover, documentary sources on the different calls and their rubrics complemented the study.

In the South Asia region, six in-depth case studies of organizations managing programs and funding research in different disciplinary fields are detailed as part of the fieldwork undertaken. The six organizations span all three countries – India, Sri Lanka, and Bangladesh and represent targeted and coordinated research funding efforts in a range of scientific disciplines (agriculture, climate change, social sciences, humanities, etc.) as well as applied innovation funding programs working towards greater inclusivity in science systems.

In Latin America and the Caribbean, four in-depth case studies based on the research assessment forms and processes of five research funding programs from four different research funding agencies and one university advisory body for research promotion policies were conducted. The case studies selected covered a wide range of disciplines and in total, the case study strategy in Latin America and the Caribbean consisted in 16 in-depth interviews with science and technology agencies and university authorities, research assessment experts from the organizations and evaluators and/or peer-reviewers involved in the evaluation process of the call or

program under analysis. **Both data collecting and analysis on the use of research quality methodologies in the case**.

5. Furthermore, the **gender perspective was involved in the whole project**: a) the composition of the staff in a minimum of parity for women; b) the collection of funding calls and research evaluation methodologies targeted at gender issues (Lebel & McLean, 2020); c) data construction, processing and analysis, in order to characterize and mitigate potential gender biases by applying "fairness" principles and/or equity strategies was implemented.

6. Finally, there was a great concern in the project for **ethical aspects related to research treatment of information.** In this sense, it is worth mentioning that the project beneficiated from the advice of the Human-subjects ethics committee (a university-wide body) at Indian Institute of Science for supervising the informed consent form draft, shared with the respondents to the survey and interviews[1]. In addition, a research team of specialists on Integrity, Ethics and Bioethics policy from the Pontifícia Universidade Católica do Rio Grande do Sul, Brazil, led by PhD Mónica de la Fare, members of CLACSO´s Network, gave advice on the qualitative fieldwork more comprehensively in both regions[2].

7. Overall, the project tried to capture a complex and diversified map of the forms of evaluation research calls oriented to development problems, by applying methodologies that placed decision makers and reviewers at center stage (Kraemer-Mbula, et al., 2020**). Both data collecting and analysis on the use of research quality methodologies in the case studies selected were developed through the Research Quality Plus (RQ+) framework** (IDRC, 2019; Ofir et al. 2016). Its three main principles were of big interest for the project: identification of contextual factors; articulation of dimensions of quality and use of rubrics as evidence (McLean & Sen, 2019; Lebel & McLean, 2020: 214), were considered in the data collection and analysis. Besides, the Latin American Council of Social Sciences (CLACSO) through the Latin American Forum for Research Assessment (FOLEC) served as a platform for the regional experts, policymakers, and researchers to deliberate on different facets of research assessment[3]. FOLEC's consultation exercises and policy reports call for region-specific research assessment guidelines. The Evaluating Scientific Research Assessment[4] discusses primary dimensions in the discourse on research evaluation in the Latin American region and the world. The Diagnosis and Proposals for a Regional Initiative[5] propose constituting a foundation for regional deliberation to devise recommendations. Building on IDRC's RQ+ framework and CLACSO-FOLEC's call for region-specific research assessment guidelines and best practices, this report presents results from a study that aimed to understand how methods for assessing research quality affect the allocation of research funds in the Global South.

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[1] The consent report from IIS team is available at: https://zenodo.org/record/6878344#.YtmzZXZBzIU
[2] The consent report is available at: https://zenodo.org/record/6877530#.YtmYaXZBzIV
[3] For further information on the activities of FOLEC, see: https://www.clacso.org/en/folec/what-is-folec/
[4] CLACSO (2020) *The Evaluating Scientific Research Assessment. Series Towards a transformation of scientific research assessment in Latin America and the Caribbean.* CLACSO. https://biblioteca-repositorio.clacso.edu.ar/handle/CLACSO/3351 /
[5] CLACSO (2020) Diagnosis and proposals for a regional initiative. *Series Towards a transformation of scientific research assessment in Latin America and the Caribbean.* CLACSO. https://biblioteca-repositorio.clacso.edu.ar/handle/CLACSO/3348

Research findings

Forms of research assessment oriented at development problems. Practices and perspectives from national science and technology organizations and higher education institutions in Latin America and the Caribbean (LAC) and South Asia (SA)

Introduction

The imperative of reforming research assessment, together with the promotion of greater equality, diversity and inclusion in science systems is needed in view of the various distortions in the current state of evaluation systems (CLACSO, 2020a). This is expressed in the proliferation of declarations of principles, initiatives and studies that address the various dimensions of the problem in specific environments and propose different approaches and instruments for their transformation. At the same time, there is a wide variety of books, articles, research reports and other forms of grey literature that address the issue from a heterogeneity of fields and areas of study (de Rijcke, et. al. 2016). More recently, several mobilisers of evaluation reforms at global, regional and local levels are also influencing the agenda for the formulation of innovative policy instruments, as well as institutional reform experiences. Overall, research assessment has been consolidated as an area of interdisciplinary studies and, at the same time, has entered as a problematised issue in the global and regional agenda of Science, Technology and Innovation and Higher Education policies (Vommaro and Rovelli, 2022).

Besides, the Sustainable Development Goals (SDGs) in the United Nations' 2030 Agenda reflect the main global development problems today are inequality, hunger, poverty, social exclusion, climate change and the degradation of the environment, access to health, education, clean water, and energy (Gras 2021). A recent study shows that 54% of research and innovation stimulus programs implemented between 2004 and 2021 by the funding agencies of eleven Latin American countries were oriented at one or more of the SDGs (Vélez Cuartas and Torres Arroyave, 2021.) In turn, since the early 2020s, the challenges posed by critical scenarios, such as the one unleashed by the Covid-19 pandemic and the ongoing interdependent socio-environmental and economic crises, have repositioned the need for reform of research evaluation on the government policy agenda, to link it to the social relevance of research, the involvement of citizens in the production processes, as well as the possibility of benefiting from its results (Babini and Rovelli, 2020).

Science, technology and innovation (STI) policies are imperative to increase R+D investment as a percentage of GDP, to increase and preserve accumulated STI capacities in the region, and to aid the generation of learning spaces and opportunities, using STI to solve problems that affect the population's quality of life and living conditions. (Gras, 2021.). According to Freeman (1991), the most important factor that STI policy must consider in responding to these social goals is the organization and assessment of science and technology and the regulation of innovations and inventions. The implementation of certain research assessment systems influences the organization of research and the direction of knowledge production (Whitley, 2007), and has generated changes in those who govern science goals and the assessment of their results (Whitley, 2010.)

Thus, the assessment of research has led to a certain standardization of the types of research products (De Rijcke et al., 2016; Hicks, 2012; Bensusán et al., 2014), prioritizing the production of scientific articles published in journals with high impact factor and indexed in Web of Science (WoS) or SCOPUS (Leisyte and Westerheijden, 2014; De Ibarrola, 2012), and giving lower priority to reports to inform policy decision-making (Hicks, 2004), publications in scientific journals with local/regional circulation (van Dalen and Henkens, 2021), technological developments (Padilla, 2010), the development of new techniques and recommendations for the productive sector (Rivera et al., 2011), etc.

In turn, various studies suggest that such assessment systems hinder development problem-oriented research (Sutz, 2000; Rafols et al., 2012; Bensusán et al., 2014; Gras, 2018), contextualized research agendas (Bianco et al., 2016) research of local or regional relevance (Chavarro et al., 2017) and of social relevance (Spaapen and Sivertsen, 2020), especially in the context of Latin America, South Asia and other peripheral regions (Vessuri et al., 2014).

These and other studies also suggest that such assessment systems impose barriers to collaborative research and/or interaction with actors external to academia (Hicks, 2013), devalue the research applied (Martin and Whitley, 2010; Valenti et al., 2013), reduce research quality (Müller and De Rijcke, 2017), decrease conceptual relevance and originality (Wang et al., 2017), and focus more on disciplinary goals than inter/multi/transdisciplinary goals (Leisyte and Westerheijden, 2014; Rafols et al., 2012; Martin and Whitley, 2010; Bensusán et al., 2014).

In the international context, work is also being done in the design and implementation of assessment alternatives that can be included in the idea of responsible research assessment (Curry et al., 2020.) According to these authors, this concept encompasses "assessment approaches that encourage, reflect and reward pluralistic characteristics of high-quality research, in support of diverse, inclusive research cultures" (p.7.) Initiatives such as the 2013 San Francisco Declaration on Research Assessment[6], the 2015 Leiden Manifesto for research metrics[7], and the 2020 Hong Kong Principles[8] for assessing researchers are examples of leading change in assessment processes worldwide.

Likewise, international science and science policy bodies are reviewing assessment processes, including such examples as: UNESCO's recommendations on open science (UNESCO, 2021), the initiatives of the Global Research Council (GRC, 2021), the development of the Research Quality Plus (RQ+) assessment framework by the International Development Research Centre (IDRC) (Mc Lean, Ofir, Etherington, Acevedo y Feinstein, 2022), among others. There is growing recognition that contextual factors, both place/region-based and those of the research area, are critical in assessing research projects and programs (Abinandanan, Venkat, Pandey, Sharma and Kumar, 2022). The work agenda of the Latin American Forum on Scientific Assessment (FOLEC), through the series "Towards a Transformation of Scientific Research Assessment in Latin America and the Caribbean", provides evidence and criteria in line with this diagnosis for

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[6] The San Francisco Declaration on Research Assessment published in 2013 highlights best practices on how to judge scholarly contributions. It was conveyed at the meeting of the American Society for Cell Biology (ASCB) in San Franscisco in December 2012.

[7] The Leiden Manifesto was published as a comment in *Nature* on 22nd April 2022. It consists of a list of ten principles to guide research evaluation.

[8] The Hong Kong Principles for assessment of researchers were formulated and endorsed at the 6th World Conference on Research Integrity. The principles focus on recognizing practices that makes research good and reliable in the evaluation of scientists while deciding about their tenure, promotions, and funding.

the region and offers recommendations and proposals to advance with alternative forms of assessing research and knowledge production (CLACSO, 2020b)

Building on IDRC's RQ+ framework and CLACSO-FOLEC's call for region-specific research assessment guidelines and best practices, this report presents results from a study that aimed to understand how methods for assessing research quality affect the allocation of research funds in the Global South.

Methodological Aspects

The aim of this study was to report on the results of the survey into the forms of assessment of mission-oriented research proposals, and the assessment characteristics, processes and criteria implemented by national science and technology organizations and higher education institutions that promote and fund quality research in various countries of Latin America and the Caribbean and South Asia. The Global Questionnaire was designed by Natalia Gras, researcher at the Sectoral Commission of Scientific Research (CSIS) and supervised by Judith Sutz, coordinator of the "Science, Technology and Innovation for a new Development" (CiTINDe) Interdisciplinary Group at Universidad de la República; both from Uruguay and members in the research project team.

The survey was conducted between September and November 2021 as part of the project "Research assessment in change: inclusivity in science systems and mission oriented projects in research funding initiatives from the Global south. Reshaping quality evaluation through grounded and progressive methodologies" coordinated by CLACSO through FOLEC and funded by the IDRC.

The goal of the survey was to find, analyze and visibilize relevant, quality assessment experiences and practices implemented in the region for the funding of mission-oriented research projects looking for solutions to social and economic development issues in Latin American and Caribbean and South Asian countries, to contribute to the development of research and assessment systems that are more inclusive, responsible, pluralistic and diverse.

This is an exploratory, observational study (Kish, 2004) offering a first approach to identify the assessment procedures, criteria and practices implemented by some of the organizations that carry out mission-oriented research stimulus programs in the region. As far as we are aware, this is the first survey for the region on the forms of assessment implemented for projects submitted to contestable funds in the calls of different mission-oriented research stimulus programs in the different countries of Latin America and the Caribbean and South Asia.

In Latin America and the Caribbean, the online questionnaire consisted of 33 questions, mostly closed, and was implemented through the Survey Monkey platform.

It was distributed by CLACSO-FOLEC and included the collaboration of the Association of the Universities of Latin America and the Caribbean (UDUAL). It was directed at and answered by a total of 34 specialists and/or authorities responsible for mission-oriented research stimulus programs of 13 national science and technology organizations (ministries, secretariats, national agencies, national councils, national research centers) and 18 higher education institutions, mostly public universities in Mexico, Argentina, Brazil, Colombia, Costa Rica, Ecuador, Uruguay, Chile, Nicaragua, Peru, Bolivia and El Salvador.

Table 1: Answers by country and organization type

Country	Organization type	Number of responses	Total	%
Mexico	HEI	3	6	18%
	NSTO	3[1]		
Argentina	HEI	0	4	12%
	NSTO	4		
Brazil	HEI	3	4	12%
	NSTO	1		
Colombia	HEI	1	3	9%
	NSTO	2		
Costa Rica	HEI	2	3	9%
	NSTO	1		
Ecuador	HEI	3	3	9%
	NSTO	0		
Uruguay	HEI	2[2]	3	9%
	NSTO	1		
Chile	HEI	1	2	6%
	NSTO	1		
Nicaragua	HEI	1	2	6%
	NSTO	1		
Peru	HEI	2	2	6%
	NSTO	0		
Bolivia	HEI	0	1	3%
	NSTO	1		
El Salvador	HEI	1	1	3%
	NSTO	0		
Total			34	**100%**

In the South Asian region, specifically India, Sri Lanka, and Bangladesh a combined fieldwork was designed and conducted by research project partners at the DST-Centre for Policy Research, Indian Institute of Science, Bangalore (DST-CPR, IISc), India: Prof. Abinandanan T.A., Dr. Venkat Nadella, Dr. Poonam Pandey, Dr. Gautam Sharma, and Dr. Avinash Kumar. It consisted of a closed-ended structured questionnaire and open-ended semi-structured interviews, was conducted with science officers, reviewers, and members/chairpersons of the research review committees/panels in India, Sri Lanka, and Bangladesh[9].

This study is South Asia's first comprehensive survey on research assessment processes[10]. A total of 28 respondents participated in the study: 16 were from India, eight from Sri Lanka, and four from Bangladesh. Table 2 below describes the sample of respondents. Twenty respondents participated in the survey questionnaire, and 19 participated in an open-ended questionnaire during combined fieldwork undertaken as part of the research study. One survey respondent answered questions on two programs from their organisation: bringing the total survey responses to 21 (of 20 respondents) for questions on program characteristics and evaluation procedures. 11 respondents responded to both the survey questionnaire as well as participated in the semi-structured interview discussion, and eight respondents participated in the interview discussion alone.

Table 2: Description of the Survey Respondents in South Asia

Respondent Code	Survey / Interview	Organization
IN-CL-CPR-01	Survey and Interview	NITI (National Institution for Transforming India) Aayog, New Delhi, India
IN-CL-CPR-02	Survey and Interview	Department of Science & Technology (DST), New Delhi, India
IN-CL-CPR-03	Interview	National Innovation Foundation, India
IN-CL-CPR-04	Survey	Indian Council of Social Science Research (ICSSR), New Delhi, India
IN-CL-CPR-06	Interview	Department of Science & Technology (DST), New Delhi, India
IN-CL-CPR-07	Survey	Department of Science & Technology (DST), New Delhi, India
IN-CL-CPR-08	Interview	Indian Council of Social Science Research (ICSSR), New Delhi, India
IN-CL-CPR-09	Survey and Interview	Department of Science & Technology (DST), New Delhi, India
IN-CL-CPR-10	Survey	Research Institution in the Indian Council for Agricultural Research (ICAR) system

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[9] Fieldwork for the study is in two phases: first, a web survey consisting of a structured was fielded to science officers of targeted research programs from September to November 2021; and second, combined fieldwork of survey questionnaire and semi-structured interviews was conducted between January and June 2022.

[10] Combined fieldwork questionnaires are uploaded in CLACSO-IDRC community in Zenodo. See: 'CLACSO Survey Instrument V6 20220203.docx'.

IN-CL-CPR-11	Survey and Interview	Research Institution in the Indian Council for Agricultural Research (ICAR) system
IN-CL-CPR-13	Survey and Interview	Department of Biotechnology (DBT), New Delhi, India
IN-CL-CPR-14	Survey	Science and Engineering Research Board (SERB) and DST India
IN-CL-CPR-15	Interview	Research Institution in the Council of Scientific & Industrial Research (CSIR) system of India
IN-CL-CPR-16	Interview	Department of Science & Technology (DST), New Delhi, India
IN-CL-CPR-17	Interview	Chairperson/member of various proposal review committees (Professor at an Academic Research Institution based in South India)
IN-CL-CPR-18	Interview	Chairperson/member of various proposal review committees (Professor at an Academic Research Institution based in South India)
SL-CL-CPR-01	Survey and Interview	Sri Lanka Council for Agricultural Research Policy (SLCARP), Colombo, Sri Lanka
SL-CL-CPR-02	Interview	National Science Foundation (NSF), Colombo, Sri Lanka
SL-CL-CPR-03	Survey	National Science Foundation (NSF), Colombo, Sri Lanka
SL-CL-CPR-04	Survey and Interview	National Research Council of Sri Lanka (NRC), Colombo, Sri Lanka
SL-CL-CPR-05	Survey and Interview	Industrial Technology Institute (ITI), Colombo, Sri Lanka
SL-CL-CPR-06	Survey	Rubber Research Institute of Sri Lanka (RRISL), Agalawatta, Sri Lanka
SL-CL-CPR-07	Survey and Interview	Sugarcane Research Institute, Udawalawa, Sri Lanka
SL-CL-CPR-08	Survey	National Science Foundation, Colombo, Sri Lanka
BD-CL-CPR-01	Survey and Interview	Bangladesh Academy of Sciences, Dhaka, Bangladesh
BD-CL-CPR-02	Survey	Ministry of Science and Technology, Dhaka, Bangladesh
BD-CL-CPR-03	Survey and Interview	Krishi Gobeshona Foundation, Dhaka, Bangladesh
BD-CL-CPR-04	Survey	University Grants Commission, Dhaka, Bangladesh

As detailed in table 2 above, the sample of respondents represents research funding programs in various disciplines spanning all leading science and innovation funding organizations from the South Asia region.

In India, the Department of Science and Technology (DST), including the Science and Engineering Research Board (SERB), and the Department of Biotechnology (DBT) account for the majority of the extramural R&D grantmaking. At the same time, institutions under the Council of Scientific & Industrial Research (CSIR), the Indian Council for Agricultural Research (ICAR), and the Indian Council of Medical Research (ICMR) system form the largest science / R&D research budget in the nation.

In Sri Lanka, the National Science Foundation (NSF) of Sri Lanka is the main central funding organization leading research grant programs in Sri Lanka and funds research conducted in all fields of science and technology, including social sciences, library and information sciences, indigenous knowledge, etc. The NSF-Sri Lanka funds both fundamental and applied research in

all S&T fields. The National Research Council (NRC) of Sri Lanka is another funding organization/council providing research grants under recurring schemes and small rapid response grants. NSF & NRC in Sri Lanka fund investigators/research and the private sector. Other organizations represented in the sample undertake intramural research of a targeted and developmental nature, such as the Industrial Technology Institute (ITI), Rubber Research Institute of Sri Lanka (RRISL), and the Sugarcane Research Institute.

In Bangladesh, the Ministry of Science and Technology (MOST-BD) is the central government agency for funding science and technology research in the country. The University Grants Commission (UGC-BD) is the apex executive and regulatory body for higher education in Bangladesh, providing grants for research activities of faculties in the higher education/university system. The Krishi Gobeshona Foundation and the Bangladesh Academy of Sciences are among the country's leading organizations of the agricultural research funding ecosystem.

General characteristics of the mission-oriented research stimulus programs: time, financial and cognitive aspects

According to the results obtained in LAC, the surveyed programs to stimulate mission-oriented research in search of solutions to the social and economic problems of the countries are relatively new, with around half created in the last decade. Since their creation, most of the programs have had regular annual calls for contestable funds, with variable levels of competition, to fund research projects of one, two or three years' duration.

In half or more of the programs surveyed in LAC the resources assigned are for funding expenditure on instruments, materials and inputs necessary for research activities, investment in equipment and infrastructure and the payments of salaries of researchers involved in the funded research projects.

In most of the programs in LAC surveyed only academic actors, i.e., the researchers themselves, may submit projects. However, cases were also observed in which non-academic actors can submit projects. The fact that both academic and non-academic actors can submit projects is a relatively new practice, as part of opening up research agendas to problems affecting diverse actors of society, the economy, culture and politics (Gras & Cohanoff, 2021) and which is aligned with UNESCO's open science recommendations (2021). Furthermore, one characteristic of problem-oriented research is the possibility that such research is conducted through interaction and collaboration between academic and non-academic actors.

Another characteristic of problem-oriented research in LAC is the fact that the problems are multidimensional and complex, and as such require approaches from diverse fields of knowledge. Most of the programs surveyed make calls for submission of research projects in all the fields of knowledge. Furthermore, around three quarters of the programs admit the proposal of multi-, inter- and transdisciplinary research projects.

Figure 1: Knowledge fields that may be involved in submitted projects in LAC

Category	Number of responses
Multidisciplinary, Interdisciplinary and/or Transdisciplinary	25
Agricultural Sciences	25
Engineering and Technology	23
Humanities	23
Natural and Exact Sciences	22
Social Sciences	22
Medical and Health Sciences	21
Arts	16
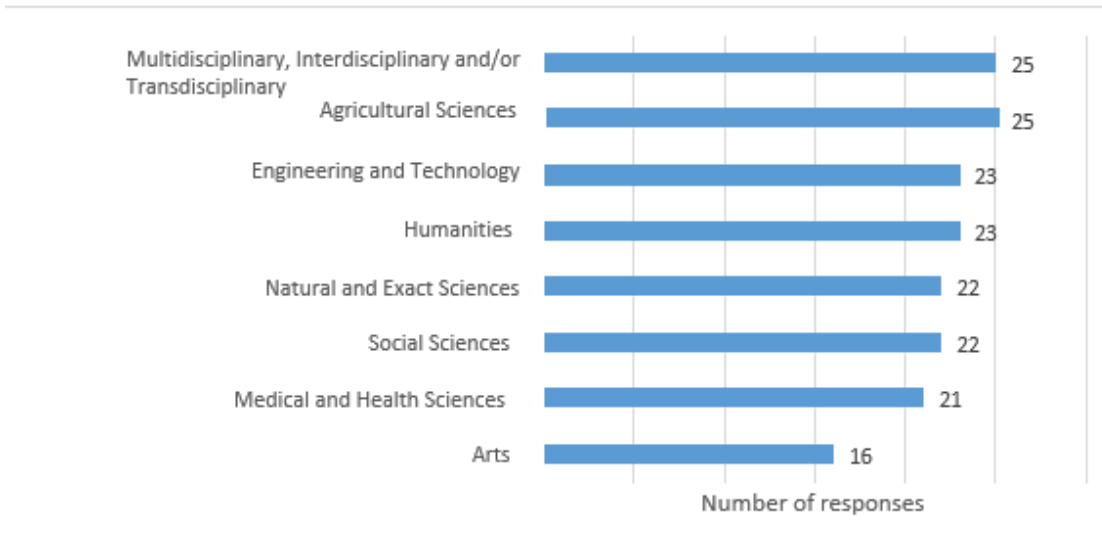
One important challenge for orienting research and knowledge production towards solving problems that affect the social and economic development of these countries in LAC is their identification. Most of the programs surveyed define the problems that must be addressed by research projects. The strategies most commonly used by the organizations responsible for the programs to define these problems are the country's development priorities and/or exploring problems present in the territories or in specific organizations.

Figure 2: Strategies for identifying problems to be addressed by research

Strategy	Value
Defined by the country's development priorities	17
Exploring problems present in the territory in specific organizations	14
Defined by SDGs	9
Organizing workshops/seminars with knowledge providers and knowledge seekers on topics of interest.	7
Defined by regional or continental development goals	6
Organizing workshops with specialists on topics of interest	5
Interviewing different actors in society	5
Other	3

In South Asia, 50% (ten) of the surveyed responses indicate that the programs to foster research for finding solutions to the socio-economic problems of the nations are more than a decade old. 30 %(six) of the programs were initiated in the last five-to-ten years; only one program was less than five-year-old. The oldest program was started in 1971, while the latest research program was initiated in 2016. For the remaining three programs, no response was received from the respondents.

The survey questionnaire inquired which items could be financed with the funds allocated to the research team. 90% (18) of the responses indicate that research funds allow for the expenditures incurred on the purchase of instruments, materials, and inputs required for the execution of the research projects; 80 % (16) enable research funds to be utilised for paying the salaries of support personnel i.e., other than the PI/s and Co-PIs) 47 % (nine) respondents said that research funds allow for investments in equipment and infrastructure. Interestingly, 30 % (six) respondents indicated that research funds could be used to fund the salaries of PI and Co-PI.

Many research programs are open to a wide range of actors who can apply against a specific call. These actors include academic actors (such as researchers based in universities, research institutes, etc.) and non-academic actors (such as companies, cooperatives, small rural producers, family producers, public government agencies, government ministries, NGOs, social and union organisations, hospitals, etc.).

In this context, the questionnaire inquired about the actors who could apply for a specific call of the research program. 60 % (12) of the responses indicate that only academic actors (researchers, research groups, research centres, public and private) can apply for the research projects; whereas 40 % of the responses (eight) indicate that both academic actors as well as non-academic counterparts of any kind who can contribute knowledge can apply for research grants.

Figure 3 shows the fields of knowledge – alone or combined – that apply for projects in the surveyed research programs. 85% (17) of the surveyed programs admit that applications are received from disciplines like Agricultural Sciences, Engineering and Technology, and Natural and Exact Sciences. 55% (10) of the programs accept applications from Medical and Health Sciences; 40 % (eight) of the programs accept applications from the Social Science disciplines. Only two programs accept applications from Humanities, while only one research program accepts applications from the Arts disciplines.

Figure 4: Fields of Knowledge involved in the Project in SA
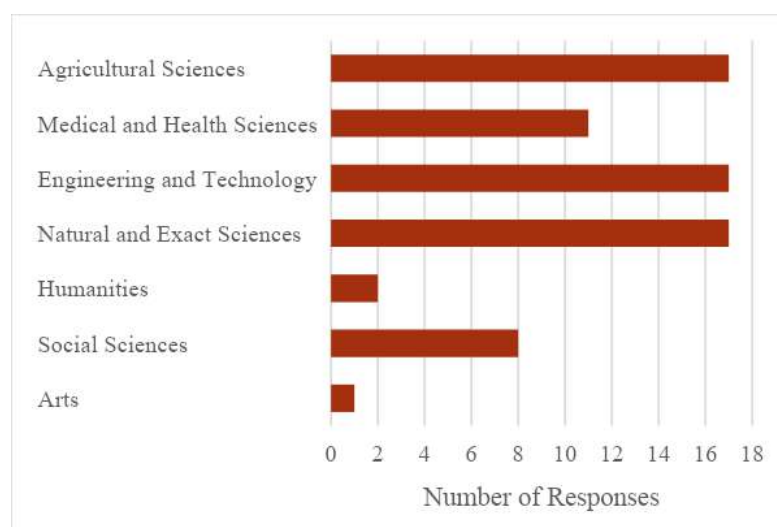
The next question was related to delimiting research problems for the targeted research calls. Identifying context-specific issues affecting the countries' socio-economic development is a

significant challenge in guiding research and knowledge towards its solutions. In this context, the questionnaire asked whether the problems for the mission-oriented research are delimited or not. 65% (13) of surveyed research programs responded that research proposals must address the issues delimited by the calls; only 35 % (seven) of the surveyed calls indicated that they do not define the problems for the research proposals.

The 13 research programs that define the problems for the research problems employ various strategies to identify the issues. Figure 4 below illustrates methods used to identify problems for targeted calls. 70% (nine) of the respondents indicate that they organise workshops with specialists to delimit the topics for research proposals; 38 % (five) indicate that interviews with various actors of the society help them to identify the problems; 36 % respondents conduct workshops or seminars with the suppliers and demanders of knowledge; 77 % (10) identify problems for the research proposals based on the regional problems or organisational problems and the need to address them. 45% (six) respondents say they delimit the problems defined by the Sustainable Development Goals (SDGs). Only one research program in the survey says they delimit the problems per the country's development priorities.

Figure 4: Methods used to Identify Problems for Targeted Calls in SA
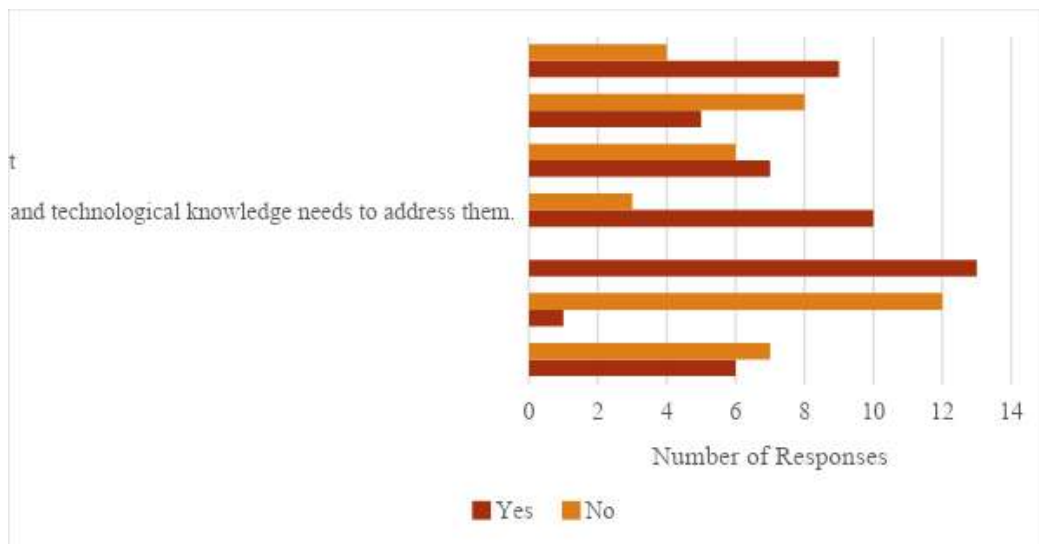
Responsible assessment of mission-oriented research proposals

Most of the organizations surveyed in LAC state that they implement responsible research assessment. At least two thirds state that their organization promotes diverse aspects of responsible research assessment, such as: the ethics and integrity of the research projects, their teams and the people involved in the assessment processes; the equity, diversity and inclusion of under-represented groups both in the assessment and make-up of research teams; social commitment and actors' participation in society; interdisciplinarity; the consideration of geographic, institutional, thematic and gender balances in the distribution of resources for research; and the consideration of open science and open access aspects.

However, in LAC few organizations formally support any of the statements, recommendations or principles of responsible assessment that exist internationally. The Global Research Council's Statement of Principles on peer/merit review has the most adherents among the organizations

surveyed, with a total of 6 responses (18%). This is followed by the Leiden Manifesto on research metrics (4 organizations), the San Francisco Declaration on Research Assessment (3) and Science Europe's recommendations on research assessment processes (1 organization).

The main strategies used by most of the organizations surveyed in LAC to attain responsible quality assessments are:

  i.   requesting that reviewers and/or specialist panel members complete a specifically designed form to address all the aspects to assess in research projects;
  ii. providing written guidelines for reviewers and specialist panel members on the tasks and roles they must undertake; the tools, metrics and criteria to use in the assessment; the definition, identification and treatment of conflicts of interest; ethical behavior rules to guarantee impartiality in gender, race, disciplinary fields, organizations assigned to the project and the academic seniority or position of the applicants; and the procedures and organization of specialist panel meetings;
  iii. adapting assessment procedures according to the specificities of the fields of knowledge and/or when they seek to obtain different research products.

Figure 5: Some characteristics of the implementation of assessment processes in organizations in LAC
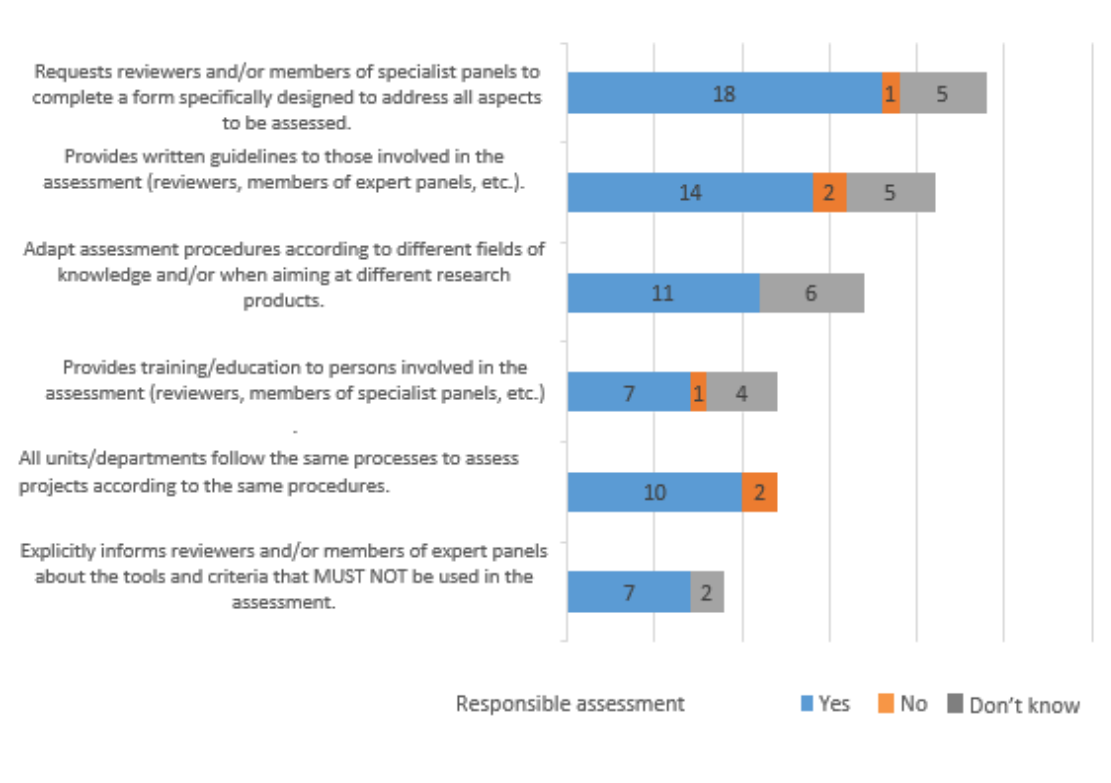
Other strategies, such as informing explicitly on the tools and criteria that must not be used in the assessment, providing specific training to assessors or certain policy adjustments (giving priority to certain high-quality projects or introducing quotas) to address any possible bias or discrimination observed in the selection process of projects to be funded, are relatively less used in the organizations surveyed. Of those organizations that introduce these policy adjustments, most prioritize high-quality projects to ensure cognitive diversity and a diversity

of problems to address and inclusion or territorial coverage, as they prioritize projects that are based in or related to partners located in peripheral areas.

Figure 6: Policy adjustments to mitigate potential biases in research project funding (n=34) in LAC
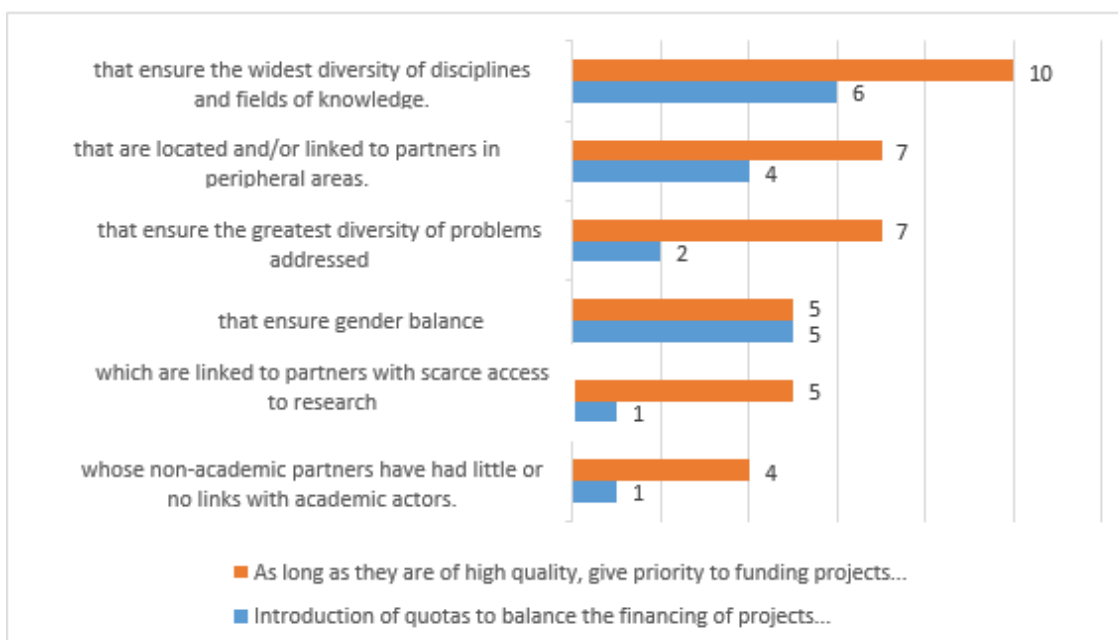
In South Asia, during interviews, nearly all respondents indicated the use of various aspects of the responsible evaluation of research proposals – such as ensuring compliance with no conflict, greater reliance on qualitative indicators, restricted use of quantitative indicators, etc. Of the 21 survey respondents, spanning programs of 17 organizations, only 6 (28 %) respondents from three organizations (2 in India and 1 in Sri Lanka) reported support or adherence to international declarations, recommendations, and principles on research assessment and evaluation.

Assessment methods implemented

The results also show that almost all the organizations surveyed (31 of 34) in LAC use a combination of qualitative and quantitative assessment methods. The survey did not register a single case of an organization that used quantitative methods alone to assess, order and classify projects as fundable or non-fundable. On the contrary, such methods are implemented in combination with one or more qualitative assessment methods.

The combined qualitative assessment methods used by the organizations surveyed are peer review (single or double blind, internal or external to the organization) of the research proposals and specialist panels (internal or external to the organization) who discuss and review the assessment reports to classify the projects according to whether they are fundable. Some organizations implement open reviews of research proposals, although these are a minority.

Table 3: Assessment methods implemented in LAC

Assessment methods		Type	External or Internal to the organization	Number of responses
Qualitative	Peer review	Double blind	External	12
			Internal	9
		Single blind	External	12
			Internal	8
		Ope n	External	1
			Internal	4
	Specialist panel	Not applicable	External	10
			Internal	13
Quantitative	Quantitative criteria	Not specified	Not specified	11

Notes: Number of responses with complete information in at least one assessment method 31/Number of responses with missing data in all assessment methods 3

In LAC, the priority criterion for being a member of the specialist panels is academic experience and knowledge, followed by practical experience and knowledge of the problems to be addressed by the research projects. Other criteria used for panel members reflect certain strategies implemented by organizations to prevent potential cognitive and gender biases, as 65% and 45% of responses respectively said that the criteria for the composition of these panels must guarantee disciplinary diversity and gender parity.

In South Asia, organisations adopt various methods to evaluate research proposals/projects submitted to their calls for research support/funding. In the survey, respondents of science funding organisations responded about their use of qualitative and quantitative methodologies in ex-ante evaluation procedures on grant proposals/projects. Table 4 presents these results.

Table 4: Evaluation modes adopted in SA

Evaluation methods		Mode	External or internal to the organisation	Number of responses
Qualitative	Peer Review	Double-blind	External	5
			Internal	0
		Single-blind	External	9
			Internal	1
		Open	External	7
			Internal	8
	Panel of specialists	Not applicable	External	12
			Internal	9
Quantitative	Quantitative criteria	Unspecified	Unspecified	10

In qualitative evaluations, 24 % of responses indicate double-blind peer review[11] by experts and specialists external to the organisation; notably, none of the organisations does a double-blind peer review by the internal experts. 43 % of the responses indicate a single-blind peer-review by experts or specialists external to the organisations. In contrast, only one organisation uses a single-blind peer-review by internal experts to categorise the proposals as fundable or non-fundable. Thirty-three percent of the responses specify using open reviews[12] from external experts, and 38 % use open reviews by internal experts.

The respondents answering "external and/or internal panel of specialists" were further asked about the criteria used by their organisations for the integration of these panels. Figure 8 depicts these results. The main criteria to form the panels of specialists, as revealed by 68 % of the responses, are: a) to ensure the disciplinary diversity of the panels of specialists and b) the degree of experience and academic knowledge.

Figure 7: Criteria for the composition of the panels of internal and/or external specialists in **SA**
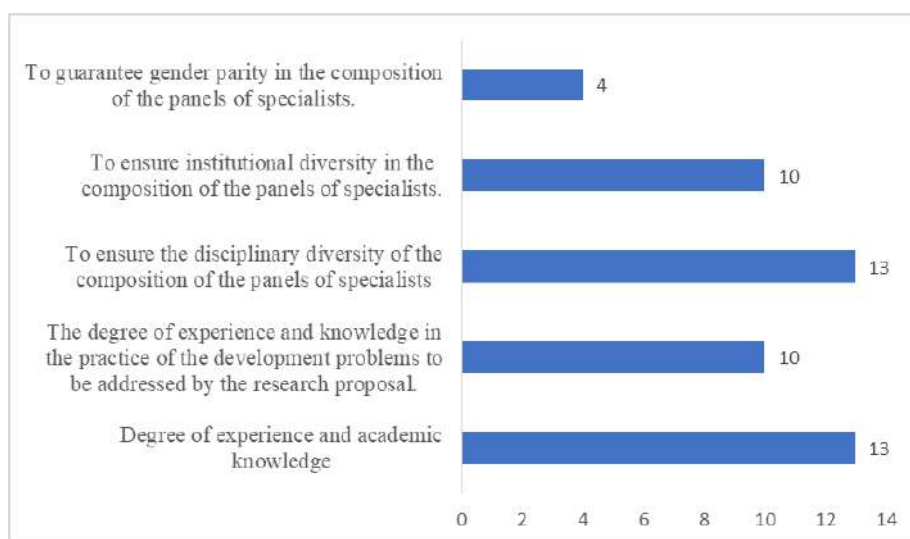
As indicated by 53 % of the responses in South Asia, the second most important criteria are: a) to ensure the institutional diversity in the composition of the panels of specialists and b) the degree of experience and knowledge in the practice of development problems to be addressed by the research problems. Only 21 % of the responses indicate that the criteria to form the panels are to guarantee gender parity in the composition of the panels of specialists.

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[11] Although respondents mentioned the use of double-blind peer review in the ex-ante research proposal evaluation process it should be noted that all the mentions of double blind were in reference to external reviewers. Respondents also noted that resume/CV and prior work of the PI are shared with reviewers and therefore in these circumstances the double-blind process was truly adhered. In the framework of this study, it was not possible to triangulate data for all organisations/programs. Future work should take caution of varying norms pertaining to the double-blind peer review system in the South Asia region.

[12] Among the most surprising findings pertaining to ex-ante evaluation procedures was the higher-than-expected occurrence of open reviews in the South Asia region. This is partly explained by the fact that most funding organizations/programs in the South Asia region undertake multi-tier multi-stage evaluations (please refer to the case studies for a detailed account of these practices); and open reviews are typically common in the final stage of the evaluation process when the PI of the study typically makes a presentation to the panel of experts (or apex evaluation committee) and receives personalised feedback on the research proposal. Future work should take caution of varying norms and definitions pertaining to open peer review system in the South Asia region.

Criteria for assessing the academic merits of mission-oriented research projects

One specificity of the assessment of problem-oriented research projects in LAC is that as well as requiring an appraisal of their academic merits, they require a specific assessment of the capacity of said projects to fulfil program goals, i.e., their capacity to contribute with a specific solution to a concrete practical problem, whether social, productive, in public policy, health, environment, energy or otherwise. At least half of the organizations surveyed consider this specificity, implementing an assessment of the academic merits of the projects and of their capacity to contribute solutions for the problems they address.

The aspects that the organizations require of reviewers and/or specialist panels in assessing the academic merits of the research proposals in LAC can be grouped into four dimensions of the notion of research quality that, in accordance with the responses obtained and the relative importance assigned to them, can be ordered thus:

i. Technical and methodological rigor, considered very important by at least three quarters of responses: the clarity of the description of the problem, the suitability of the research design, the methods and techniques for fulfilling the goals presented, the accuracy and concordance between the goals, questions and hypotheses, and the robustness of the grounding of the research proposed;

ii. Academic relevance and impact, stated as very important by at least two thirds of the responses: the conceptual relevance or academic interest of the problems addressed, the appropriateness and scope of the strategies to disseminate the research results, and the generation of spaces for graduate and postgraduate education and to develop research experiences for young people in the context of the project, including writing graduate and postgraduate theses, were indicated as very important by a little less than half of the responses.

iii. Experience and capacity of the research team, which the majority of responses stated as very important: reviewers' and/or specialist panels' appraisal of the viability of the research in relation to the knowledge and experience of those responsible for the proposal. A little less than half of the responses stated as very important that the make-up of the research team included the disciplinary fields necessary to fully address the problem selected and the exploration of solutions;

iv. Originality, with most of the responses deeming very important reviewers' and/or specialist panels' appraisal of the originality of the expected results or solutions to explore in the national/local area. This percentage drops to 41% when originality is appraised in the international sphere. It can be said that assessment is contextualized, as it fundamentally considers that research results and/or solutions to be explored be at least new or original for the local/national sphere, that is, that the research results should represent the possibility to generate a solution that is not available locally.

In South Asia, the academic merits of proposals for targeted research are essential aspects of responsible research evaluation. The study results indicates that theoretical and methodological rigor have surfaced as the most weighted/important aspect in evaluating the academic merits of proposals since around 73% of participants reported it as very important. This was followed by feasibility (72%), adequacy (58%), and originality (56%). The dimension of the relevance of academic impact obtained the lowest response, with only 51% of participants considering it very important to assess the academic merit of targeted research proposals.

I. <u>Theoretical and methodological rigor</u> involved the clarity of the description of the problem to studying as very important obtained an overwhelming response, with 94% of the participants recognizing it as *very important*. This was followed by accuracy and agreement of the objectives, questions, and hypotheses/propositions; strength of the rationale for the research raised; and conceptual relevance or academic interest of the problems to be addressed with 75%, 75%, and 50% of responses from participants rating them as *very important* respectively. Notably, 25%, 25%, and 37% of participants also ranked these three aspects *moderately important*.

II. <u>Regarding the</u> <u>originality of the research proposal</u>, almost two-thirds of the participants (69%) believe the originality of the expected results or solutions to be explored at the national/local level is an important criterion for evaluating the targeted proposals' academic merits. Moreover, around 19% of the participants rated the same as *moderately important*. However, the proportion of responses decreased for the originality of the expected results or solutions to be explored in the international arena since only 44% of the respondents stated this aspect as *very important* and 25% as *moderately important*. These responses suggest that the originality of the expected results or solutions to be explored at the national/local level is prioritized over the originality of the expected results or solutions to be explored in the international arena while evaluating the merits of targeted research proposals.

III. <u>Turning now to the</u> <u>adequacy aspect</u>, adequacy of the research design, methods, and techniques to meet the objectives set appeared to be the most preferred aspect in appraising the merits of the targeted research proposal. Approximately 88% of participants scored it as very important. Furthermore, a small number of participants (6%) also considered it *moderately important*. On the contrary, the other two dimensions of adequacy: 1) adequacy and updating of the bibliography, and 2) whether the composition of the research team brings together the disciplinary fields necessary to comprehensively address the selected problem and explore solutions obtained lower responses. One-one-hand, over one-fourth (31%) of the participants felt adequacy and updating of the bibliography as very important, which is the lowest among all the three adequacy aspects. However, almost 50% of participants also picked it as *moderately important*. On the other hand, over half (56%) of the respondents reported the interdisciplinarity of the research team as *very important* and one-fourth (25%) as *moderately important*. Therefore, participants' response indicates that the adequacy of the research design, methods, and techniques to meet the objectives set is preferred over the other two dimensions of adequacy. Nevertheless, the interdisciplinarity of the research team is weighted more vis-à-vis the adequacy and updating of the bibliography.

IV. <u>Concerning the feasibility aspect</u>, the feasibility of the investigation about the knowledge and experience of those responsible for the proposal obtained the highest response with 82% of participants identifying it as *very important*. In contrast, over two-thirds (63%) of participants reported the feasibility of the investigation concerning the concordance between the allocation of resources, the objectives, expected results, and schedule of activities as very important. Furthermore, the response rate for the systematic nature of the interactions foreseen with the counterparts involved during the project's development obtained the lowest response among all the three constructs of feasibility aspect, with only 32% of participants endorsing it as very important. It's also important to highlight that these later two themes were also reckoned by 32% of participants as very important.

V. <u>Relevance and academic impact, the expected impact of the results in solving the problems raised</u> is reported as the critical distinguishing factor for funded proposals. Around 88% of respondents recognized it as *very important* for evaluating the academic merits of targeted research proposals. The relevance and scope of the dissemination strategies of the research result is rated as *very important* by 56% of the respondents. However, the generation of training spaces (undergraduate and graduate) and the development of research experiences for young people within the proposal's framework, including the preparation of graduate and postgraduate theses, obtained the lowest rating, with 37% of participants acknowledging it as *very important*.

Criteria for assessing the capacity of problem-oriented research projects to fulfil instrument goals

In LAC, the aspects to assess that the organizations surveyed require of reviewers and/or specialist panels to appraise the capacity of research proposals to fulfil the program goals can be grouped into five dimensions regarding research quality and relevance, ordered as:

i. <u>Newness/originality</u>; nearly three quarters of responses list as very important the robustness of the justification of the need of original research to solve the problem in question;

ii. <u>Transfer and appropriation of scientific and/or technological knowledge</u>; over two thirds of responses give as a very important aspect in the assessment the importance of the problem in question in the project for the partners interested in its resolution, and around 60% state the relevance of the research results expected for the partners interested and/or the concordance between the problem in question and the expectations expressed by the partners. However, less importance was given to the planning of strategies for implementing solutions in collaboration with participating partners (44% deemed this very important); the suitability of the mechanisms for transfer and appropriation by the partners of the results obtained (41%); the specific characteristics of the partners involved as potential co-funders and/or co-producers of knowledge (38%); and the willingness and possibilities of the partners to implement of solutions (29%).

iii. <u>Potential social, economic, political and/or SDG impact of expected research results</u>. Two thirds of responses deemed the relevance of the research proposed in terms of its contributions to possible solutions to be very important. 44% deemed very important the potential contribution of the research to public policies and/or the potential economic and social impact of the results. 26% of responses considered very important the research's potential contribution to SDGs, grand challenges and other mission-oriented initiatives.

iv. <u>Implementation of the research results or implementation of the solutions explored</u>. The project's clarity on the conditions necessary for the implementation of results obtained was deemed very important by most responses. This was followed by the make-up of inter-institutional teams that contribute to the exploration and implementation of solutions; the feasibility of implementing the results and the clarity in defining the population that would benefit from the implementation of the research results, which half or less of the responses deemed very important. The involvement of relevant actors from the government, productive or social sector related to the

problem addressed, the suitability of the identification of the academic actors involved in the implementation of the results, and the feasibility of strategies to make their participation viable are aspects deemed very important by approximately one third of responses;

v. <u>Experience and capacity of the research team</u>. Most responses deemed very important the make-up of multidisciplinary teams, composed by the disciplinary fields necessary to fully address the problem selected and the exploration of solutions.

In South Asia, every organization has its own goals, objectives, and mandates aligned with the country's developmental goals. Organizations design various programs/ calls/schemes based on these broader aims and goals, with a specific set of objectives for each program/call/scheme of the organization.

I. <u>The importance of the stated problem</u> is the most critical criteria in determining the match between the research proposal and the objective of targeted research schemes, with around 80% of participants considering it *very important*; followed by implementation (71%), relevance (65%), potential (56%), and research team/human capital inputs (56%). The criteria of actors/stakeholders/counterparts obtained the lowest response rate, with only 31% of participants considering it *very important* for assessing the ability of research proposals to meet the objectives of targeted research programs. With specific reference to the importance of the stated problem, among its three aspects, the first two i.e., a) the importance of the problem or need to the stakeholders interested in the solution and b) the strength of the justification for the need for original research to solve the proposed problem obtained highest responses with 91% participants reckoning them as *very important*. On the contrary, only 54% of participants showed confidence in the third aspect, i.e., the concordance between the problem posed and the expectations expressed by their counterparts as *very important* criteria. Nevertheless, it is also important to note that around 46% of participants also ranked it moderately important.

II. <u>Research team/human capital inputs</u>. Over 77% of the participants believe the formation of multidisciplinary research teams composed of the disciplinary fields necessary to comprehensively address the selected problem and the exploration of solutions level as a crucial criterion. However, the proportion of responses decreased for the formation of inter-institutional teams that contribute to the exploration and implementation of the solutions to be found. Since only 54% of the respondents stated, this criterion is *very important*. Finally, the criteria for the involvement of relevant actors from the governmental, productive, or social sectors linked to the problem to be addressed obtained the lowest response, with only 38% of participants considering it very important. Notably, around an equal number of participants (38%) consider it *moderately important*.

III. <u>Relevance</u>. If we order the participants' responses (scores for very important), the relevance of the expected research results for the stakeholders involved obtained slightly more responses (69%) vis-à-vis the relevance of the expected research results for the stakeholders involved (61%). However, around 31% of participants also rated the relevance of the expected research results for the stakeholders involved as moderately important.

IV. <u>Potential criteria. T</u>he research results' potential economic and social impact emerged to be the most critical aspect. Approximately 77% of participants scored it as very important. The other two aspects of potential criteria: 2) potential contribution of the

research proposal to public policies, and 3) potential contribution of the research proposal to Sustainable Development Goals (SDGs), grand challenges, or other mission-driven initiatives, obtained lower scores. One-one-hand, over one-fourth (31%) of the participants felt the potential contribution of the research proposal to public policies was *very important*, which is the lowest among all the three aspects of potential criteria. On the other hand, 62% of the respondents spotted the potential contribution of the research proposal to Sustainable Development Goals (SDGs), grand challenges, or other mission-driven initiatives. Interestingly, however, almost 32% of participants also identified the second and third aspects as *moderately important*.

V.   <u>Implementation.</u> It involved:_1) the planning of strategies aimed at the application of research results/implementation of solutions in collaboration with participating partners; 2) the clarity in the delimitation of the population that would benefit from the implementation of the research results; 3) the feasibility of the implementation of the results to be obtained, and 4) the clarity of the proposal on the conditions necessary for the implementation of the results to be obtained. The first aspect obtained the highest responses among all these four aspects, with 85% of participants reporting it as very important. The second aspect of the implementation criteria obtained the lowest responses, with only 46% of participants considering it very important. However, around 31% of the participants rated the second aspect as *moderately important*. The third and fourth aspects of implementation criteria were identified by 77% of participants as *very important*.

VI.   <u>Actors/stakeholders/counterparts</u>. It involved: i) the adequacy of the identification of the set of non-academic actors that should be involved in the implementation of results; ii) the adequacy of mechanisms for the transfer and appropriation of the results to be obtained by the interested counterparts.; iii) clarity in delimiting the population that would benefit from implementing the research results.; and iv) specific characteristics of the counterparts involved in the proposal as potential co-financiers and/or co-producers of knowledge. Among these four aspects, the third aspect obtained the highest responses, with 46% of participants reporting it as very important

Assessment criteria used and information inputs required

The information inputs considered very important by the broad majority of the organizations surveyed in LAC are the research project, reviewers' assessment reports and the research project team members' resumes (including project leaders). A little less than half of the organizations surveyed deemed very important quantitative indicators (number of publications in high-impact journals, highly-cited publications, citations, H-index, projects funded, patents) of project leaders.

The above is not surprising, given the assessment methods implemented by the diverse organizations surveyed, the strategies they follow to attain responsible assessments and the assessment criteria they use to appraise both the academic merits of the research projects and their capacity to fulfil the goals of the call for submissions. However, only 41% of responses deemed the letters of interest in the research results of the partners involved in the research projects a very important information input, and 21% deemed them less important or not important at all. Similarly, only 24% of responses deemed very important interviews with partners involved in the research projects to evaluate their interest, characteristics and commitments in the research; in contrast, 37% stated that this information is less important or not important in the assessment.

From the open science perspective, most responses state that a very important or moderately important information input for the assessment is the written commitment that the data generated by the project and the research results obtained will be open access, thus promoting the dissemination of the solutions found. However, indicators on refereed publications with local/regional circulation that could potentially contribute to local/regional dissemination of research results are considered very important information inputs for assessment by less than a third of the organizations surveyed.

Figure 8: Information inputs and their importance in the assessment of research projects
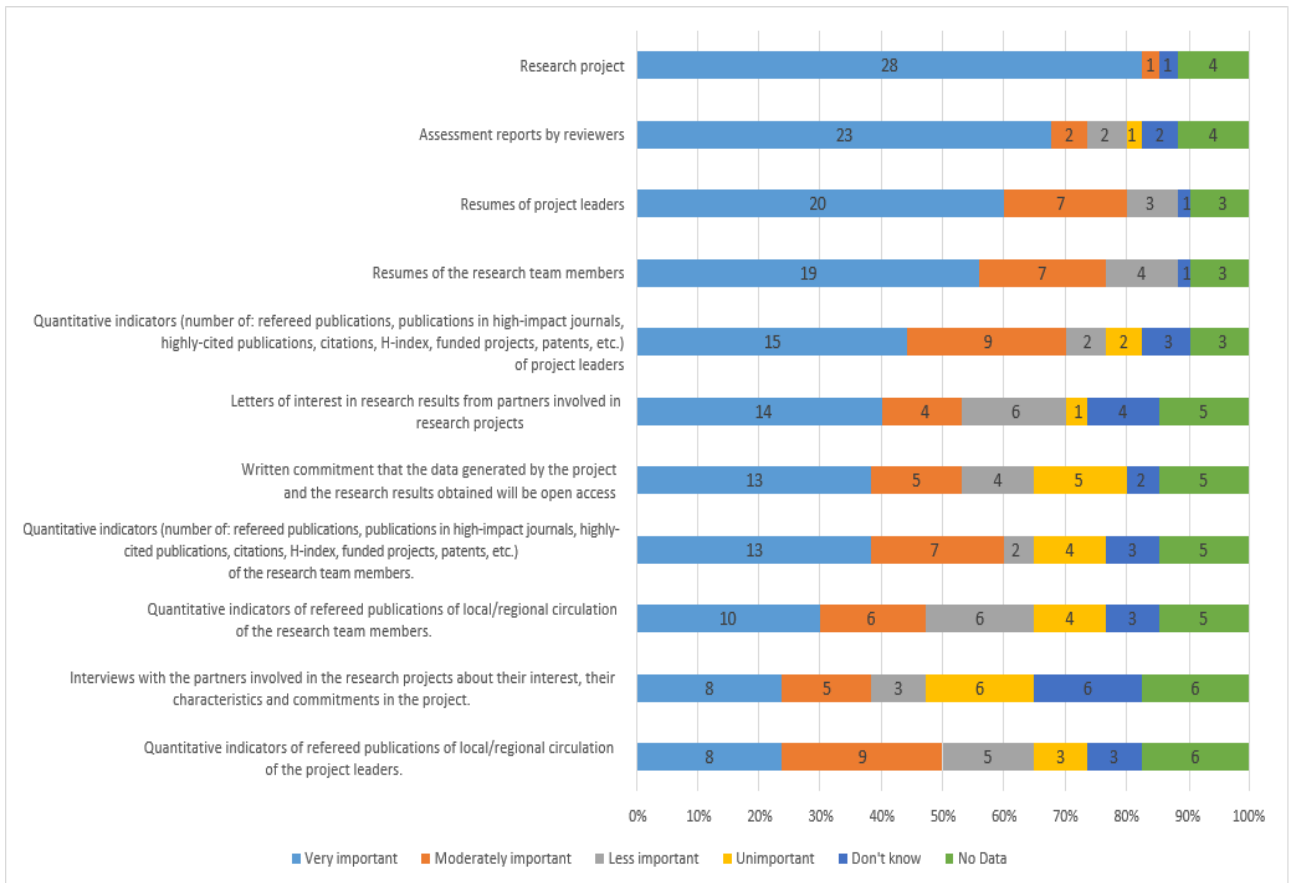
In South Asia, organisations employ different methods to evaluate research proposals: they may undertake quantitative or qualitative methods or a combination of both. The three typical approaches followed by organizations to assess the targeted research proposals are 1) to assess the informational inputs; 2) to assess the academic merit of the proposal and its relevance to the targeted calls, and 3) to assess the ability of the targeted research proposals to meet the programs/calls/schemes.

Figure 9 below illustrates the survey responses on the relative emphasis of informational inputs for evaluating targeted research proposals in South Asia. The research proposal is the highest among all the informational inputs, with around 78% of the respondents rating it as very important. The second most valued informational inputs in evaluating targeted research proposals are a) evaluation reports by reviewers and b) statements of the societal impacts submitted by the investigators. Nearly two-thirds (67%) of the participants considered these two informational inputs very important.

Only 39% of the respondents reported quantitative indicators (number of publications in high-impact journals, highly cited publications, citations, h-index, funded projects, patents, etc.) of persons responsible for the projects as *very important*. Simultaneously, around half of the surveyed participants (50%) ranked quantitative indicators of investigators as *moderately important*. On the contrary, quantitative indicators of other team members are valued slightly less since only 6% of respondents considered it *very important*. Nevertheless, around 39% of respondents reported quantitative indicators of other team members as *moderately important*. The most striking result is the low emphasis on quantitative indicators of refereed publications of local/regional circulation in both categories, viz: of the PI/Co-PI and other team members. In the survey, only 6% of the respondents reported that quantitative indicators of refereed publications of local/regional circulation are a significant factor in evaluating targeted research proposals. The CVs of PI/Co-PI were valued more than those of other team members. Around 50% of participants rated it *moderately important* and 39% *very important*. In contrast, the CVs of other team members are emphasized by 38% of participants as *somewhat important* and 12% as *very important*.

22% of respondents indicated that open research data is *very important* or *moderately important*. Finally, 33% of respondents indicated that letters of interest in the research results from the counterparts involved in the research projects as *very important* or *moderately important*. The proportion of responses decreased in the case of the interviews with the partners/counterparts involved in the research projects about their interests, characteristics, and the commitments they assume in carrying them out. Only 22% of participants endorsed it as *very important* or *moderately important* in targeted research proposal evaluation.

In summarize, the research proposal, the evaluation reports by reviewers, and the statements of the societal impacts submitted by the investigators have emerged as the three most valued informational inputs in evaluating targeted research proposals in South Asia. Conversely, quantitative indicators of refereed publications of local/regional circulation for both categories, i.e., key investigators and other team members, have emerged as the least valued informational inputs in responsible research evaluation.

Figure 9: Relative Emphasis on Informational Inputs for Evaluating Targeted Research Proposals in South Asia (n=18)

he proposals.

atents, etc.) of the research team members.

ects, patents, etc.) of those in charge of the proposals

Legend:
- Not Important
- Less Important
- Moderately Imprtant
- Very Importatnt
- Not Applicable
- No Rresponse
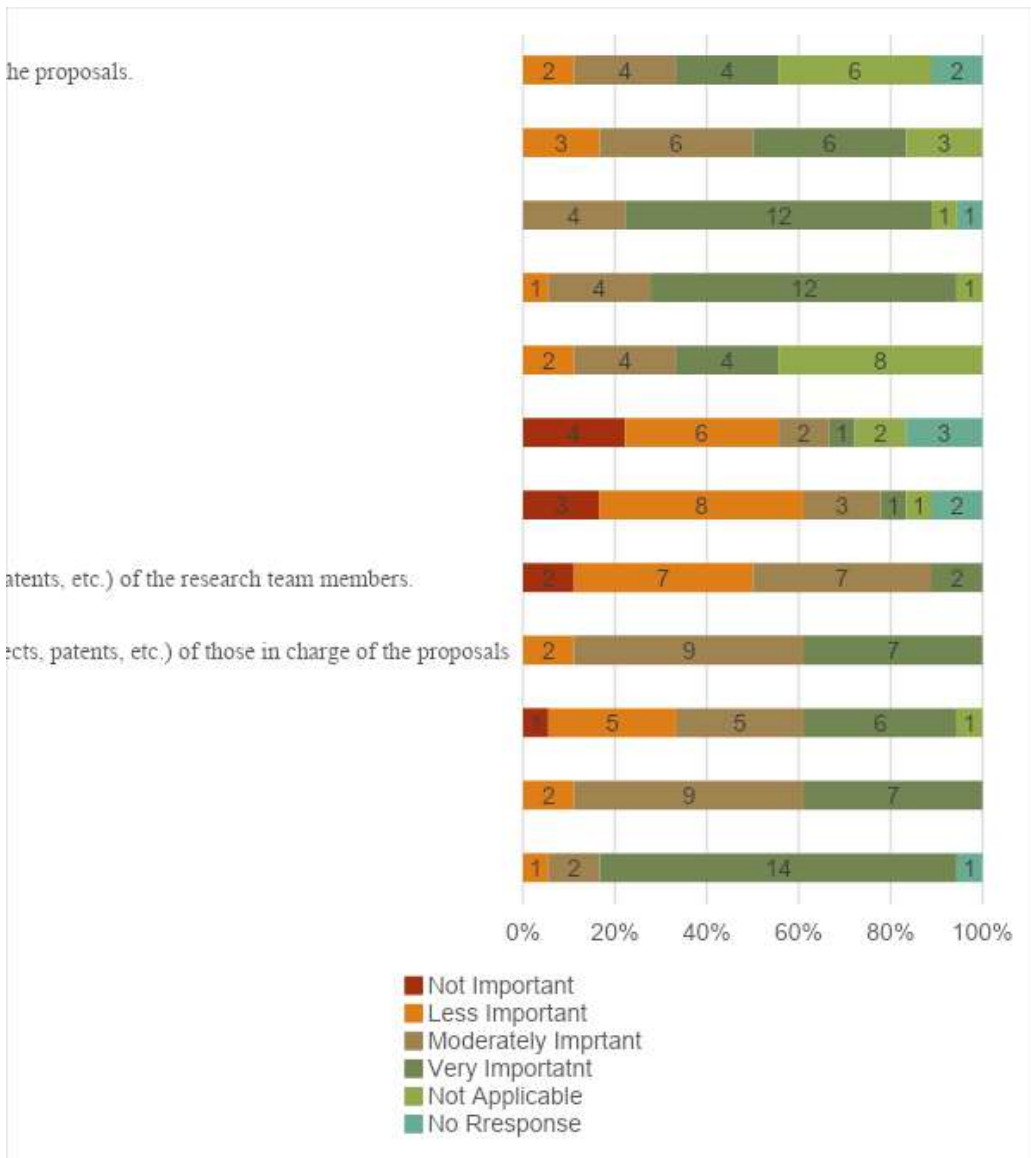
Transparency, public communication of assessment results and personalized feedback for research project leaders

Lastly, most of the organizations surveyed in LAC, all of which promote and fund quality research in the region, have transparent assessment practices and collaborate with researchers' learning to improve research quality.

Figure 10: Assessment information made public and accessible (n=26) in LAC

The number of research proposals submitted	19
The detailed description of the criteria used for the assessment of the research proposals and for the final selection for funding	16
The complete list of the research proposals selected for funding	15
The total amounts financed by disciplinary fields and development problems to be addressed	14
The level and degree of compliance with the terms of the call	12
The minimum, maximum and average number of assessments each research proposal had	5
The complete list of research proposals (funded and non-funded)	4
A characterisation of the reviewers of research proposals (number, country of residence, gender, disciplinary fields, level of training, etc.)	4
A characterisation of the members of the expert panels (number, country of residence, gender, disciplinary fields and areas of practice, level of training, etc.)	3

In LAC, three quarters of responses state that their organization makes assessment results public and accessible. In all these cases, the number of projects submitted is published; a little less than two thirds publish details of the assessment criteria used, both for the appraisal of the research proposals and for the final selection of projects to be funded. Most responses state that the full list of funded projects is made public, including their titles, researchers responsible and the institution they belong to, the issues addressed, disciplinary fields, non-academic actors involved, resources assigned, and the total sums funded by disciplinary field and by issue.

Two thirds of responses state that their organization sends research project leaders personalized feedback or assessment of their proposal which notifies whether the proposal was funded, provides detailed suggestions to overcome their main weaknesses, and includes in a large number of cases (41%) all the assessments made by the reviewers and an overall judgement drawn up by the specialist panel. In 32% of cases it includes a global judgment drawn up by the specialist panel, and in the remaining 27% all the assessments made by the reviewers.

In South Asia, transparency of the evaluation process is a significant aspect of organizations' research assessment exercises. It helps them prepare their decisions, communicate the results, and adds to their rigour and responsibility. It also helps eliminate any possible biases that reviewers may have from disciplinary or thematic, or institutional favoritism.

Concerning public communication of evaluation results, in South Asia 71% of organisations (15) answer that they do not share the results publicly, while only 29 % (six) publicly share the evaluation results. Four organisations each make the following information available publicly: 1) complete list of research proposals selected for funding, 2) total amount funded by disciplinary fields and development problems to be addressed, 3) detailed description of the criteria used for the funding, and 4) the number of research proposals submitted. Two organisations indicate that the minimum, maximum and average evaluations received for each proposal are made public. Only one organisation provides information on the members of expert panels and a description of the reviewers of the proposals.

Figure 11: Information about evaluation that is made public and accessible (n=6) in SA
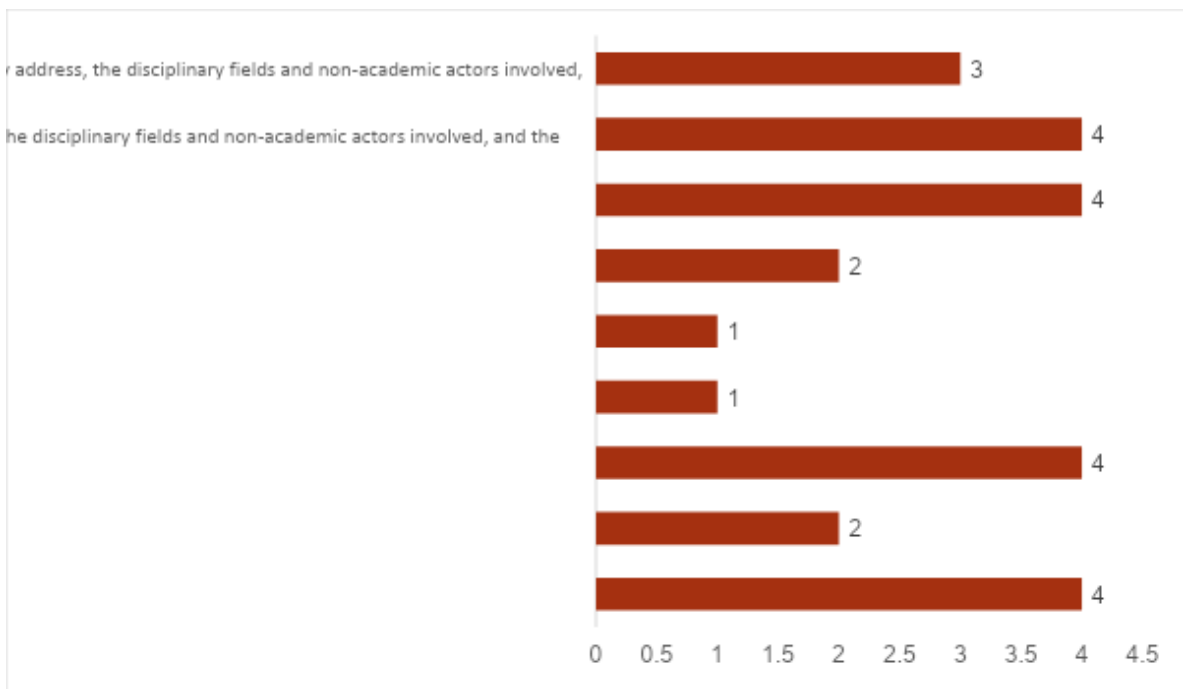
Regarding whether personalised feedback is provided to applicants of the research projects, almost 81 % of the responses in South Asia indicate that the applicants receive personalised input or opinions about evaluating their project proposals; only 19 % (four) suggest that they do not send personalised feedback to the applicants.

Those who answered that project applicants receive personalised feedback on their research project proposals were further consulted about the information provided to the applicants. 65% of respondents in South Asia indicate that only the overall judgement made by the panels of specialists is provided to the applicants, and 35 % (six) respondents indicate that feedback also includes evaluations made by the reviewers and the overall judgement made by the panel of specialists.

Policy recommendations and implications in Latin America and the Caribbean

Based on the results obtained, there follows a set of policy recommendations to broaden and deepen responsible assessment processes of mission oriented research projects implemented in the region. These are structured into six dimensions underlying these processes: i) ethics and integrity; ii) diversity and inclusion of under-represented groups; iii) social commitment and participation of society actors; iv) interdisciplinarity; v) geographic, institutional, thematic and gender equity in the distribution of resources for research; vi) open science and open access.

Ethics and integrity of assessment processes

- ✔ Clarify the ethical norms of behavior that must be followed by the individuals responsible for assessment to guarantee impartiality with regards to gender, ethnicity, disciplinary fields, organizations assigned to the projects and applicants' academic seniority or position.

- ✔ Provide specific training for people responsible for project assessment.

- ✔ Notify reviewers and specialist panels explicitly of the tools, criteria and metrics that must not be used in project assessment.

- ✔ Broaden and further the transparency of assessment processes, with an emphasis on the provision of public, accessible information on the profiles of reviewers and members of specialist panels by country of residence, gender, disciplinary fields and education level.

- ✔ Broaden and further efforts towards developing personalized feedback for those responsible for projects, including all the assessments/reviews received and an overall judgment detailing the main strengths and weaknesses of the research proposal and suggestions to overcome these issues.

Diversity and inclusion of under-represented groups in assessment processes

- ✔ Promote disciplinary diversity and territorial, institutional and gender inclusion in the make-up of specialist panels responsible for assessment.

Social commitment and participation of society actors

- ✔ Recognize and appraise in the assessment of mission oriented research projects:
  - o the systematic nature of interactions with non-academic partners involved;
  - o the planning of strategies to implement research results;
  - o the suitability of mechanisms for transferring and appropriating results obtained from the research;
  - o the characteristics of the non-academic partners as potential co-funders and co-producers of knowledge;
  - o the potential contribution of research results to public policy, SDGs, major challenges and other missions;

o the involvement of non-academic actors (governmental, productive and/or social) related to the problem to be solved, in the implementation of research results.

Interdisciplinarity

✔ Promote the adaptation of assessment procedures according to the specificities of the knowledge fields and results and products of research to be obtained.

Geographical, institutional, thematic and gender equity in the distribution of resources for research

✔ Analyze the appropriateness of certain policy adjustments to address possible biases or discrimination observed in the selection of projects to fund, such as the introduction of quotas and/or prioritizing those high-quality projects that:
  o ensure greater diversity of knowledge fields, disciplines and problems to address;
  o promote gender balances;
  o are localized and/or connected with partners based in peripheral areas;
  o are connected with non-academic partners with limited access to research or who have had scarce or no connection with academic actors.

Open science and open access

✔ Advance in the knowledge of experiences of openness of the assessment processes, promoting the analysis of its appropriateness and reflecting on opportunities and challenges in its implementation.

✔ Promote the co-responsibility of academic and non-academic actors in the research proposals and consider in the assessment the expressions of interest of non-academic partners involved in the proposals to collaborate with the openness of the research agendas and the problems affecting diverse actors of the society, economy, culture and politics.

✔ Recognize and value in the assessment the commitment to open access to the data and publications generated and the research results obtained in the project.

✔ Recognize and value in the assessment the performance in indicators of peer-reviewed publications of local and regional circulation.

Lastly, it is hoped that the results and recommendations made in this study will contribute to broadening and furthering global and regional efforts to transform assessment, adopting the best practices and main regional trends identified in this study which, in addition to others, strengthen STI systems and make them more inclusive, diverse, pluralistic and democratic, promoting a change in research assessment led by more open, collaborative and participatory practices. FOLEC and CLACSO in collaboration with other Latin American and international networks and institutions that have participated in this study maintain their commitment to these efforts.

Discussion of key findings and policy recommendations in South Asia

Combined fieldwork (survey and in-depth personal interviews) with 28 respondents from the South Asia region (India, Sri Lanka, and Bangladesh) and six in-depth case studies formed the evidence base for key findings and policy recommendations presented below. The sample of respondents represented research funding programs in various disciplines spanning all leading science and innovation funding organizations from the South Asia region.

Need for Progressive Methodologies in Research Assessment

✔ Senior science officers and administrators undertake extensive policy exercises to align research funding calls with national priorities in South Asia. However, it is challenging to distinguish between top-down approaches from the government vs. bottom-up from academia/industry. Science and Innovation funding organizations in South Asia, particularly in India and Sri Lanka, organize workshops with experts and stakeholders (academia and industry). Workshops/discussion sessions with citizens (i.e., consumers, producers, and other individuals not represented through interest/expert groups) should be part of the targeted research funding call design more frequently.

✔ One of the most surprising findings from fieldwork is that most South Asian science and innovation funding organizations do not conduct formal training or provide a research evaluation guideline document/manual to reviewers before research assessment. Providing research evaluation guidelines, particularly in the case of targeted research calls, will improve the quality of research assessment processes.

✔ No survey/interview respondent indicated a formal/explicit definition of research quality as part of their organization's research assessment processes in grantmaking. However, many respondents indicated using different aspects of the responsible evaluation of research proposals – such as ensuring compliance with no conflict, greater reliance on qualitative indicators, restricted use of quantitative indicators, etc. Focusing on the evaluation processes systems and heuristics is key to understanding research assessment practices in South Asia. Future work on research assessment principles should place the regional and research context at the center, similar to IDRC's RQ+ framework and CLACSO FOLEC.

✔ Funding organizations in South Asia adopt various methods to evaluate research proposals/projects submitted to their calls for research support/funding. Most organizations extensively use qualitative and quantitative information/criteria to assess research proposals. It is important to note that quantitative information refers to rubrics and scoring sheets that include a reviewer's judgment of aspects of the research proposal/applicants. Further, most funding bodies in South Asia employ peer review and a panel/committee of specialists (often external to the organization) to review targeted research proposals. The main criteria in forming panels of specialists, as revealed by 68 percent of the survey respondents, are a) to ensure the disciplinary diversity of the panels of specialists and b) the degree of experience and academic knowledge. The six case studies from the South Asia region detailed the rationale for

using peer/panel/committee evaluation systems and their organizational/disciplinary context. Taking the regional research culture into the context of research assessment practices will not only enhance support of international declarations/recommendations and principles on research evaluation but also enable learning and consolidation across research evaluation systems and scientific policymaking in the Global South and North.

Need for Greater Emphasis in Aligning Research Funding to Sustainable Development

✔ The alignment of research funding calls with sustainable development goals (SDGs) is indirect; instead, a more direct approach used in designing targeted funding calls in South Asia is synchronisation with national objectives. During interviews, science officers and funding administrators stated that SDGs and regional/local objectives are often tacitly involved in designing the targeted research funding calls but seldom by explicit consideration/intent. Therefore, it is challenging to ascertain research assessment practices that promote sustainable development goals. Future work should examine the role of sustainable development goals (SDG) agenda-setting in forming national/regional research priorities and objectives.

Need for Promoting Inclusive Research Systems through Research Assessment Practices

✔ Survey and interview respondents in India discussed unwritten rules and case-by-case adjustments to address bias and discrimination through research assessment practices. However, these adjustments were limited mainly to early career researchers/scientists, scientists from peripheral institutions/regions of the country, and scientists from institutions that are not well equipped with scientific infrastructure/instruments. Explicit inclusivity mandates in calls for applications and evaluation rubrics or written rules/manuals to reviewers will promote inclusion in research systems through research assessment practices. Several approaches to address bias and discrimination through research assessment practices are detailed in case studies, such as minimum acceptable merit (ICSSR; Case Study #3), special calls for women scientists (NICRA Case Study #4); or an explicit focus on translational research (SEED; Case Study # 2 & NIF Case Study #1).

✔ In all three South Asian countries (India, Sri Lanka, and Bangladesh), respondents indicated that they have never encountered a scenario where adjustments were made to a research proposal during grantmaking decisions just because the applicant is a women scientist. However, some respondents described having separate calls for specific populations - for instance, researchers from North-Eastern/Himalayan regions/fellowships (in the case of India) and awards for women scientists, etc. Future work should develop a systematic framework for classifying and evaluating the role of research assessment processes and practices in promoting inclusivity, and overcoming intersectionality, in science and innovation systems in the South Asia region and the global south in general.

✔ Finally, public communication of evaluation results leaves much to be desired in the South Asia region, with 71 % of organizations (15 survey respondents) stating that they

do not share the results publicly. Similarly, open research data practices are not standard in targeted research funding programs. Future research should examine the antecedents for enhanced adoption of open access and open research data practices in the science and innovation funding ecosystem in the South Asia region.

CASE STUDIES

Based on the data collected in the project, a total of ten case studies based on selection of research proposals in the Global South, were developed to contribute to potentially comparative research on science systems and research assessment in Latin America and the Caribbean and in South Asia. To deepen knowledge in each case study, interviews with authorities, research assessment experts from funding agencies and academic institutions and evaluators and/or peer-reviewers involved in each of the calls were conducted. In that sense, the project sought to capture a complex and diversified map of situated research assessment experiences, by applying methodologies that place decision makers, research assessment experts and evaluators/peer- reviewers at center stage (Kraemer-Mbula, et al., 2020). Moreover, documentary sources on the different calls and their rubrics complemented the study.

In the South Asia region, six in-depth case studies of organizations managing programs and funding research in different disciplinary fields are detailed as part of the fieldwork undertaken. The six organizations span all three countries – India, Sri Lanka, and Bangladesh and represent targeted and coordinated research funding efforts in a range of scientific disciplines (agriculture, climate change, social sciences, humanities, etc.) as well as applied innovation funding programs working towards greater inclusivity in science systems.

Each of the 28 respondents provided an invaluable and exciting account of research assessment practices in their organisation, most of which are unique and not documented in the literature on research assessment. Every organisation and program analysed as part of this study provided a distinctive take on research evaluation, often situated in the context of their organisation's mandate and circumstances peculiar to the research community or geography of the region they operate.

In order to highlight the uniqueness of the research assessment practices from the South Asia region as well as explain the situated context of the South Asia region and the Global South, six programs from different organisations with a relatively singular mandate or work area were chosen. Four of them were placed in India, one in Sri Lanka and the last one in Bangladesh. We refer to the Grassroots Innovations promoted by the National Innovation Foundation (NIF); The Science for Equity Empowerment and Development (SEED), from the Division of the Department of Science and Technology (DST); the Funding Research Projects to Promote Social Science Research from the Indian Council of Social Science Research (ICSSR); and the National Innovations in Climate Resilient Agriculture under the Indian Council of Agriculture (ICAR), all the four located in India; the National Agricultural Research System (NARS) in Sri Lanka; and the Bangladesh Academy of Sciences – United States Department Of Agriculture Endowment Program (BUEP), established by The Bangladesh Academy of Science (BAS), in Bangladesh. The main funding councils from India, Sri Lanka, and Bangladesh are not included in the case studies; even though they featured many of the unique research assessment practices described in the six case studies, as their organisational mandate was too broad to describe sufficiently in a brief case study.

In Latin America and the Caribbean, four in-depth case studies based on the research assessment forms and processes of five research funding programs from four different research funding agencies and one university advisory body for research promotion policies were conducted. We refer to the "National Fund for Scientific and Technological Development" (Fondecyt), dependent on the National Agency for Research and Development (ANID) in Chile; "The University - Society and Production Linkage Program" (VUSP) and the "Research and Innovation Program oriented to Social Inclusion" (IIIS) from the Sectoral Commission for Scientific Research (CSIC) at the Universidad de la República (Udelar) in Uruguay; the "Science

and Technology against Hunger program", from the Ministry of Science, Technology and Innovation (MinCyt) in Argentina; and the "Malvinas, Antarctica and South Atlantic Oriented Scientific and Technological Research Projects (PICTO)" from the National Agency for the Promotion of Research, Technological Development and Innovation (AGENCIA I+D+i) in Argentina. Due to their funding capacity, each organization plays a central role as a research funder in the respective countries selected in the region: Chile, Uruguay, and Argentina (two case studies were undertaken in this last country).

The case studies selected covered a wide range of disciplines. In Chile, it involved four area of knowledge: Arts, Social Sciences and Humanities, Exact and Engineering Sciences, Natural and Life Sciences. In Uruguay, one of the research funding programs, the VUSP, contributed to solving problems mainly in agro-veterinary and industry areas, followed by the socio-economy, and in a lesser extent, in arts and culture, environment and health; whereas in the IIIS program health, nutrition, housing, education were targeted, among others fields. In Argentina, the program "Science and Technology against Hunger" included the search for solutions to problems of malnutrition, poverty, access to and quality of water; whereas in the "Malvinas, Antarctica and South Atlantic Oriented Scientific and Technological Research Projects (PICTO)", the thematic lines were the following: social and human sciences; international relations and legal affairs; natural sciences and environment; economics and natural resources.

In total, the case study strategy in Latin America and the Caribbean consisted in 16 in-depth interviews with science and technology agencies and university authorities, research assessment experts from the organizations and evaluators and/or peer-reviewers involved in the evaluation process of the call or program under analysis. In addition, a contextual and normative analysis of the call for proposals was carried out, together with an analysis of the rubrics used. The narrative guide for case study development included three level of analysis:

-**conceptual/normative level** where temporal, contextual and cognitive aspects; purpose and funding, institutions/actors in the ecosystem involved in the program were explored.

-**research assessment methodology and indicators level,** which included a description and analysis of the different dimensions and indicators used to evaluate the research proposals and their value in the evaluation rubrics; evaluation system implemented; training/education, written guidelines, tools or criteria not to be followed are provided to the persons involved in the evaluation of research proposals (reviewers, members of specialist panels, etc.).

-**procedural level,** which involved a description and analysis of evaluators' and experts' perceptions of the research assessment process; scope, challenges, main problems, institutional learning from the evaluation process of the call, from the perspective of evaluators in different areas of knowledge.

Finally, a consent form was sent to respondents once they have agreed to participate in the fieldwork and ethical guidelines for fieldwork assistants were provided following the policy of the IDRC. On research ethics and safety clauses issues the project team have the supervision from the Human-subjects ethics committee (a university-wide body) at Indian Institute of Science and from a specialist of a research team on Integrity, Ethics and Bioethics policy from the Pontifícia Universidade Católica do Rio Grande do Sul, Brazil, PhD Mónica de la Fare, member of CLACSO´s Network, who gave advice on the qualitative fieldwork more comprehensively in both regions.

Some of the results of the case study strategy of *ex ante evaluation* in project funding in the Global South demonstrate that: a) the diversity of funding instruments and the variety of forms of research assessment increases in all the countries; b) funding instruments oriented towards specific topics are an increasing tendency in both regions where funding agencies and universities find a higher margin than in traditional calls/programs for more innovative and exploratory forms of research assessment without achieving a dominant procedure nor a coherent set of rules in place; rather there is a complex mixture of evaluation procedures, each with its objectives, scope and assessment dynamics (Oshsner and Peruginelli, 2022); c) there are some innovative initiatives described in this study, particularly in the case studies in India and Uruguay, where research assessment designs are centered in a bottom-up perspective, engage with diverse knowledge systems and local communities; however top-down managerial and academic orientation research assessment designs are still predominant. The latter, needs to be encouraged through an increase in the participation of researchers from all areas of knowledge in open research processes, the incentive of knowledge demand from different productive and social actors, and the integration of non-academic stakeholders' perspectives in ex-ante and ex-post evaluation processes.

In the case studies analysed in the Global South, a formal or explicit definition of research quality as part of the organization's research assessment processes in grantmaking was not frequent. However, the existence of formal criteria to address ethics and integrity issues is a dimension that is widespread in the LAC case studies and addressed, more informally, in the South Asian studies. Furthermore, the alignment of research funding calls with sustainable development goals (SDGs) was indirect in both regions; instead, an orientation to national objectives prevailed.

Regarding research assessment methodologies and indicators, peer review and a panel/committee of specialists (often external to the organization) to review the research proposals were extended mechanisms. What´s more, there were several heterogeneous research evaluation practices, less standardised around the exclusive use of publication impact indicators to allocate funding, particularly in targeted research calls, and where a combination of qualitative and quantitative methodologies is implemented. Formal training or guidance to reviewers before research assessment was more usual in the LAC case studies than in the ones conducted in South Asia, but in both regions the importance of strengthening and expanding these instances was stressed.

In terms of equity and inclusivity in the scientific ecosystems, gender, underrepresented generational groups (particularly Early Career Researchers) and/or institutional strengthening, and/or regional balances were introduced in three of the four case studies analysed in LAC. The gender dimension was often addressed through indirect mechanism related to the composition of research groups and /or panels/ committees in a minimum of female parity and less by means of positive discrimination measure. However, there are ongoing gender innovative initiatives from two of the research funders included in this study (case studies 7 in Chile and 10 in Argentina). For example, ANID in Chile has begun piloting the use of algorithms that offer greater territorial, gender and institutional equity among the evaluators and created gender mechanisms for the tie-breaker between projects with the same qualification, which has favored women (who are generally under-represented). The AGENCIA I+D+I in Argentina introduced a higher score for women-led projects in its regular calls for proposals (female researcher were awarded 3 points out of a maximum of 10, plus a further 2 points if there was gender parity in the composition of the responsible group). Both in Argentina and Chile, measures have been included to alleviate the burden of maternity or childcare periods, extending deadlines for the delivery of documents and/or the validity of publications. This also applies to researchers with disabilities in the case of Chile. In South Asia case studies, equity

and inclusion considerations in research assessment were mainly oriented to early career researchers, scientists from peripheral institutions/regions, and scientists from institutions that were not well equipped with scientific infrastructure/instruments. In two of the case studies in India (cases 1 and 3) organizations scout and support innovations from geographically marginalized regions, by engaging with diverse knowledge systems and local communities for contemporary problem-solving. In addition, the gender issue was covered indirectly through special calls for women scientists (Case Study 2 and 4).

Concerning the open science dimension in research assessment, relevant practices were encouraged in India (case study 1) through its distinctive model of patenting grassroots innovations by promoting open sharing and copying if done by any person for their individual use and by incentivizing open access (case 3) although with no explicit mandate. Meanwhile, in the LAC case studies, research assessment indicators linked to open science, with focus on open access (case study 8 en Uruguay and 10 in Argentina) and/or mechanisms to stimulate and assess interdisciplinary approaches in research funding calls (case study 6 in Chile) were still an incipient but incremental trend.

Another component of open science that is highlighted is the inclusion of non-academic actors in research assessment processes (case study 8 in Uruguay). In both calls studied in the context of the CSIC-UDELAR body, non-academic actors are required at different stages: definition of research agendas, formulation of objectives, elaboration and presentation of projects, consideration of interest in the results and the exchange of opinions during the development of the research, and the transfer and appropriation of the results obtained. Although more indirectly involved in the research assessment processes, the participation of grassroots movements and citizenship in the case studies in India (particularly cases 2 and 4) is a central aspect of both programs. Furthermore, in multi-stage evaluations implemented in India, a local variant of open reviews are frequently implemented in the final stage of the research process, when the PI of the study makes a presentation to the panel of experts (or apex evaluation committee) and receives personalised feedback on the research proposal.

Finally, in each country and region the different approaches for assessing research quality and how they influence research funds allocation should be considered as situated in complex environments and in interaction with different assessment procedures (Ochsner and Peruginelli (2022). Although research assessment is very diverse and fragmented in each region and country, therefore forcing convergent models seems inappropriate, it is desirable to increase harmonization and coordination, in policies, methodologies and practices towards some shared principles oriented towards the transition to open science practices in line with guidelines of inclusion, diversity, equity and the gender perspective in STI, qualitative evaluation in dialogue with quantitative evaluation of research and trajectories, the strengthening of early careers and women, and an epistemic pluralism that includes the knowledge of local communities and social actors from different countries and regions.

CASE STUDIES IN SOUTH ASIA

Case 1: Grassroots Innovations promoted by the National Innovation Foundation (NIF), in India

Case 2: The Science for Equity Empowerment and Development (SEED), from the Division of the Department of Science and Technology (DST), in India

Case 3: The Funding of Research Projects to Promote Social Science Research, from the Indian Council of Social Science Research (ICSSR), in India

Case 4: The National Innovations in Climate Resilient Agriculture under the Indian Council of Agriculture (ICAR), in India

Case 5: the Sri Lanka Council for Agricultural Research Policy (NARS), in Sri Lanka

Case 6: The Bangladesh Academy of Sciences (BAS) – United States Department of Agriculture (USDA) Endowment Program (BUEP), in Bangladesh

CASE STUDY 1: NATIONAL INNOVATION FOUNDATION, INDIA[13]

India's National Innovation System and the National Innovation Foundation

In the 2030 Agenda for Sustainable Development (United Nations, 2015), governments worldwide made explicit commitments to using technology to achieve a sustainable future. Science funding bodies began funding projects to develop technological innovations vital to attaining the sustainable development goals (SDGs). In the Global South, these funding efforts also include support for inclusive innovation projects that serve the interests of low-income populations and marginalized socio-geographic groups.

The National Innovation Foundation (NIF) of India, announced in the union budget of the government of India in 1999, was established in 2000 to build on India's unique inclusive innovation system and became an autonomous body of the Department of Science and Technology (DST, India) in 2010-11. The mandate of NIF is to scout, document, validate, protect (through various intellectual property means), and diffuse (both commercially and socially) the technological innovations, ideas, and traditional knowledge practices developed by the untrained, less-educated, poor, and excluded groups in India.

Initiatives to promote knowledge and technological innovations of the traditionally marginalized and excluded communities began in the late 1980s with the Honey Bee Network, an informal network comprising farmers, scientists, researchers, activists, and artisans (Gupta, 2016). There have been other campaigns and movements advocating for citizen´s knowledge. However, the Honey Bee Network was unique in its advocacy of intellectual property rights (IPR) for promoting and recognizing the innovations at the grassroots (Smith et al., 2017). The Honey Bee Network is supported by numerous agencies such as Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI), formed in 1993, and Grassroots Innovation Augmentation Network (GIAN), formed in 1997. Today, NIF is the apex institution and the integrating node in the institutional infrastructure of the grassroots innovation system (Ustyuzhantseva, 2000). The NIF reports creating a repository of "*over 325,000 technological ideas, innovations and traditional knowledge practices (not all unique, not all distinct)*" from all geographic locations of India."

NIF performs five significant activities:

1. Scouting, documentation, and database development
2. Value addition, research and development
3. Intellectual property management
4. Business development
5. Dissemination and social diffusion

Funding and cognitive aspects of the NIF and grassroots innovations in India

The National Innovation Foundation provides funding and support to those innovations in India that have a scope for market commercialization or social diffusion and the potential to impact the lives of the poor. Over time, these innovations are scouted through different methodologies adopted by the NIF. One of the primary methods is through a 'Submit Idea' webpage available on the NIF website, where innovators from the informal sector or non-formal economy can submit their ideas. The ideas received through NIF's scouting

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[13] Elaborated by Gautam Sharma, Venkat Nadella, Avinash Kumar from DST-Centre for Policy Research, Indian Institute of Science, Bangalore, India.

methods are often rudimentary prototypes that require further value addition and validation of the innovators' claims. NIF seeks the assistance and expertise of 'formal' science and technology institutions, agricultural universities, and colleges in India to validate and add value to grassroots innovations and their efforts.

The call for ideas/innovations is open throughout the year; the submitted ideas/ innovations are assessed in a time-bound manner, and feedback is sent to the innovator's address. Further, NIF provides need basis funding for value addition, often based on the technology readiness level of the grassroots innovations. The unique feature of NIF's funding is that it is available only to innovators who have no formal science and technology degree or education and have developed a technological concept or idea.

In addition, NIF also provides technical and financial support in patenting, incubation, and prototype development to grassroots innovators. The Micro Venture Innovation Fund of NIF provided grants of USD/United States Dollars 450,000 to over 190 projects with an average of USD 2,368 per project.

The fundamental principle guiding NIF's support and assistance is that citizens are not merely recipients of knowledge and technology; instead, they can be essential producers of knowledge and develop sustainable solutions. NIF supports ideas from grassroots innovators in various fields such as agriculture, human health, veterinary, nutraceuticals, and engineering.

Weblink to the NIF website: https://nif.org.in

Weblink to the innovation call and eligibility for support: https://nif.org.in/announcement/biennial_competition

NIF's approach for screening and validating grassroots innovations

NIF invites applications from the innovators and uses its organizational resources to scout these innovations. There are three distinct approaches for inviting grassroots innovations requiring funding and other assistance. First, NIF takes help from various partners for searching for grassroots innovations from all over the country. These partners are responsible for scouting the knowledge and innovations of the people from the country's remote regions. The second approach employs the snowball method encouraging grassroots innovators to search for other such innovators. Third, NIF invites idea submissions from grassroots innovators through their website, email, and postal mail.

After receiving idea submissions from grassroots innovators, NIF employs the following criteria to screen submissions:

1. *Ascertaining the eligibility of the innovator for NIF's support*: The individual submitting the idea/ innovation should not have formal science and technology education or be in an S&T/ R&D role
2. *Ascertaining the novelty*: The idea or technology submitted should be unique or novel and may not be available in literature or market
3. *Ascertaining scientific validity*: The claims made in the idea or technology statement should be verifiable based on sound scientific knowledge
4. *Ascertaining social applicability*: The idea or technology could be used by the people

Internal screening of grassroots innovations and knowledge practices

An internal screening committee ascertains the novelty/degree of novelty of each idea or technological innovation submitted to the NIF by undertaking a thorough prior art search (patent, non-patent, and market). The screening committee comprises subject matter experts

working in various departments of the NIF, such as engineering, veterinary science, agriculture, and human health. The value addition research development (VARD) section of the NIF conducts the internal screening process.

An internal brainstorming session is conducted with other intellectual property management and business development section members to identify innovations that have the potential for improvement and value addition. A market analysis of the innovations is conducted using techniques like field visits, focus group discussions, and consulting market experts and entrepreneurs.

Validation and testing of novel grassroots innovations

Novel grassroots innovations are taken forward for validation and testing. In this phase, NIF verifies claims made by grassroots innovators by involving formal S&T institutions in India, such as the CSIR/ICMR/ICAR institutions, agricultural universities, veterinary institutions, and the Indian Institutes of Technology, the National Institutes of Technology, the Indian Institute of Science, etc. Some of these institutions have a memorandum of understanding signed with NIF to verify and validate the grassroots innovations. The claims are also verified through on-field trials or farm trials in many cases.

Each innovation or knowledge practice is assessed according to its merit. A strategy is formulated regarding the involvement of public or private sector R&D teams, academic institutions, product planning, and prototype improvisation. After validating and testing the grassroots innovations, the research advisory committee (RAC) is consulted for expert advice. The RAC provides action-based recommendations considering the grassroots innovation's novelty, value addition, cost-effectiveness, and social impact.

Screening applications for collaboration with formal sector institutions

Based on the technology domain, NIF identifies institutions where a particular technology could be tested or validated, or value-added and reaches out to experts in the institution. Those experts who express willingness to work on the technology submit a project for the same as Project Investigators (PIs). The internal committee first screens these projects at NIF to check if the projects meet the expectations or if the testing parameters are covered.

Shortlisted project applications from PIs are reviewed by the respective Research Advisory Committees (RACs) comprising eminent external experts from different domains. The senior official of the NIF explains the role of RACs as:

> *"The RACs comprises of the expert people. So depending upon the kind of technology or the kind of project proposed, we present the shortlisted projects to the different RACs. All the projects are reviewed here."*

> *Senior Innovation Officer, NIF, personal interview on April 11, 2022*

The research advisory committee reviews the projects on validation or value addition of grassroots innovations from PIs on the following primary criteria:

1. The expertise of the PI vis-à-vis innovation proposed to be validated/ value-added
2. The testing/ validation protocol(s) to be followed
3. The budget of the proposed project
4. Timeline

After evaluating the projects, the RAC recommends approval, seeks revision, or rejects the proposals received. This model of innovation incubation by the NIF model is an excellent example of blending formal science with informal knowledge practices and innovations. The process also poses some challenges as the improvisations or the modifications suggested by the formal S&T institutions are often not accepted by the innovators or are unable to work (Wierenga, 2021). There is also a communication distance between the innovators and the formal experts. The official from NIF also acknowledges this challenge:

"Every mother loves her child; the same is true with some grassroots innovators. Sometimes they (grassroots innovators) are reluctant to appreciate the design inputs given by the designers, engineers, or the formal sector, but that is sometimes only. Broadly, most of the time, they agree."

Senior Innovation Officer, NIF, personal interview on April 11, 2022

Another unique dimension of the NIF model is its aggressive use of IPR as a tool for providing cognitive justice to the grassroots innovator (Smith et al., 2017). The novel grassroots innovations receive full support for protecting the IPRs, filed in the name of the grassroots innovators, who are the source or originator of the idea. Only in cases where any formal S&T institution does considerable value addition is the IPR shared between the grassroots innovator and the concerned expert. NIF has so far filed applications for different IPRs, which include:

1. Patents (India) for 1250 innovations (314 granted)
2. Patents (US) for 8 innovations (6 granted)
3. Design Rights for 27 innovations (20 registered)
4. Protection of Plant Varieties and Farmers' Rights for 70 traditional farming practices

The NIF model of patenting grassroots innovations is unique as it promotes open sharing and copying if done by any person for their individual use. The rationale is to protect the inventions from being misappropriated by corporations for profits. The use of intellectual property rights (IPR) differentiates the HBN and the NIF from other grassroots movements of the 1980s that advocated for cittizens´knowledge. The Honey Bee Network always used IPR to recognize, respect, and protect the non-formal knowledge holders and as an instrument to facilitate collaborations between the formal and the informal. Thus, using IPR by NIF promotes open access for individuals and patent rights as protection from corporations.

Lessons from NIF's research assessment processes and practices

The National Innovation Foundation's approach to scouting, supporting, and funding grassroots innovations at the bottom of the pyramid offers institutional learnings for science councils and funding bodies around the world, especially in the global south:

1. The National Innovation Foundation (NIF) invests in innovations and/or projects that are risky. In contrast, main science funding bodies typically like to invest in safe technology projects or institutes and scientists with a good track record. NIF, on the other hand, supports people who have no formal education but have built a prototype using locally available resources and applying their experiential knowledge. The NIF official elaborates on this as follows:

"Many institutions, while funding research, are risk-averse. They try to invest in somebody with a good track record, but at NIF, we recognise innovators who have no track record of successful innovations. Some may have developed an innovation that may not have immediate utility but could be useful in the next 5 or 10 years."

2. The NIF funds technological projects and ideas which are bottom-up. The poor have a better understanding of their reality and are more aware of their technological needs, and thus the solutions built by them need to be supported by formal S&T institutions. Their role should be to provide value-addition and validation. Therefore, in designing indicators to measure the scientific credibility of an S&T institution, it is essential to also think critically and clearly about scientist´s social responsibility. Hence, special consideration should be given to scientists who have collaborated with grassroots innovators or citizen´s knowledge/science.

3. NIF scouts and supports innovations from geographically marginalized regions of India. Their practice of inclusivity in terms of alternative knowledge promotion and recognition from the remote areas and hinterland promotes sustainable development. To promote inclusivity, formal S&T institutions should engage with diverse knowledge systems and local communities for contemporary problem-solving.

CASE STUDY 2: SCIENCE FOR EQUITY EMPOWERMENT AND DEVELOPMENT DIVISION

A Division of the Department of Science and Technology (DST), Ministry of Science and Technology, Government of India[14]

About the SEED Division

The Science for Equity Empowerment and Development (SEED) Division of the Department of Science and Technology (DST) was established in 1985 with the broad objective of *"providing opportunities to motivated scientists/technologists and field-level workers (Non-Government Organisations) to take up action-oriented and location-specific projects aiming at socio-economic development of disadvantaged sections of the society through appropriate Science and Technology (S&T) interventions*."

The SEED Division (hereafter interchangeably referred to as the Division) provides grant-in-aid support to project proposals from Knowledge Organisations (including Government and Private Academic Institutions, R&D Labs, etc.) and S&T-based NGOs for the "*delivery of science-led solutions and development & deployment of location-specific appropriate technologies for the creation and improvement of sustainable livelihoods; primarily aimed at enabling vulnerable sections of the society*." The Division thus delivers scientific knowledge and technologies for societal benefits at the national and sub-national levels. The objective is to create sustainable livelihoods for the most vulnerable and disadvantageous sections of society, such as artisans, landless labourers, farmers, etc. The Division aims to uplift poor and underprivileged sections of society through scientific and technological interventions by channelling the linkages of national R&D labs and S&T institutions to augment the welfare of the people. The Division works in a bottom-up approach involving people at the grassroots to develop need-based, location-specific, and appropriate technological solutions for sustainable and socially acceptable development.

The Division has flagship programmes to benefit women, Scheduled Caste (SC) and Scheduled Tribe (ST) communities, young scientists, the elderly and divyangjan with innovative technological interventions for improving the livelihood system. The Schemes and Programmes of the SEED Division majorly fall into three categories viz programs for social inclusion, geographical inclusion, and economic inclusion. The various schemes and programmes of the SEED Division under the three categories are illustrated in Figure 1 below:

Figure 1: SEED Programs and Schemes
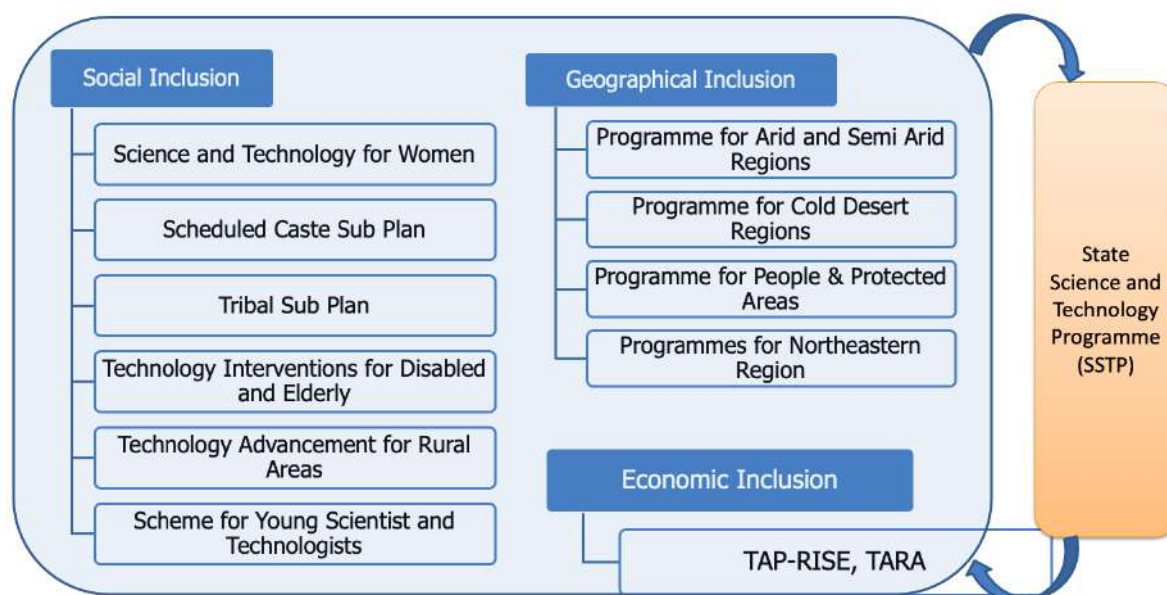
Source: Dutta (2022)

The main aim of the Schemes and Programmes under the social inclusion category is to develop various S&T interventions for improving the quality of life and creating sustainable livelihood models for socially and marginally excluded groups like women, Scheduled Castes (SC) and Scheduled Tribe (ST) populations, weaker sections, elderly, differently-abled etc. Similarly, the Schemes and Programmes under geographical inclusion aim at bringing the marginalised population in remote and geographically less accessible areas into the developmental framework through S&T inputs. Under economic inclusion, efforts are directed towards the development of S&T-led entrepreneurship development by supporting the ecosystem for elevating 'incremental innovation' by creating social enterprises and cross-bridge collaborations.

The Division accepts project proposals from government academic institutions (central and the state governments), government S&T bodies, R&D Labs etc., private academic institutions (universities/ colleges/ institutions and government-aided colleges recognised or regulated by the UGC/AICTE/MCI/DCI/PCI etc.), and S&T-based voluntary organisations (NGOs) with legal status or registered as a society under the Societies Registration Act 1860 or a Trust registered under the Indian Trusts Act 1982 or Charitable or Religious Act 1920 or under the corresponding State Act with three years of existence.

Selected Technology Delivery Models of the SEED Division

Technology interventions for disabled and elderly

The Programme promotes Research and Development (R&D) for finding affordable and adaptable Science and Technological (S&T) solutions for empowering persons with disabilities (PwDs) and the elderly population in the country. Several tools, technologies, techniques and processes for increasing inclusivity and universal accessibility to PwDs and the elderly are developed through S&T inputs.

Scheme for young scientists and technologists

The Scheme encourages young scientists and technologists to identify socially relevant challenges and provide S&T-based solutions using a lab-to-land approach. The Scheme encourages young scientists to submit proposals on emerging S&T areas such as artificial intelligence, additive manufacturing, environmental sustainability, renewable energy etc. The

minimum qualification for the award is a master's degree in any of the S&T fields. The applicant should be less than 35 years of age; however, the age eligibility criteria for women, differently-abled populations, SC and ST populations is 40 years

Women Technology Park Scheme (WTP)

The Programme on Women Technology Parks (WTPs) under the Scheme Science and Technology for Women supports action-oriented projects with science and technology inputs to benefit women. These WTPs act as a single-window hub for convergence of diversified technologies, integrated with forward and backward linkages to build capacities in new trades and skills with scientific knowledge leading to the development of women entrepreneurs. About 50 WTPs established in various geographical locations of the country had benefitted more than 20,000 women

Evaluation of project proposals and monitoring of projects

The Department of Science and Technology (DST) invites Call for Proposals (CFP) under the various Schemes and Programmes of the SEED Division on its website twice a year. The project proposals received under the call are screened by the Internal Screening Committee/Secretariat comprising experts/members from respective Expert Committees. The Expert Committee can either (i) shortlist the project proposal for presentation, (ii) suggest peer review or (iii) Screen out the project proposal. The recommended proposals will be put up for Secretary DST's approval upon the Minutes of the Meeting by the Chairman of respective Expert Committees.

The progress of approved (sanctioned) projects is monitored through presentations in Group Monitoring Workshops and onsite field visits. The Output and Outcome based Evaluation and Monitoring Framework will be a part of monitoring system and the output and outcome indicators will be developed and monitored periodically. The Division shall also closely review the progress from time to time with the help of members of Expert Committees of respective programmes to take suitable decisions to amend/modify/delete any of the activities being implemented under the projects.

The impact of the projects is evaluated based on the acceptability of the proposed interventions, techno-economic viability, ecological sustainability, and replicability potential, considering the project's social dimensions and broader replication in the rural sectors.

SEED's approach for science and technology interventions in enhancing the Welfare System

The SEED division's philosophy and the approach of its various programs and schemes can be traced to the discourse around the appropriate technology movement of the 1970s. The appropriate technology movement was essentially a critique of the technology transfer from the global north to the global south. The argument was that the exported technologies failed to fit the context of the worldwide south, which was capital-poor and labour-rich compared to the global north's capital-rich and labour short economies (Peterson, 2008). Appropriate technology, therefore, is defined as any technology compatible with local, cultural, and economic conditions. It utilises locally available materials and energy resources, with tools and processes maintained and operationally controlled by the local population (Hazeltine and Bull, 2003).

The SEED Division of the DST supports projects focusing on designing and developing appropriate technology solutions and interventions for the most vulnerable sections of society. The website of SEED lists one of the main objectives of the Division as to "*Catalyse and support research, development, and adaptation of relevant and appropriate technologies for empowering and improving quality of life of Artisans, Landless labour, Women, SC/ST and other*

disadvantaged sections, particularly in rural areas." Thus, the Division's goal is "Equitable Growth and Inclusive Development to improve the Quality of Life of Vulnerable Sections of the Society". A senior officer heading the SEED Division remarked:

> *"Earlier examples of exporting technology and absorbing them have mostly failed and positively affected only 10-15 percent of the population. Through SEED, we try to develop technologies that can affect the local people and promote sustainability in real terms."*
>
> *Senior Officer of the SEED Division, personal interview on April 8, 2022*

The Schemes and Programmes of the SEED Division aim to improve the welfare system's efficiency through Science, Technology and Innovation (STI). Figure 2 depicts the framework for the Technology Delivery Platform for Welfare System Strengthening through STI interventions

Figure 2: SEED Framework for Strengthening the Welfare System
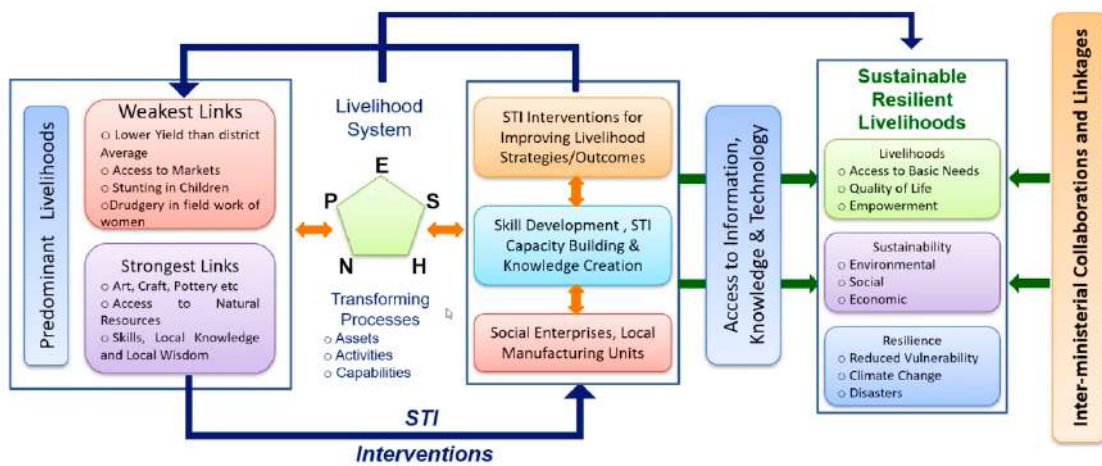
Source: Dutta (2022)

Thus the Schemes and Programmes of the SEED Division provide sustainable S&T solutions for addressing the weakest links in the predominant livelihood systems like low agricultural productivity, access to markets, stunting in children, the drudgery of women etc. and the creation of social enterprises based on livelihood strengths tapping the local knowledge, innovation systems and natural resources for inclusive development in a sustainable manner addressing the requirements of Sustainable Development Goals (SDGs).

Annex

Government of India (2021). DST@50 coffee table book. Mimeo.

Figure 2A: Onboard bus Identification device for visually challenged
Source: Reproduced from DST@50 book pg. 126

Figure 2B: Women using improvised farm equipment at rural Women Technology Park,
Sitapur, Uttar Pradesh
Source: Reproduced from DST@50 book pg. 129

Figure 2C: Solar water heating system for the Himalayan region
Source: Reproduced from DST@50 book pg. 125

CASE STUDY 3: INDIAN COUNCIL OF SOCIAL SCIENCE RESEARCH, INDIA[15]

Social science research in India and the genesis of ICSSR

In India, social science research has a long history; however, modern social science research traces its roots to the British colonial period. During this period, British officers commissioned independent studies, collected data and information on the Indian society to understand better its structure, culture, and traditions, and aid in the general administration of the country (Sharma, 1992).

In pre-independence India, social science research was confined only to a few universities (Vaidyanathan, 2001). However, after independence in 1947, when India needed precise understanding and information for planning, several economic research institutions came into existence in the 1950s and 60s. With greater emphasis on higher education and funding from the central and state governments, the number of universities gradually increased ten-fold from 20 in 1947 to almost 200 by the 1980s (Chatterjee, 2008); and a further five-fold to over 1000 universities by 2020 (AISHE 2019-20 Survey).

In 1969, the Government of India established the Indian Council of Social Science Research (ICSSR) to coordinate and promote advanced research in social science disciplines (ICSSR, 2007). Universities, Institutes of National Importance and Research Institutes are the primary sites for academic research and teaching in the social sciences in India. In addition, a diverse set of organisations, including government research institutes, autonomous research organisations, non-governmental organisations (NGOs), and think tanks, are involved in social science research in India (DFID, 2011).

ICSSR (hereafter also interchangeably referred to as 'the council'), funded entirely by the central government, has played an active role in establishing and financing research institutes all over India. The main aims and objectives of the council, as specified on their website, are:

- To review the progress of social science research and advise its users
- Sponsor social science research programs and projects and administer grants to institutions and individuals for research in social sciences
- Administers scholarships and fellowships for research in social sciences
- Indicate areas in which social science research is to be promoted and adopt special measures for the development of research in neglected or new regions
- Give financial support to institutions, associations, and journals engaged in social science research
- Arrange for technical training in research methodology and to guide research
- Coordinate research activities and encourage programs for interdisciplinary research
- Develop and support centres for documentation services and supply of data
- Organise, sponsor, and finance seminars, workshops, and study groups
- Undertake publication and assist publication of journals and books in social sciences

ICSSR currently supports 24 research institutes and six regional centres by providing grants for projects, international collaborations, capacity-building courses/programs, and publications to promote research in social sciences in India.

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[15] Elaborated by Gautam Sharma, Venkat Nadella and Avinash Kumar from DST-Centre for Policy Research, Indian Institute of Science, Bangalore, India.

Funding research projects to promote social science research in India

ICSSR makes financial grants towards two categories of research projects: a) Major and Minor research projects "*to conduct cutting edge research in various fields having a theoretical, conceptual, methodological, or policy orientation on a subject*"; and b) Research program to undertake "*inter-institutional or inter-disciplinary or multi-disciplinary*" social science research. The research projects funded by ICSSR may either be from one of the social science disciplines or may be interdisciplinary. The main objectives of the program are:

- To support a high-quality, independent program of research
- To provide opportunities for training of future researchers
- To contribute to the development of elaboration of new theoretical or methodological approaches to research
- To promote collaborations among different disciplines and foster research activities among researchers in the social sciences
- To facilitate the communication of research both within and outside the research community as well as to provide inputs to policymakers

Eligible institutions

Social scientists working at ICSSR research institutes, institutes of national importance, UGC recognised Indian universities (eligible for a grant) and deemed universities are eligible to apply for ICSSR research grants. Further, those registered organisations with demonstrated research capabilities are eligible to apply in collaboration with the institutes mentioned above as co-project directors. In addition, social scientists who have retired and senior government and defence officers with more than 25 years of regular service are also eligible to apply for research grants in areas of their interest or expertise. Calls for major and minor research projects are annual, and applications are invited through advertisements on the ICSSR website and in print media. The duration of the major research project ranges from 12 to 24 months for a budget of Indian Rupees/INR 500,000 – 1,500,000 (6,500 – 19,300 USD/US Dollars), while the minor research projects are from six to 12 months for up to INR 500,000 (up to USD 6,500). The research programmes of an inter-disciplinary/ inter-institutional nature have funding of more than INR 1,500,000.

Disciplinary focus

Research proposals from all major disciplines of the social sciences, having theoretical, conceptual, methodological, and policy implications, are invited. The broad fields of the study include sociology and social anthropology, political science, economics, international studies, social geography and population studies, commerce and management, social psychology, education, sociocultural studies, law, environmental studies, health studies, national security, and strategic studies. Apart from these core disciplines, research proposals from other allied social science disciplines are also supported, such as library science, social work, media studies, modern social history, health studies, gender studies, diaspora studies, and area studies.

Targeted calls

In addition to the general open call for research proposals in the above broad disciplinary areas, calls for proposals in specific research topics depend upon deliberation with stakeholders from academia, public policy, and international partners. Explaining the deliberation process to identify subject areas for targeted funding calls; a senior member of the ICSSR governing council noted:

> *"We invite research proposals on thrust areas. These thrust areas are decided by asking for suggestions from policymakers and highly placed scholars at the national level. We*

58

ICSSR also issues targeted calls for projects based on India's problems. These can be in the areas such as poverty, inequality, quality education, climate change, and migration. These problems are primarily informed and reflect the more considerable debate on the Sustainable Development Goals. In 2020, ICSSR invited proposals on the social science dimensions of the COVID-19 pandemic. Thus, apart from the major and minor research projects advertised annually on the website on broad areas of social sciences, ICSSR also notifies targeted research calls on specific dimensions and regions.

Assessment methodology used by ICSSR

The assessment of the research proposals received for the category of major and minor projects and targeted research calls are done at various stages by ICSSR.

Screening and peer-review

The division that advertises the research call begins screening research proposals. In the first screening, ICSSR assesses the eligibility of social scientists to confirm if they meet the minimum requirements. Screened submissions undergo two rounds of the expert review process.

Minimum acceptable merit

The first round is a single-blind peer review. The reviewers evaluate the research proposal, scientist's academic profile, institutional profile, and prior work and provide a detailed report, with comments, to the council. Only submissions with a minimum cut-off score (depending on merit) advance to the second round of review. With more than the minimum qualifying marks and positive reviews and scores, these proposals are placed on the 'merit list' and shortlisted for presentation & interaction.

Interactions between experts and scholars

ICSSR then invites proposals in the 'merit list' for interaction with the panel of experts. The principal investigator (PI) makes a detailed presentation about the research proposal and the justification for funding. During the interaction, the expert panel makes suggestions/recommendations on the research proposal, research methodology, outcomes, academic/policy impact, and budget/financial aspects of the project to the PI/team. Upon a positive review from the expert panel, the council makes research project awards public. ICSSR maintains an internal expert database of 500-600 social scientists of national repute, updated regularly (every six to 12 months). The experts in this database are faculty from leading institutes of national importance, universities, and other social science policy institutions in India. They are selected based on their publications, institutional profiles, and disciplinary backgrounds.

Training and sensitising the reviewers

During the two stages of ex-ante review procedures, experts receive an evaluation form detailing aspects of the research proposals to be assessed and the criteria for scoring/marking. ICSSR relies on the reviewers' objectivity and the integrity of the expert peer review system to reduce individual bias and promote diversity, equity, and inclusion while awarding the research projects. In addition, ICSSR follows government norms of quotas/reservations while awarding fellowships to scholars from reserved social categories.

Further, to ensure the participation of social scientists who are traditionally under-represented, ICSSR makes special efforts to sensitise reviewers on DEI initiatives and sets minimum

acceptable merit scores. Detailing how training and sensitising the reviewers is ideal for promoting diversity and inclusion in research grant-making, a senior member of the ICSSR governing council noted:

"In the interest of objectivity and merit, if we do not make any specific efforts on particular cases and leave the inclusivity at this stage of the review itself after sensitising the reviewers. I think many things are expected to happen on their own. If the review system is objective and well defined, inclusivity occurs on its own. Around 40 to 45 percent of our awardees are women, so gender justice is happening on its own"

Senior member of the ICSSR governing council, personal interview on April 26, 2022

ICSSR entrusts reviewers to objectively evaluate the research proposal, regardless of the PI's demographic and social environment, barring reservations (where applicable). If the research proposal addresses a significant problem faced by the marginalised communities and meets the minimum acceptable merit scores; the proposal is funded regardless of the PI's research publication history.

ICSSR, as of now, has no explicit mandate or funder's policy on open access publications that are the outcome of research projects funded by the council. However, ICSSR promotes publication in open access journals, and a significant number of papers are open access. The council collects publications from the researchers and updates them on their website from time to time. In addition, ICSSR conducts an ex-post peer evaluation of the final project deliverable, typically a report, and publishes these deliverables on their website.

CASE STUDY 4: NATIONAL INNOVATIONS IN CLIMATE RESILIENT AGRICULTURE, INDIA[16]

Introduction

Climate change has become a grave concern for the world to ensure food and nutritional security for the burgeoning population. India is expected to be the worst affected by climate change-induced risk because most of the population depends directly or indirectly on agriculture for their livelihood. To overcome the impact of climate change on agriculture, the Government of India (GoI) initiated the National Innovations in Climate Resilient Agriculture (NICRA) project in February 2011. NICRA is a network project that operates under the Indian Council of Agriculture (ICAR) with funding support from the Ministry of Agriculture, GoI. The overall aim of NICRA is to improve the resilience of the Indian agriculture sector to climate change and vulnerability. NICRA was launched in 2011 initially for two years with 200 crores of budget. It was further extended on a five-year basis and continues to date. The project NICRA has been developed and implemented with short-term, medium-term, and long-term visions by keeping in mind the future impact of climate change on the Indian agricultural sector. The project NICRA is currently coordinated by Central Research Institute for Dryland Agriculture (CRIDA). CRIDA is an ICAR-sponsored national research institute established in 1985 to perform fundamental and applied research in rainfed farming.

Mandate function of National Innovations in Climate Resilient Agriculture, India

The broad objective of NICRA is to enhance the resilient capacity of Indian agriculture to climate variability through developing and applying improved production and risk management technologies. It also emphasizes the demonstration of specific technologies directly in farmers' fields and capacity building of scientists, farmers, and other relevant stakeholders in agriculture climate-resilient research and its application. The project NICRA has four major components: 1) strategic research, 2) demonstration of the technology, 3) sponsored and competitive research grants, and 4) capacity building. Among all the four components, the scope and ambit of strategic research is more comprehensive and applied across all segments: dairying, fisheries, livestock, and other parts of agriculture. The central tenets of NICRA are 1) crop production, 2) natural resource management, and 3) livestock and fisheries. The program also focuses on establishing current climate-resilient best practices in 151 vulnerable districts and stresses the need to develop appropriate climate change research infrastructure for agricultural research institutes with an adequate scientific workforce to monitor the climate change situation across the agriculture sector and develop new technologies.

Funding and cognitive aspects of the National Innovations in Climate Resilient Agriculture, India

Broadly situated within the program's mandate, the three primary funding components of NICRA are: 1) strategic research, 2) sponsored and competitive research grants, and 3) technology demonstration. NICRA provides funds to conduct strategic research, planned and carried out at leading ICAR-sponsored research institutes located across the country in a network mode. It covers almost all the significant segments of agriculture, such as crops, livestock, horticulture, natural resource management, and fisheries. Under the strategic research, NICRA also funds basic research to understand the impact of climate change on different agriculture components. A senior official of NICRA noted:

The second focus area of strategic research is to fund short-term and long-term investigations related to enhancing existing technologies and developing new technologies that can improve the resilient capacity of Indian agriculture. The third important aspect of strategic research is funding technology demonstrations in the farmer's field.

The program has prioritized research themes related to strategic research and funds projects corresponding to these themes. Under strategic research, NICRA provides funds exclusively to ICAR-sponsored research institutes. The main reason behind this is that each ICAR-sponsored institute is specialized in significant agricultural commodities like rice, wheat, and maize, to name a few. Additionally, these institutes have well-established infrastructure and trained scientific workforce to undertake research. At present, the strategic research is being conducted in 21 ICAR-sponsored institutes, of which seven are identified as core institutes, and the rest 13 are functioning as peripheral institutes. These seven core institutes have state-of-the-art research infrastructure and appropriate equipment to conduct climate change research. The second funding component of the NICRA project is sponsored and competitive research grants. Sponsored and competitive research grants primarily fund critical researchable issues, especially those not covered under strategic research components. For example, the impact of climate change on plant pollinators, hail storm management, fisheries on estuarian habitats, socio-economic impacts of climate change, etc.

Notably, the funding purview of sponsored and competitive grants is comparatively broader vis-à-vis the strategic research grants. It is open to all academic institutions (inside or outside the National Agricultural Research System (NARS) on a competitive basis except private-sector agencies. Moreover, it also funds some critical research-oriented NGOs, such as MS Swaminathan Research Foundation (MSSRF). Like strategic research funding, sponsored and competitive grants have prioritized research themes. The funding cycle of the NICRA program usually is three years, with the possibility of another year extension. The average amount per grant ranges between Indian Rupees/INR 18,00,000 to 50,00,000. However, in some exceptional cases, it may shoot to INR 80,00,000.

Research Proposal Evaluation Procedures of NICRA

The NICRA project follows a three-tier screening and approval process. Based on the pre-determined research themes at the first level, the secretariat advertises/invites three-page concept notes from interested scientists/researchers, institutions, or a group of institutions in leading newspapers of the country.

An independent committee screens concept papers and recommends the best concept papers for further evaluation. At the second level, the project investigator/s of the selected concept

papers submit a complete research proposal in a prescribed format. Then, these research proposals are sent for the second level of evaluation performed by another independent committee. The program provides guidelines/format/templates/scoring sheets to these two separate committees.

After receiving the evaluation report/scores from the second review committee, the research proposals with the highest scores are referred to the third level of the evaluation carried out by yet another expert committee. The expert committee reviews the technical aspects of the proposed project. The applicant/s is asked to furnish the milestones every six months for a three-year project. The Expert Committee members assess whether these milestones can be reached or not. If not, where the problem lies. Based on their evaluation, the expert committee may recommend changes or modifications to the research proposal. The milestone document acts as the basis for the assessment and monitoring of the project. Another criterion to evaluate the research proposals is the proposed project's potential to produce products. The product could be a technology or peer-reviewed publications. Principal Investigator/s are asked to make a presentation and defend their proposals before the expert committee. In this meeting, budgets are discussed, and the final decision is reached on whether it is possible to fund the proposed research or not. The Director-General, ICAR, forms the expert committee, and CRIDA Hyderabad is the secretariat to the expert committee.

NICRA program does not have any formal definition of research quality. They select the proposals that are compatible with their pre-determined research themes. A committee identifies research themes, viz. the high-level monitoring committee which monitors the whole NICRA program. This committee is chaired by Director-General, ICAR, and the secretariat (CRIDA). The Deputy Director-General of all seven divisions are members of this committee. Additionally, members also encompass officials from other ministries and government departments.

The committee members meet every six months to discuss and flag research programs/themes related to their ministries. Therefore, the half-yearly meetings of the high-level monitoring committee act as a first source of formulating research themes. The second process to identify research themes is through brainstorming sessions. Every year, a brainstorming session is organized on specific themes, where all the relevant stakeholders are invited to participate. They're not necessarily only from the central government. The state government officials and vice-chancellors of state universities are also invited. These stakeholders meet to discuss the recent or burning issues that need immediate attention. These burning issues are included in the list of research themes on a priority basis. The third source through which research themes are determined is the parliament questions. In parliament sessions, many questions are raised about climate change every year. These questions are referred to the secretariate for answers. The secretariat keeps a record of these questions. Some of the unanswered questions are considered in the research themes. The fourth source to outline research themes is the review of scientific literature. A senior official of the NICRA project mentions:

> *"We keep reviewing the scientific literature and some of the lead papers we referred to. Anywhere there is a deficiency, we will identify those things for our Indian situations and initiate those activities for our Indian conditions. These are the four ways of ideas for the research activities."*
>
> *Senior official of NICRA, personal interview on May 6, 2022*

There's no explicit formal category or quota for underrepresented groups with specific reference to geographic, institutional, thematic, gender, etc., under the NICRA program. However, in competitive research grants, gender is given weightage. Likewise, many projects are also allocated to young scientists to encourage early-career research. Furthermore, some

portion of the budget is also assigned to underrepresented areas and groups. There is a clear guideline from the Ministry of Finance to give a specific budget to scientists or groups of scientists belonging to socially weaker sections of the society, such as the scheduled caste and scheduled tribes. The same applies to remote or underrepresented areas such as the North East Hill region. Finally, the evaluation results are not made public and accessible to everyone. NICRA communicates the decisions via emails only to successful applicants.

Nevertheless, the evaluation report is shared even with the investigators of the successful projects for improving the proposal, NICRA discloses information related only to successful projects, such as project title, name of investigators, and project duration, on their website. They also display the total number of applications received, the number of projects shortlisted, and the number of successful projects.

Annex

Figure 4A: Reviews of the progress on "Pest Dynamics in relation to Climate Change", NICRA

Source: Reproduced from NICRA website
(http://www.nicra-icar.in/nicrarevised/index.php/photogallery?layout=edit&id=106 ; accessed July 8, 2022)

Figure 4B: Stakeholder's Consultation on Climate Change, NICRA, September 2011

Source: Reproduced from NICRA website
(http://www.nicra-icar.in/nicrarevised/index.php/photogallery?layout=edit&id=108 ; accessed July 8, 2022)

CASE STUDY 5: SRI LANKA COUNCIL FOR AGRICULTURAL RESEARCH POLICY, SRI LANKA[17]

National Agricultural Research System in Sri Lanka and SLCARP

The Sri Lanka Council for Agricultural Research Policy (SLCARP) was established in 1987 to coordinate the country's agricultural research endeavors. Based in Colombo, SLCARP functions under the Ministry of Agriculture, Livestock, Lands, and Irrigation (MALLI). It serves as an advisory body for coordinating and consolidating research activities within the National Agricultural Research System (NARS) of Sri Lanka.

The primary responsibility of SLCARP is to strengthen research and development in the agricultural sector by formulating research policies and strategies to organize, plan, coordinate, and execute agricultural research by funding research projects/programs and promoting scientific research linkages in the NARS. SLCARP monitors and coordinates research activities of multiple governmental agencies placed under five different ministries: MALLI, the Ministry of plantation Industries (MPI); the Ministry of Fisheries and Aquatic Resources (MF&A); the Ministry of Environment and Natural Resources (ME&NR); and the Ministry of Education (MHE) (SLCARP 2005). Over time, SLCARP has identified its plans, programs, and perspective aligned with the aspirations and goals of the Ministry of Agricultural Development and Agrarian Services to surmount future challenges in enhancing domestic food production and export-focused on poverty reduction.

SLCARP accepts research programs of all NARS institutions functioning under different ministries and functions with the vision of "*building a vibrant and sustainable agricultural research system that can ensure the socio-economic development of Sri Lanka.*" Its principal mission is "*to provide agricultural research, development, and innovations directed toward the country's development goals via policy formulation, facilitation, coordination, monitoring and evaluation, and impact assessment.*" SLCARP has 13 overarching mandate functions ranging from formulating national agricultural policy to monitoring departmental and promoting inter-institutional research programs.

Funding and cognitive aspects of the Sri Lanka Council of Agricultural Research Policy

In Sri Lanka, the government funds agricultural research through a dual funding system (Stads et al., 2005). First, a majority of government grants for agricultural research in Sri Lanka are made directly by the Treasury under the recommendation of experts at SLCARP, and the second through national science councils, namely, the National Science Foundation (NSF) of Sri Lanka and National Research Council (NRC) of Sri Lanka.

In addition to assistance with grants from scientific councils, SLCARP makes additional research funding available to the agricultural research system through two flagship programs: 1) Competitive Contract Research Grants Program (CCRGP) and 2) National Agricultural Research Plan (NARP). CCRGP program was started in 1990 and completed in 2010. The CCRGP program focused on funding problem-driven innovative research, mobilizing research capacity, strengthening research partnerships, and flexibility in fund disbursements. It supports government-sponsored institutes, organizations, and private-sector research agencies to conduct research in pre-defined and high-priority areas.

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[17] Elaborated by Avinash Kumar, Venkat Nadella, Gautam Sharma from DST-Centre for Policy Research, Indian Institute of Science, Bangalore, India.

CCRGP proved to be a highly successful program regarding stakeholders' participation (Stads et al., 2005). It received a considerable response from stakeholders, including private-sector agencies. NARP program was initiated in 2011 and continues to date. NARP encompasses research programs of NARS institutions and national universities having faculties related to agriculture. NARS institutions design their research programs following priority areas identified in the Government Development Policy Framework and policies of line ministries for a particular period. Likewise, universities determine their research programs as per academic needs and national developmental goals. NARP provides funds to support specific research programs of government research agencies and universities. Like CCRGP, NARP does not fund research programs of private-sector agencies. Outlining the targeted funding group, a senior scientist from SLCARP highlights:

"Earlier […] contract research program provided research funds to the private sector; however, the current program is funded directly by the Treasury. There are strict [eligibility] guidelines, and the program can only provide funds to government institutions, research organizations, research institutes, and universities."

Senior scientist at SLCARP, personal interview on March 9, 2022

Additionally, SLCARP only funds applied research projects and does not directly fund fundamental research projects. The funding cycle of the program is roughly one to three years. However, in some cases, an extension of one year is granted or a second phase (another three years). Discussing the details of the funding cycle, a senior scientist from SLCARP noted:

"Normally, according to our treasury requirement, we give a maximum of three years to complete the project. However, some projects, especially breeding projects, sometimes fund a second phase of the project; as you know, one cannot complete the grading process within three years. We have to go for another three years. So the second phase is required, which is how we operate those projects. Most other projects are less than three years."

Senior scientist at SLCARP, personal interview on March 9, 2022

There is no ceiling or limit on grants. However, the average is about 3 to 5 million, which sometimes may increase up to 10 million. They also provide certain restrictions on using research funds in the budget. SLCARP does not fund instruments and equipment that require heavy investment. They rarely support equipment/infrastructure such as glasshouse greenhouses and polytunnels. A substantial chunk of the allocated funds is towards the salaries of the contractual workforce.

Concept papers and research assessment procedures of SLCARP

Under NARP, SLCARP invites applications from researchers to contribute to the pre-determined research programs/priorities in the agriculture sector.

Screening and peer-review

SLCARP posts a call for concept papers from the NARS, the university system, and government research institutions and provides format and guidelines for preparing the concept paper for the researchers. Further, SLCARP includes a list of institutes/organizations eligible to apply for the call. After receiving the concept papers, science officers internally screen applications based on their alignment with the call's research priority areas and agricultural research policies.

Concept papers and national research priorities in agriculture

After that, they select the best concept papers that match their priority areas. Aligned with the national agricultural policy, SLCARP formulates a document that outlines the policies and

procedures related to determining the research priorities and nature of agricultural research funding. Anchored on these policies, SLCARP identifies national research priorities. These national research priorities change from time to time. SLCARP constitutes several national committees comprising experts from relevant disciplines to identify these national research priorities such as agronomy, crop improvement, forestry, organic agriculture, etc., as per the country's national and contemporary importance and needs. National research priorities are accessible on the website of SLCARP. Reflecting on the assessment process, a senior scientist from SLCARP mentions:

> *"We select the best concept papers according to our policies and priorities, and we have government policies and agricultural research policies. And we formulate priorities also, and from time to time, the government imposes some policies. So, according to those policies, we select suitable concept papers, then we call project proposals from those that can be is within the concept papers selected, then we collect research proposals."*

> *Senior scientist at SLCARP, personal interview on March 9, 2022*

Peer review and national committees on thematic research areas

Once the concept papers are selected, then they ask for a complete proposal from the applicants. SLCARP provides a comprehensive template/ format for the project proposal to the applicants. After receiving the full research proposals in the prescribed format, these proposals are sent to the reviewers for a double-blind review. These reviewers are experts in relevant disciplines. SLCARP provides guidelines and evaluation sheets to reviewers. After receiving the evaluation/score sheet from reviewers, the national committees again evaluate the proposal. SLCARP constitutes these committees based on different disciplines, such as plant breeding, agronomy, plant protection, post-harvest technology, etc. They request nominations from NARS, the university system, and private-sector agencies. The committee is generally composed of 9 to 15 members. After receiving the evaluation report from these national committees, they recommend the selected proposals to the Ministry of Agriculture for funding. The Ministry of Agriculture then forwards it to the Treasury Department, which transfers funds directly to the relevant organizations. Therefore, SLCARP does not directly participate in the monetary aspect of the program. The ministry directly allocates funds, but SLCARP carries out the administration and monitoring of the program. Clarifying the monitoring role, a senior scientist from SLCARP states:

> *"Our main role is the research management and monitoring. […] we do the monitoring part, and based on our recommendation, the Treasury provides funds. Then yes, after starting the project, we monitor projects, via half-yearly progress monitoring and in addition to that, we also conduct physical monitoring annually."*

> *Senior scientist at SLCARP, personal interview on March 9, 2022*

SLCARP does not have any formal definition of research quality. They select the best proposals according to their pre-determined research priorities and policies. In their research proposal evaluation process, they assess the quality of the proposal through the lens of these national research priorities, policies, and developmental goals. However, sometimes they value/prioritizes proposal on plant breeding, plant protection, post-harvest research, and so forth because they provide solutions to burning problems and urgent issues. Furthermore, the SLCARP does not fund NGOs directly. There is no special quota in SLCARP's funding program for underrepresented groups with specific reference to geographic, institutional, thematic, gender, etc.

Nevertheless, during the evaluation, committees prefer underrepresented institutes that are remotely located and lack necessary resources. Finally, the evaluation report is kept strictly confidential and not shared with selected or non-selected applicants. Only the final result is

communicated to the applicants. SLCARP publishes the list of ongoing projects and new projects along with the name of principal investigators and other team members on their website. Importantly, SLCARP does not make public any information about the project's budget.

CASE STUDY 6: BANGLADESH ACADEMY OF SCIENCES (BAS) -UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) ENDOWMENT PROGRAM, BANGLADESH[18]

About the BAS-USDA Endowment Program

In 2001, the People's Republic of Bangladesh and the United States of America government signed a joint agreement on Science and Technology to create an endowment fund for applied research in natural sciences focusing on food security. Later, in 2005, the joint agreement was amended, and the income generated through the endowment would be used exclusively to support applied research in natural sciences to solve the problem of food security and enhance the trade capacity of Bangladesh in the light of the Doha Round of WTO negotiations. To realize the goals of the joint agreement, a separate independent entity, viz., the Bangladesh Academy of Sciences – United States Department Of Agriculture Endowment Program (BUEP), was established by The Bangladesh Academy of Science (BAS).

The Board of Trustees (BOT) governs the BUEP, which the BAS Council constitutes. Under this agreement, the US government sanctioned an endowment amount of BDT Tk 817 million to the government of Bangladesh to support research activities and the exchange of information. USDA administers the fund of the BUEP. Simultaneously, BAS is entrusted with managing the BUEP fund by implementing BAS-USDA research and development programs in Bangladesh. Two broad objectives of BUEP are: 1) To encourage and support priority R&D activities in natural sciences funding or otherwise, to ensure food security and income-earning of poor people in Bangladesh; and 2) To promote and support the exchange of information and expertise.

Funding and cognitive aspects of the BAS-USDA Endowment Program

The BAS-USDA Endowment Program primarily funds applied research in natural sciences focusing on agriculture, food security, and nutrition. They provide funds to public and private universities, R&D organizations, also NGOs with the capacity to conduct R&D projects. BAS is responsible for soliciting, monitoring, and evaluating research proposals. BAS holds the authority to directly release the fund from the endowment to the successful projects or grantee institutions. Under this program, four funding phases are completed, and the fifth phase is underway. The funding cycle of BUEP usually is 2 to 3 years, and the funding amount ranges between 5 million to 10 million Bangladeshi takas (BDT) per project. The program advertises calls every 1 - 1½ years.

Research assessment practices of the BAS-USDA endowment program

The research proposal and funding approval process under BAS-USDA Endowment Program are performed as per the operation manual. The operation manual is a document that outlines management policies, regulations and guidelines, and procedures for preparing projects and for monitoring and evaluating the funded projects. Additionally, the operation manual also lays out guidelines for the project proposal submissions, financial plans, monitoring and evaluation system, and other relevant actions related to the management of projects and funds. Broadly guided by the operation manual, BUEP follows a two-tier evaluation process.

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[18] Elaborated by Avinash Kumar, Venkat Nadella and Gautam Sharma from DST-Centre for Policy Research, Indian Institute of Science, Bangalore, India.

Technical advisory committee

BAS invites research proposals from researchers in a prescribed format provided by the operation manual. At the first level, received applications are reviewed first by an internal committee. Technical Advisory Committee (TAC). TAC's first and foremost task is to identify and reject duplicate proposals/projects.

External peer review

The selected proposals from the first level of evaluation (recommended by TAC) are forwarded to the second level of assessment, i.e., external review. At least two external experts evaluate the proposals that have cleared the first round of screening. Finally, based on the recommendation of the two experts, potential proposals are approved for funding. A double-blind review process is followed to assess the merit of a project at the second level (external review) of the evaluation process. The experts for the external review are constituted as per the guidelines of the operation manual. Moreover, the operation manual also provides guidelines to these reviewers regarding the evaluation criteria. Describing the evaluation process, a senior official from BUEP noted:

> *"After getting the proposals the Technical Advisory Committee members go through and divide them into different groups and based on their expertise, they go through the projects and then categorize them on the merit of the project and the country's need. Again, we get this massive number of projects, and we have to be very strict about it. [..] We do grade them [research proposals], and those with excellent grades are sent out for [external] review. We had over 300 project proposals submitted, and from there, we selected a 1/3rd of them. And then again, this went to the reviewers, and once we get the review comments of the two reviewers and based on their grades [, we fund projects]."*
>
> *Senior member of the BUEP Technical Advisory Committee, personal interview on February 23, 2022*

Furthermore, a concurrence is also solicited from the Agricultural Counsellor, USDA New Delhi, before releasing funds from endowment to the approved projects.

BUEP does not have any formal definition of the research quality. They select the proposals that match their priority research themes. In the evaluation process, BUEP values projects that have the potential to produce outputs that can be translated and finally reach the farmer's field. They also give weightage to quality publications, i.e., papers published in high-impact journals.

Communication of evaluation results

One of the unique features of BUEP is that it funds one basic salary of Principal investigator/s (PI) and Co-PI/s per year. Moreover, the program also supports Ph.D. students through the projects. Furthermore, as per the operation manual, the BUEP is committed to implementing transparency in communicating evaluation results. At present, results are communicated only to PI/s of successful projects. Discussing the communication of evaluation results, a senior official from BUEP points out:

> *"Only this year we have decided to make the results public and accessible on our website. We will be doing it for the first time, so we haven't yet finalized what we'll be putting up on the website. So, the number of projects submitted will be there. The number of projects funded will be there, and the reason for not funding will be there for the projects that are not being funded. These are the three issues I know will be there."*

BUEP has no implicit or explicit quotas for underrepresented groups with specific reference to geographic, institutional, thematic, gender, etc. However, they ensure that a small number of projects (1/4 of the total funding) go towards emerging technologies. BAS does not promote social commitment and participation of society in the funding process. Nevertheless, they encourage social responsibility and involvement by engaging relevant stakeholders in the monitoring process.

Annex

Figure 6A: On-spot review of BAS-USDA project proposals (July 2019)

Source: Reproduced from BAS Activity Report January 2019 – June 2021; pg. 48

Figure 6B: Principal Investigator presenting their research proposal (October 2019)

Source: Reproduced from BAS Activity Report January 2019 – June 2021; pg. 49

CASE STUDIES IN LATIN AMERICA AND THE CARIBBEAN

Case 7: The National Fund for Scientific and Technological Development (Fondecyt), from the National Agency for Research and Development (ANID), in Chile

Case 8: The University - Society and Production Linkage Program (VUSP) and the Research and Innovation Program oriented to Social Inclusion (IIIS) from the Sectoral Commission for Scientific Research (CSIC) at the Universidad de la República (Udelar), in Uruguay

Case 9: The Science and Technology against Hunger program, from the Ministry of Science, Technology and Innovation (MinCyt), in Argentina

Case 10: The Malvinas, Antarctica and South Atlantic Oriented Scientific and Technological Research Projects (PICTO), from the National Agency for the Promotion of Research, Technological Development and Innovation (AGENCIA I+D+i), in Argentina

CASE STUDY 7: NATIONAL FUND FOR SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT (FONDECYT), CHILE[19]

General Description

The National Fund for Scientific and Technological Development (Fondecyt) is a public competitive fund whose mission is to promote the development of scientific and technological research in Chile. Created in 1981 and currently dependent on the National Agency for Research and Development (ANID), it has financed more than 16,000 research projects, being the main public tool at the national level.

With the aim of providing financial support to quality scientific research carried out in the country by national or foreign researchers, Fondecyt has three instruments or calls: Regular Fondecyt, created in 1981, oriented to researchers with a longer trajectory and for projects with a duration of 2 to 4 years, Postdoctoral Fondecyt, created in 1998 for young researchers with doctorates less than 3 years ago, with funding for 2 to 3 years, and finally, Initiation Fondecyt, created in 2006, for researchers with doctorates less than 5 years ago, with the same duration as the previous one. Each and every one of these instruments can finance any area of knowledge and have annual calls for proposals. The maximum amount financed by each of these instruments is: Regular Fondecyt 67,000 USD, Initiation 35,200 USD and Postdoctoral 32,300 USD per year of execution.

The award rate for the three calls mentioned above is slightly above 30%. The statistical analysis of the 2014-2022 series[20], shows that in the case of Regular Fondecyt, the award rate is 31.2% on average, with 32.3% for men and 28.3% for women. These percentages are quite similar for the Initiation call, 31.2% for men and 28.7% for women. In the case of Postdoctoral Fondecyt, the award rate is slightly higher, reaching 35.5%, in addition to equal award rates for men and women, with 35.2% and 36%, respectively. It is important to note that, in terms of the geographical distribution of the projects, the vast majority are located in the Metropolitan Region. In terms of the number of projects submitted, as well as the number of projects awarded historically, two institutions stand out: the University of Chile and the Pontificia Universidad Católica de Chile. The largest number of projects belong to the broad area of knowledge of Natural and Life Sciences.

Regarding the conditions for the application, the proposed projects must have at least one Responsible Researcher (RI) and one Sponsoring Institution (PI). While the former must have a doctoral degree and is responsible to ANID for the academic and budgetary progress of the project, the latter supports the implementation through infrastructure and equipment for researchers, in addition to monitoring the ethical and bioethical regulations of the research.

The fund can finance projects in all fields of knowledge. These are grouped into four areas: Arts, Social Sciences and Humanities, Exact and Engineering Sciences, Natural and Life Sciences, and finally, the Inter-Transdisciplinary area. It is worth noting that this last area is an innovation of the year 2020, which was formulated as a result of the growing demand for inter and transdisciplinary projects and aims to respond to complex problems, encouraging

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[19] Elaborated by CLACSO-FOLEC with the fieldwork assistance of Pablo Nicolás Contreras Gutierrez in Chile.

[20] The series for Fondecyt Initiation only has data from 2014-2019. Analysis based on data available at www.anid.cl.

disciplinary interaction and novel solutions to these[21] . This area has its own evaluation group and has the particularity of being able to consider as evaluators actors from industry, civil society or other sectors related to the projects. In addition, and in terms of research assessment itself, it has a series of guiding questions and an explicit recommendation to consider changes in the researchers' disciplinary trajectory. This should be kept in mind when considering the relevance of the curriculum and the products developed during the researcher's career.

Fondecyt does not define themes or problems that research proposals should address, nor is there an explicit orientation towards the Sustainable Development Goals (SDGs). Despite this, it was possible to identify the existence of a number of other public funding competitions for research, other than Fondecyt, but also dependent on ANID, which do have thematic definitions that frame the projects. Some of these are: Fondap (Fondo de Financiamiento de Centros de Investigación en Áreas Prioritarias), Proyectos Anillos de Investigación en Ciencia y/o Tecnología and Proyectos Núcleos Milenio, which vary and specify their areas or topics in each competition. In addition, competitions were recently launched to finance research on Covid-19 and the drought affecting the country.

Research assessment methodology and indicators

The application period for these calls takes place during the first semester of the year preceding the implementation of the research project and lasts approximately one month. The application is made through ANID's website and specifically through the Online Application System. There, the responsible researchers must complete information and upload documents in unencrypted pdf, responding to the following items: means of notification, project identification, relevance, sponsoring institutions, researchers, project formulation, objects/subjects of study, resources provided, requested and available, certificates (publications, birth, disability, others), curriculum vitae (including publications), conflicts of interest, possible evaluators and finally, adherence to the Singapore Declaration (on responsible conduct in research). Projects are screened for admissibility and, if applicable, projects are declared ineligible due to non-compliance with any element of the terms and conditions.

The evaluation of research projects considers two main factors: a) quality, feasibility, scientific and technological novelty, on the one hand, and b) the researcher's academic career and productivity, on the other. In this way, there is a consideration of the proposal itself and also of the researcher responsible. The weightings of these factors are around 70% for the quality and feasibility factor, and the remaining 30% for the academic career and productivity factor. In the postdoctoral call for proposals, the academic career factor accounts for 20% and in initiation 25%, which makes evident the progressive assessment of this factor in the evaluation. The dimensions observed in the proposals are their theoretical basis, the quality of the hypotheses and objectives, the methodology, the work plan, the infrastructure and resources, the relevance and scientific novelty, while with respect to the researcher, the curricular background (grants, conferences, patents, etc.), their productivity in publications (indexed articles, books, others) and their links with the environment (dissemination activities, extension, technology transfer) are observed.

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[21] This new area has tools to support evaluators in the distinction of projects within the EG. These tools are: the Proposal Identification Flow and the Disciplinary Matrix. For more information, see the document Guidelines for Inter- and Transdisciplinary Evaluation.

The actual research assessment of the projects, in any of the three calls, is carried out through thematic Evaluation Groups (EG) (e.g., Earth Sciences, Early and School Education, Engineering 1, etc.). The groups are made up of specialists in the area, who confirm the relevance of the proposals received, point out possible conflicts of interest, distribute the proposals and determine the specific modality they will use to evaluate. This modality can be Panel, External or Mixed.

In the panel mode, the lead evaluator and the secondary evaluator assigned to the project individually and independently evaluate the proposal, establishing ratings and comments on each factor, and then present and agree on the evaluation with the EG. The opinion of an external specialist may be sought. In the case of the external modality, after the assignment of projects among the members of the EG, the latter proposes external reviewers, Chilean or foreign, with expertise in the area, who evaluate the research proposal individually, independently and remotely through the Online Evaluation System, for a total of a minimum of two and a maximum of three evaluations. The EG validates the external evaluation - which cannot be modified - ensuring its quality and justification, and then averages the marks. Finally, in the mixed modality, the evaluation is carried out by the EG - which, after the presentation of the responsible reviewer, reaches a consensus on a mark - and a maximum of two external evaluators, proposed by the same group. The assessments are averaged.

In terms of the rubrics (contained in the respective Evaluation Guides), the concrete evaluation is given with scores from 1 to 5 that are associated with the perceived excellence or deficiency of the project in each of the dimensions. Thus, the values from 1 to 5 reflect in parallel whether the project "Does not qualify", is "Poor", "Fair", "Good", "Very Good" or "Excellent". This form of research assessment operates for the three calls described above, in both factors mentioned above, except in the case of the evaluation of the curricular factor and the trajectory of the responsible researcher in the case of the Regular Fondecyt. In this case, the evaluation is parameterised and each group of evaluators has a specific mathematical formula to weight scientific productivity (papers, books, book chapters, etc.), which constitutes the unique dimension of this factor in this call. For the calculation of scientific productivity in Fondecyt Regular, the Journal Citation Report (JCR) based on Web of Science (ex ISI) and Scopus is mainly used. Although the weighting of each product varies according to discipline (in Philosophy the score of a book is higher than that of an article, while in Earth Sciences no books or book chapters are considered), there is a clear tendency to give higher scores to scientific articles in indexed journals over other types of publication[22]. This tendency has been deliberately softened in the other calls, as they have a more comprehensive, more subjective and less publication-focused evaluation, given the recognition of the difficulty for young researchers to be highly productive in the early stages of their career.

For all Fondecyt calls there is training for evaluators. This training phase includes: a) induction to the procedures, indicators and rubrics to be used, and later b) calibration among the members of the EG of the definitions of the factors, what will be understood by a given question, in order to standardise the criteria. In addition, the guidelines are presented in written form, indicating the tasks that the evaluator is expected to perform (reviewing technical evaluation criteria, evaluating the assigned projects and completing the evaluation in the SEL) and including recommendations and guiding questions for the evaluation of each dimension. For example, it is pointed out that no additional sub-rubrics or scoring formulas should be used.

With regard to the consideration of elements tending to favor inclusion and equity (gender,

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[22] For more, see the Fondecyt Regular 2023 Call document. Particularly between pages 22-46, corresponding to Annex 3 Curricular Evaluation Criteria by Evaluation Group.

territorial or other) among the proposed and selected research, it was noted that in the case of Fondecyt, these factors are not directly included in the evaluation (in the rubrics, with a specific score). However, in the last couple of years, mechanisms have begun to be applied to improve the equity and diversity of the process and of the proposals finally selected.

Some of the measures deal with the composition of the research assessment panels and others with the characteristics of the applicants. For example, with regard to the composition of the evaluation groups, ANID has begun piloting the use of algorithms that offer greater territorial, gender and institutional equity among the evaluators. The algorithms provide lists of potential new members in such a way that they are contacted and added, avoiding over- or under-representation, and thus generating groups with less bias.

Another measure implemented recently in terms of gender equity is the creation of gender mechanisms for the tie-breaker between projects with the same qualification, which has favored women (who are generally under-represented). On the other hand, both in the application and execution of projects, measures have been included to alleviate the burden of maternity or childcare periods, extending deadlines for the delivery of documents and/or the validity of publications. This also applies to researchers with disabilities.

Regarding transparency and integrity issues, Fondecyt has a series of measures aimed at safeguarding transparency and integrity. First, the calls for proposals are compulsorily published in national newspapers. The bases of each call and the evaluation guides with their respective rubrics are public and are permanently available on ANID's website. The resolution of each evaluation is available to each researcher, where he/she can find a report of both his/her grades and the comments received, both academic and budgetary. In addition, and in case of disagreement with the resolution, researchers can submit a plea within a maximum of 5 days of receiving the notification. It should also be noted that, in the last two years, the pilot of the blind evaluation modality was included in the Fondecyt Initiation call for proposals, in order to contribute to the objective of reducing gender bias in the evaluation of applications.

With respect to ethical and bioethical criteria for research, Fondecyt and its calls for proposals establish the requirement to present certifications and/or authorisations when the research must work with humans, animals, databases with sensitive information, material with biosafety risk, archaeological sites and protected species or wild areas. In the case of work with humans, a favorable report from a Scientific Ethics Committee of a guarantor institution is required. In terms of integrity, the veracity of the information provided is required and practices that incite to confuse the authorship of a certain element (e.g. plagiarism) are prohibited.

Evaluators' perception of research assessment

The interviewees' assessment of the overall process tends to be positive. The rigorousness of the evaluation, the thematic openness of the calls for proposals and the organic functioning of ANID and the evaluation groups were highlighted. However, a number of challenges were recognised that could favor a better functioning. The following descriptions are pointed out by the interviewees (Expert in charge of the call and evaluators of Astronomy and Early and School Education) as challenges shared by the different areas of knowledge and Evaluation Groups beyond their specific areas.

One of these challenges relates to the difficulty of finding evaluators. Both in terms of numbers and in terms of the thematic expertise required. Regarding the former, the interviewees repeatedly point out that the evaluation groups must make great efforts to find

new evaluators, given that there is little willingness or, failing that, there are not many experts in each topic. Moreover, when evaluators are found, it is common for them to have conflicts of interest because they have collaborated with or mentored some of the applicants, which significantly reduces the number of available evaluators. The evaluators' work appears to be arduous, precisely because of this. To overcome this difficulty, external (foreign) evaluations are often requested. In addition, the evaluation groups have a tendency to split into more specific areas of knowledge (to overcome their "generalism") which, without seeking to do so, makes it even more difficult to obtain new specialists to evaluate. It is worth noting that ANID pays an honorary salary to evaluators for their work.

Another key aspect of Fondecyt is its strong academic orientation. The focus of the calls for proposals is the evaluation that other academics make of the proposal, with the theoretical-methodological and curricular aspects being the most important. In this same sense, the reforms to the general Fondecyt processes mentioned above, both to the indicators considered and to the application conditions, are the result of review processes carried out with academic specialists in each area or, failing that, with evaluators from other institutions or scientific agencies. Hence, the inclusion of other civil society actors, intermediate, territorial or other organisations is not considered in this respect.

Regarding measures to improve the equity and diversity of the proposals and the general process, Fondecyt has opted to maintain an evaluation without positive discrimination measures with respect to the content of the applications, but it has generated some guidelines that affect the "application process". Thus, although there are no extra points or different weightings according to the fulfilment of certain characteristics (e.g. being a woman or a

researcher from a region), facilitators or stimuli have been generated so that they can participate in the competitions on a more equal footing. A clear example of this is that ANID has created calls such as Initiation or Postdoctoral to promote the participation of new researchers. In this sense, gender and territorial (and institutional) equity are also important concerns, although relatively new. Interviewees believe that it is necessary to include weightings that discriminate positively or as "extra points" for applications with these characteristics. Issues such as open science/open access or intellectual property are not assessed. The curricular and track record factor does take into account the researcher's links with society and the environment (particularly in Initiation and Postdoctoral programmes), demonstrating the ability to disseminate, transfer or disseminate their research.

With regard to the assessment rubrics or guidelines, these are well appreciated in terms of how they work. They are understandable, simple to apply and are, as indicated above, explained and reviewed by the Evaluation Groups collectively, which seems to favor a coherent and consistent evaluation among the members.

CASE STUDY 8: RESEARCH SUPPORT PROGRAMS AIMED AT FINDING SOLUTIONS TO DEVELOPMENT PROBLEMS, IMPLEMENTED BY THE SECTORAL COMMISSION FOR SCIENTIFIC RESEARCH OF THE UNIVERSITY OF THE REPUBLIC, URUGUAY[23]

Introduction

The Sectoral Commission for Scientific Research (Comisión Sectoral de Investigación Científica- CSIC in Spanish) is the advisory body for research promotion policies at the Universidad de la República (Udelar) in Uruguay. The CSIC administers the central fund for the support of the university's research through the implementation of various programs.

The University - Society and Production Linkage Program (VUSP) and the Research and Innovation Program oriented to Social Inclusion (IIIS) originated from the need to contribute, from the research capacities present in Udelar, to the solution of problems of the social and productive sectors of the country. The VUSP program was created in 1992 at the initiative of the CSIC, and its objective is to promote links between Udelar's research teams and different actors in the country's social and productive fabric, in order to solve specific problems (CSIC, 2021, p.1). Likewise, the IIIS program is also a CSIC initiative, promoted since 2008 due to the need to collaborate with the resolution of problems that hinder the social inclusion of some sectors of the Uruguayan population, based on the formulation and implementation of research projects (CSIC, 2019).

Both programs have organised regular calls every two years for the submission of research projects in all areas of knowledge. The projects have a duration of twenty-four months and a total amount of approximately 30,400 US dollars. Udelar professors participate in them together with organisations located in the national territory, oriented through different modalities to the production of goods and services or linked to the improvement of the quality of the Uruguayan society in important areas such as education, health, or housing. Each project is led by up to two researchers from Udelar and must also involve at least one non-academic actor. The VUSP and IIIS programs are CSIC instruments that stimulate open practices in the design of research agendas (Gras and Cohanoff, 2021).

The funding of the proposals that are approved in both programs is entirely university- based, and the ratio between funded and submitted proposals is around 40% (CSIC, 2021; CSIC, 2019). On more than one occasion in the history of the CSIC, the relevance of entirely university funding to support projects that seek to address the problems of actors with few possibilities of accessing knowledge has been discussed, and in all cases the same conclusion

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has been reached: the importance of university support given the few or even nonexistent national initiatives in this area (Bianco and Sutz, 2014).

The research topics at VUSP are defined by the research team in dialogue with non- academic stakeholders when drawing up the projects to be submitted. The search for solutions to problems in the agro-veterinary and industrial application sectors make up the majority of funded projects (68%), followed by the socio-economic sector (17%), and a few projects in the artistic-cultural, environmental, health and service sectors (5%) (Gras and Cohanoff, 2021).

The IIIS program seeks to guide research agendas in order to contribute to the resolution of problems in various areas: health, nutrition, housing, education, among others. In order to identify problems and needs whose resolution and/or satisfaction require the development of new knowledge, the team responsible for the program has used different strategies: i) organisation of meetings between academia and different actors; ii) joint work with public policy actors, hospitals, companies, etc.; and iii) implementation of specific modalities to finance the detection of needs and problems (Gras and Cohanoff, 2021). The projects funded have mainly contributed to solving problems in the social and health dimensions (85%), and to a lesser extent in the basic, agricultural and technological areas (15%).

The project evaluation processes in the framework of the VUSP and IIIS programs are analysed. Inputs for the analysis are: the evaluation grids used for the review of projects and information from semi-structured interviews with two program managers and four members of evaluation commissions in the agricultural, social and technological areas.

Research assessment methodology and indicators

In the evaluation of research projects submitted to the calls for proposals of the VUSP and IIIS programs, the confidentiality of the information submitted during the process is guaranteed. The panels of specialists are responsible for the evaluation process and are made up of between seven and eight Udelar professors in the different areas of knowledge (agrarian, basic, health, social and technological). These panels are made up of teachers of grades 4 and 5 (the highest in the Udelar scale), with an important trajectory in their discipline, and in addition, gender parity must be considered and possible conflicts of interest must be avoided to ensure the objectivity of the process. Every two or three calls for applications, half of the members of the commissions are renewed, maintaining the history of evaluation in the program. In the formation of panels of specialists for the VUSP and IIIS programs, efforts are made to ensure thematic and disciplinary diversity among the participants. For the VUSP program, people with experience in projects involving non-academic actors are included. For the IIIS program, people with experience in dealing with issues of social interest are selected, as well as representatives of social and health policies.

The members of the expert panels are in charge of the selection of external evaluators for each project (single blind peer review) and the internal evaluation of the relevance of the project with respect to the program's objectives. Panel members and external project evaluators are informed about the criteria to be considered and not to be considered in the

evaluation through written guidelines and the accompaniment of the program team throughout the process. In addition, the external evaluation of VUSP projects involves actors involved in professional practice who contribute additional reflection based on their experience and knowledge of specific sectors of production or society.

The evaluation method implemented is mainly qualitative for the two programs and the information requested on the projects includes: the main application form, the academic proposal, the CVs of the research team members, and the letters of interest and forms completed by non-academic actors. Also considered are the academic evaluation reports prepared by external reviewers, internal evaluation reports prepared by members of a panel of specialists, and interviews with non-academic actors conducted by the team responsible for the program.

There is no explicit CSIC policy regarding open access publications. With regard to other components of open science, in research programs oriented towards social problems and/or production, the participation of non-academic actors is required at all stages: definition of research agendas, formulation of objectives, elaboration and presentation of projects, consideration of interest in the results and the exchange of opinions during the development of the research, and the transfer and appropriation of the results obtained. In addition, research results must be made public.

With regard to the ethical aspects of projects involving human or animal research, the approval of a research ethics committee must be submitted and is reviewed with special care. Concerning potential conflicts of interest in the evaluation process, research teams have the possibility to include up to three names of persons who in their opinion should not be considered as potential evaluators for their project, and up to three evaluators who may be considered. In the VUSP program in particular, it is not permitted for members of the research team to also have any involvement in the institution or non-academic organisation involved, in order to avoid potential conflicts of interest.

Stages of the evaluation process

1. Relevance assessment of the projects submitted to the call for proposal

This is the internal evaluation stage carried out by members of the panel of specialists and considers aspects related to the viability of the research proposals to meet the objectives of the program. The evaluation criteria are specified in the terms and conditions of the calls for proposals and in the evaluation grids.

The main objective of the internal evaluation of the IIIS program is to consider whether the problems proposed in the projects are issues of importance from a social inclusion perspective. This criterion is fundamental to define which projects will be included in the second stage of evaluation. In addition, the internal evaluation analyses: the participation

and/or collaboration of non-academic actors in the projects and the need for original research to contribute to the resolution of the problem posed. In the internal evaluation of the VUSP program, the main objective is to consider the relevance of the participation of non-academic actors involved in the projects submitted. This program values the association of research teams with social and productive actors who have had little or no link with Udelar, or for whom access to research and knowledge is particularly difficult, and also the link with actors located outside the country's capital. This criterion is not exclusive, but it is very important for the selection of the projects to be financed. The dimensions considered in the evaluation of the relevance of the projects to meet the objectives of the program, according to their order of priority, are as follows:

Priority 1.- i) Academic quality of the research proposal, feasibility of the work plan and adequacy of the resources requested; ii) Justification of the need for original research to solve the problem; and iii) Link between some actor in society and/or production and the research team.

Priority 2.- i) Clarity in the consideration of the problem and the relevance of the results for some actor in society and/or production; and ii) Space for the participation of young researchers.

Priority 3.- i) Feasibility of the results implementation strategy; and ii) Co-financing possibilities.

2. Academic evaluation of the projects

Each research project is submitted to the academic review of two external peers. According to the academic evaluation criteria established in the terms and conditions of the calls for proposals and the study of the evaluation grids, the following dimensions are considered according to their order of priority:

Priority 1.- i) Academic quality of the research proposal, feasibility of the work plan and adequacy of the resources requested; and ii) Experience, skills and disciplinary composition of the research team.

Priority 2.- i) Space for the participation of young researchers; ii) Relevance, applicability, and mechanisms for dissemination and transfer of research results in society and/or production; and iii) Academic dissemination of results.

3. Interviews with representatives of non-academic stakeholders involved in the projects

The social commitment and participation of production actors, civil society, and also the role of intermediary organisations, is considered on the basis of the letters of interest and the forms filled in for the presentation of the project. Interviews are also conducted with representatives of non-academic actors, in which the following topics are discussed in order of importance: i) Relationship of the actor from society and/or production with the research team: history of joint activities, dialogue produced at the stage of problem definition and formulation of the project idea; ii) Description of the problem addressed by the project and its importance for the affected population/sector; iii) Possibilities of providing resources for project funding; and iv) Linkage of the actor from society and/or production with the research team in the framework of the project and the implementation of the expected results.

4. Feedback of the evaluation results to those responsible for them

The panel of specialists prepares feedback to the project leaders, which consists of comments on the relevance of the project with respect to the program's objectives and assessments of its academic quality. In addition, the full reports of the external academic evaluations are included. This feedback exercise is important from the point of view of the transparency of the evaluation process, and also for the improvement of future research proposals.

Main challenges and lessons learned from the call evaluation process

Challenges for the evaluation of calls for research projects aimed at solving social and/or productive problems.

- **Increase the participation of researchers from all areas of knowledge in open research processes.**

It is necessary for evaluation systems to consider the time involved in dialogue and joint work with stakeholders, and also that the results obtained in research processes aimed at solving specific problems are not always easily published in high-impact journals.

ii) Actions should be taken from outside academia to facilitate the identification of problems and make them available to researchers from different fields.

- **Stimulate the demand for knowledge of actors linked to the production of goods and services, institutional and social.**

The wide thematic diversity and multiplicity of actors involved is an outstanding characteristic of the programs aimed at solving CSIC development problems, but at the same time this makes the work of detecting demands and problems difficult, as it involves such a wide universe of actors and problems. In this sense, it is necessary to undertake sustained work over time with specific actors to detect demands and needs, for which the role of intermediary institutions is interesting. In terms of evaluation, it is necessary to assess the importance that the various issues and problems may have for different actors and the extent to which research can contribute to their resolution. The contribution of different points of view, from different places of participation of actors and institutions can enrich this process.

- **Integrate the perspective of non-academic stakeholders in ex-ante and ex-post evaluation processes.**

i)   It is important to integrate actors who are in contact with the social environment or production into the evaluation process of the calls for proposals, as part of the panels of specialists and/or by incorporating their perspective in the review of the projects.

ii)   It is also of fundamental importance to carry out ex-post evaluation processes of the results obtained in projects that contribute to the resolution of specific problems, and to involve non-academic actors in such evaluation.

iii)   It should also be borne in mind that the social effects of the results of research processes are neither immediate nor easily attributable to a specific case.

<u>Lessons learnt from the evaluation of calls for research projects aimed at solving social and/or productive problems.</u>

- **Consider the time needed to tackle complex problems and their impact on research evaluation issues**.

Solving problems as complex as those of social inclusion requires dedication in the medium and long term. In addition, the timing of policy and changes of authorities are a challenge both for the identification of topics of interest and for the integration of actors in research projects. At the same time, the evaluation of research is organised around individual calls for proposals and focuses on specific projects; the assessment of medium and long-term aspects is not well defined.

- **Carry out ex-ante assessment of feasibility in the transfer and appropriation of research results.**

The ex ante evaluation of the mechanisms of transfer and appropriation of the results should consider whether the actors involved in the elaboration and development of the project are sufficient to make it viable in the future, or whether the participation of other actors - state and/or intermediary institutions, for example - is needed. In addition, there should be sufficient information about possible changes and adaptations that are necessary in the framework of the activities of non-academic actors in order to make the implementation of the results feasible.

- **Accompanying role in the research assessment process by the team responsible for the call.**

The support role of the expert´s team that manages the calls is important in order to maintain clarity about the fundamental aspects to be weighed up in the evaluation process. This fundamental task of guiding the evaluation of the calls is carried out by CSIC lecturers who research in the field of Science, Technology and Society studies, and who also contribute to the reflection on the instruments.

CASE STUDY 9: SCIENCE AND TECHNOLOGY AGAINST HUNGER. MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION (MINCYT), ARGENTINA[24]

Introduction

The Science and Technology against Hunger program is a cross-sectoral initiative of the Argentinean Ministry of Science, Technology and Innovation (MinCyt), together with the Argentinean Ministry of Social Development and the National Council for the Coordination of Social Policies, which is part of the Argentina against Hunger Plan, and which had its first and only call for proposals in 2020. The three organisations agreed on the lines of research that make up this call, which are detailed below: A) Technology and food production, B) Technology for access to water and sanitation, C) Targeted research and development projects.

The National Plan "Argentina against Hunger" is aimed primarily at children under six years of age, pregnant women, people with disabilities, older adults and adolescents in situations of social vulnerability, with difficulties in accessing safe food and water. Within this framework, the program "Science and Technology against Hunger" (S&T against Hunger) was created with the aim of promoting the capacities of the scientific and technological system in the search for solutions to the problems of malnutrition, poverty, access to and quality of water, with special emphasis on the mentioned population groups, under the criteria of environmental sustainability and gender equality.

In this way, based on priorities defined at government level, the aim is to strengthen the articulation of the scientific-technological system with the regional and local productive sectors. Among the themes of the projects are the following: food production with high nutritional value, scaling up of production processes, technologies for family farming, technologies for access to and use of water, innovations for wastewater treatment, clean and sustainable irrigation systems, strengthening of regional economies, actions aimed at achieving the Sustainable Development Goals, agro-ecological production, food and nutrition education, family farming in peri-urban areas, food security and sovereignty, human breastfeeding, youth employment, among others.

From the proposals submitted to the S&T against Hunger program, 32.5% were selected and funded, of which 41% were led by researchers based in science and technology organisations and 59% in universities.

The duration of lines A and B is 12 months, starting from the first disbursement. The maximum funding for each project in both lines is the equivalent two hundred thousand US dollars (USD 200,000). While the proposals selected under line C foresee a duration of 24 months and a maximum funding of two million Argentine pesos ($2.000.000), around sixteen

thousand US dollars (USD 16,000).

Those responsible for the academic proposals can only be academic actors, framed in any area of knowledge.

Research assessment methodology and indicators

The evaluation of the proposals submitted to the S&T against Hunger program was carried out in three stages: eligibility, eligibility, and research assessment.

The first was carried out by experts from the Ministry of Science, Technology and Innovation and consisted of verifying that the projects submitted complied with the administrative requirements. In this instance, gender was a dimension that was especially valued when considering the leadership of female researchers in the project applications submitted, as well as when seeking to equalise the number of male and female researchers in the research team to a minimum of parity. The presentation of endorsements from governmental institutions, science and technology organisations or universities, companies and civil society as potential adopters of the project results was also taken into account, although it was not mandatory. There were two possible evaluation results for this instance: "Admitted" or "Not admitted".

The second eligibility stage focused on whether the submitted project fell within one of the three proposed lines of work and whether the proposed objectives were relevant to the selected line of work. The categories "Eligible" and "Ineligible" were used to assess eligibility.

The research assessment was carried out by an Advisory Commission made up of experts from outside the Ministry of Science, Technology and Innovation in the three thematic areas, as well as representatives of public bodies with competence in the National Plan Argentina against Hunger and representatives of the National Program for Gender Equality in Science, Technology and Innovation of the Ministry of Science, Technology and Innovation. In the constitution of this Advisory Commission, efforts were made to comply with gender parity. In addition, there was training for the evaluators, which consisted of a methodological guide, and at the same time, guidelines related to the aspects to be evaluated were made explicit. It was emphasised that academic merit should not be the dimension par excellence to be considered, but rather the impact and feasibility of the project.

The commission assigned a pair of experts in the field to evaluate each proposal. They were interdisciplinary and inter-institutional. In addition, gender parity and a federal dimension (i.e., a balance in the representation of different geographical areas of the country in relation to the institutional affiliation of the evaluators) were taken into account in their constitution. The evaluation system implemented was single-blind peer review[25] . The evaluation criteria considered were organised along three main lines: analysis of the proposal, impact and feasibility. They also had to assess the budget presented in each proposal. The qualification of

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[25] Single-blind peer review refers to evaluations carried out by experts/specialists external to your organisation (external reviewers know the identity of the applicants, but the applicants do not know who the reviewers are).

each axis was conceptual based on closed categories that will be detailed in the description below.

In the analysis of the proposal components, in addition to assessing the internal coherence of the project, the gender perspective, the approach to environmental issues related to the proposal, the consideration of the objectives of the National Plan "Argentina against Hunger" and the link with strategic sectors outside the scientific system such as productive sectors, technology-based companies (TBC), social economy or national, state, or local public sector bodies were considered. The assessment of each one was to be made with the categories of "Very good", "Good" or "Fair", as well as the result of the component.

The impact was assessed by considering its application in the short term in public policies that fulfil the aims of the National Plan "Argentina against Hunger"; the social, productive, environmental and food impact of the expected scientific results; the impact on gender inequalities and on the environment; and the timeframe for obtaining results. The evaluation of each of these dimensions was carried out with the categories of "high", "medium" or "low", and then a final result for each component with the same possible evaluations.

Feasibility was assessed based on the capacity of the scientific and technological system to respond, the degree of scientific and technological maturity of the proposal's background, the future sustainability of the expected results and the potential adopters of the results. Each of these dimensions, as the result, were assessed with the categories of "high", "medium" or "low". Finally, the assessment of the budget, in terms of relevance and consistency, was rated as "adequate" or "not adequate".

With the evaluation of the four components mentioned above, the peer evaluators drew up a non- binding opinion. Finally, representatives of the government jurisdictions in which the projects are based give their assessment of the proposal; then the social organisations associated with the project assess the relevance, correspondence and interest with their institutional objectives; and finally, on the basis of the opinions received, the proposals that were finally selected were weighted and selected.

Research assessment procedures

The interviewees highlighedt the efforts made in the evaluation of this program to assess and weigh impact and feasibility over academic merit, an aspect that many evaluators found challenging, given the dynamics of the Argentinean scientific and technological system, which is often more focused on the second aspect. In this sense, the prior training session proposed by the team of the Ministry of Science, Technology and Innovation was positively valued for clarifying this main aspect of the program.

In this regard, the interviewees mentioned that there were many proposals that were solid in terms of academic excellence, but not in terms of application and transfer to the environment. On this point, they emphasised that discussions and disagreements arose in the

advisory committee, particularly when those responsible for these projects were researchers with important academic careers but with less expertise in applied projects.

Concerning the scope of the instrument and its contribution to the construction of socially relevant research agendas, those who participated as evaluators identify an interesting and strong link between the scientific and technological system and the needs of the social environment in the program. In this respect, they recognised some challenges facing the scientific and technological system in relation to this type of call for proposals. Firstly, the scarce recognition of the results of this type of project in the scientific careers of researchers, in which the production of academic papers is given greater weight. Added to this is the fact that recognition in the evaluation is more linked to the creation of new knowledge and/or findings and not so much to the co-production or application of scientific knowledge, as is the purpose of this program. According to one interviewee, this divorce between the needs of the social environment and the needs of researchers - to settle and make progress in their careers - represented a difficulty for the success of this type of research calls. For this situation to be reversed, a systemic change is required in the forms of research assessment and the evaluation system policies.

CASE STUDY 10: MALVINAS, ANTARCTICA AND SOUTH ATLANTIC ORIENTED SCIENTIFIC AND TECHNOLOGICAL RESEARCH PROJECTS (PICTO). NATIONAL AGENCY FOR THE PROMOTION OF RESEARCH, TECHNOLOGICAL DEVELOPMENT AND INNOVATION (AGENCIA I+D+I), ARGENTINA[26]

Introduction

The "Malvinas, Antarctica and South Atlantic" Oriented Scientific and Technological Research Projects (PICTO, in Spanish) is an initiative that arose in 2021, from the Unit for Oriented Instruments from the National Agency for the Promotion of Research, Technological Development and Innovation (AGENCIA I+D+i, in Spanish), through the Fund for Scientific and Technological Research (FONCyT), in conjunction with the Secretariat for Malvinas, Antarctica and South Atlantic, of the Ministry of Foreign Affairs, International Trade and Worship in Argentina.

In terms of the scale of funding, the AGENCIA I+D+i is the main research funder in the country. At present, the AGENCIA is implementing a program to strengthen the research assessment processes in the main financial funds of the institution. Current improvements include the remuneration of peer reviewers to stimulate their commitment with these processes, an increase of 30% in the number of evaluation coordinators, a new software to update the scientific information systems used to assess projects, the improvement of eligibility and accreditation processes and, a redesign of the criteria for assessing the quality and relevance of projects[27].

The "Malvinas, Antarctica and South Atlantic" Oriented Scientific and Technological Research Projects aim to collaborate in the construction of a bi-continental and oceanic policy in the country; to promote the development of multidisciplinary knowledge about the Malvinas Islands, South Georgia, South Sandwich Islands and the corresponding maritime areas, as well as Antarctica and the South Atlantic; to contribute to the defense of Argentine sovereign rights over the Malvinas Islands, South Georgia, South Sandwich Islands and the corresponding maritime areas. It also seeks to strengthen Argentine sovereign rights over the Malvinas Islands, South Georgia, South Sandwich Islands and the corresponding maritime areas; as well as to build up Argentine sovereignty rights in Antarctica due to the consideration of the geostrategic importance of the Southwest Atlantic, both in terms of sovereignty and its potential for development, and to articulate research networks in the same field of study.

The associative projects presented had to be made up of a minimum of four belonging to

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[26] Elaborated by CLACSO-FOLEC with the fieldwork assistance Ana Luna González (CLACSO) in Argentina.
[27] See:
https://www.argentina.gob.ar/noticias/lanzamiento-del-programa-de-fortalecimiento-de-la-evaluacion-de-la-agencia-idi

different nodes and a maximum of eight science and technology research groups with proven track records, belonging to public or private research institutions of the scientific-technological system, settled in Argentina.

The project leaders could only be academic actors, specifically based at a National University or at the Argentine Antarctic Institute, which constituted the Beneficiary Institution of the project. Furthermore, each project had to form a network of at least three (3) nodes of different National Universities. In accordance with the gender policies of the AGENCIA I+D+i, the composition of this network had to guarantee gender parity among the responsible researchers, foreseeing that as
at least half of the nodes involved had a female responsible researcher in charge of at least one of the nodes and in the case of an odd number of nodes in the network, a difference of more or less than 1 in favor of male or female would be accepted indistinctly[28]. In terms of network formation, only two projects from each beneficiary institution could be selected. This was the only restriction for the institutions, as there were no similar limitations for participation as a node.

The thematic lines in which the projects had to be framed were the following: Social and Human Sciences; International Relations and Legal Affairs; Natural Sciences and Environment; Economics and Natural Resources.

Both for the definition of the thematic lines of the call and for the evaluation of the projects, an ad- hoc commission was constituted for which expert researchers and actors linked to the thematic area were invited. To participate in this commission, it was necessary to sign the "Declaration of agreement to act as a member of an ad hoc commission", in which the mission of the task, transparency and confidentiality guidelines, and procedural norms were detailed. Unlike other calls for proposals of the Fund for Scientific and Technological Research (FONCyT in Spanish), in which the Fund defines the topics to be financed, in this calls the process was longer, lasted several months and involved the participation, exchange and discussion of the different actors involved.

The funding of the call established an amount of around US $25,000 for 18 months. Of this total, the AGENCIA I+D+i was responsible for 75%, the remaining 25% being provided by the

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[28] More recently, the AGENCIA I+D+i has actively incorporated the gender dimension in the evaluation of the distribution of research resources in the regular call called "Scientific and Technological Research Projects" (PICT). Regarding equalizer mechanisms, in one of the research assessment components of PICT, projects led by a female researcher were awarded 3 points out of a maximum of 10, plus a further 2 points if there was gender parity in the composition of the responsible group. See:
https://www.argentina.gob.ar/ciencia/agencia/la-agencia-idi/politica-de-genero In addition, the AGENCIA I+D+I recently launched the Gender Oriented Scientific and Technological Research Projects (PICTO 2022) together with the Ministry of Women, Gender and Diversity. The call seeks to promote research that contribute to the development of strategies, programs and public policies for the expansion of rights and opportunities in the field of gender in Argentina. The research assessment process of this calls is in process. See:
http://www.agencia.mincyt.gob.ar/frontend/agencia/convocatoria/482

Secretariat for the Malvinas, Antarctica and South Atlantic. Likewise, the beneficiary institutions had to contribute, as a counterpart, with a minimum amount corresponding to twenty-five percent (25%) of the amount of the subsidy requested. In addition, the AGENCIA I+D+i earmarked an additional amount of around USD 63,500 for projects requiring fieldwork in Patagonia and/or the Malvinas Islands, South Georgia and the South Sandwich Islands and the corresponding maritime areas, as well as Antarctica and the South Atlantic. Finally, each project could apply for an additional amount of up to a maximum of around USD 80,000. Of the total number of projects admitted, 43.7% were finally funded.

Research assessment methodology and indicators

Once the projects had passed the admissibility process carried out by the AGENCIA I+D+i, an advisory committee set up for the program recommended single-blind peer reviewers for each project, based on their expertise in the different thematic lines. Then, through a panel of external specialists[29], a common review and discussion of all the projects was carried out and the scores and the final order of merit was defined as a result of the comparison between the different research assessments and considering the objectives of the call. For the research assessment, the "Instructions for the evaluation of oriented scientific and technological research projects submitted to FONCyT" were shared. These instructions detail ethical aspects of the research assessment procedure, such as confidentiality and conflict of interest, and a form that specifies the dimensions to be addressed.

These dimensions were organised into three components: scientific and technological knowledge content of the project; coherence between objectives, methodology and work plan; scientific-technological capacity of the group responsible for the project. And finally, there was a last component of Ethical and environmental safeguard, which was evaluated independently and whose approval was a condition for the project to be funded.

The criteria of the first component refer to the promotion of multidisciplinary knowledge on the Malvinas Islands, Antarctica and the South Atlantic and the defense of the rights of the Malvinas Islands, Antarctica, and the South Atlantic Argentine sovereignty over them. Likewise, if the proposal considered the geostrategic importance of the Southwest Atlantic, both in terms of sovereignty and in terms of its potential for development.

The second component, "Coherence between objectives, methodology and work plan", referred to the feasibility and viability of the expected results as well as the field work, considering the geographical and environmental conditions of the territories involved in the call.

The third component assessed the scientific-technological capacity of the responsible researchers, the disciplinary composition of the responsible project team, the adequacy of the networks of the node for the development of the project, and the background of the responsible researchers in relation to the proposed line of research.

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[29] The External Expert Panel consists of a discussion and review of the individual evaluation reports to rank the research proposals according to whether they are fundable or non-fundable.

The research assessment methodology for the three components was both quantitative and qualitative. In the first case, a grid was filled by the evaluators in which the score from 1 to 4 is "Low", from 5 to 7 "Medium" and from 8 to 10 "High". In addition, an overall numerical rating per component (which might or might not coincide with the mathematical average of the marks assigned to each criterion) was requested, with a mandatory conceptual justification, which was an open field.

Based on the evaluation of each component, an overall assessment of the project was requested, with final comments and a numerical rating[30] . The possible assessments in this case were conceptual according to the numerical rating. The possible ratings were "Not acceptable", "Fair", "Good", "Very good" and "Excellent". Projects whose quality was lower than "Very good" were not eligible for subsidy according to the terms of the call.

In the case of the fourth component, Ethical and Environmental Safeguards, the possible rating of the criteria is "Yes" or "No", and final comments were required but no numerical rating was required. The criteria were related to potential adverse environmental impacts and violation of existing bioethical standards.

The interviewees also mentioned that there were particular guidelines set by the AGENCIA I+D+i for this call. Firstly, project leaders were not required to have a PhD degree, which had been a condition in other calls. It was considered that there might be researchers who were carrying out research related to the call subject and of interest for the AGENCIA I+D+I who did not accomplish this requirement. Secondly, while it was established that those who were in the responsible research group should have a research background, as this was considered relevant to the feasibility of the projects, there was a more flexible criterion for the assessment of their careers in terms of the amount and circuit of their publications, away from the use of publication impact indicators. Finally, as part of the guidelines in relation to project objectives, the evaluators interviewed stated that particular attention was requested to feasibility of the proposal, given the adverse geographical settling of the projects.

Finally, in terms of open science, "The "Malvinas, Antarctica and South Atlantic" Oriented Scientific and Technological Research Projects call makes special reference to open access as it is established that the results of the projects should be destined to the public domain through publications or documents of open circulation[31]. On this last point, in Argentina, the trajectory of the implementation of responsible research evaluation shows the early incorporation of the dimension of equity and inclusivity (gender, underrepresented generational groups and/or institutional strengthening) in scientific ecosystems and the search for regional balances in the distribution of funding (Sarthou, 2019). Meanwhile, the incorporation of research assessment indicators linked to open science in calls for project funding is still an

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[30] The numerical grade results from the following formula: Rating Component 1 x 0.35 + Rating Component 2 x 0.35 + Rating Component 3 x 0.30= PROJECT RATING (approximate to 0.1).

[31] Recently, the AGENCIA I+D+i has introduced in the model contracts of the PICT 2021 call a reference to the obligations of "Open Access Institutional Digital Repositories" National Law 26.899.

incipient but incremental trend; an issue that is also manifested in a certain blurring of related but diverse concepts to refer to openness in calls for proposals (Rovelli, 2022).

Research assessment procedures

According to the interviewees, the challenges and institutional learning from this call were mainly related to the ad hoc Commission that was created for the purpose of building the PICTO 2021 Malvinas, Antarctica and South Atlantic. Firstly, the thematic definition of the call for proposals was a distinctive aspect, as different experts on the subject were invited to co-construct the program's foundations. This was extremely enriching for the program. Although it was also acknowledged that the time involved in the research assessment of the call was longer than usual and replicating a similar experience could not be so easy, given the political and management times.

On the other hand, as mentioned in was mentioned previously, it was also interesting how the curricular accreditation was assessed. The research evaluation process was more diverse, being less standardised around the exclusive use of publication impact indicators It was understood that, due to the call thematic for proposals, it was likely that those who could contribute to the problems involved might not necessarily have a mainstream academic trajectory.

Finally, the evaluation system of the panel of experts was very interesting. The evaluators were able to compare the quality of the projects presented in relation to the objectives of the call for proposals, and based on this exchange, the projects were weighted. The Committee also participated in this instance, which enriched the research assessment, since they were the ones who built the foundations of the program.

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Case 2

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Case 3

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- Evaluation Sheet, containing scoring parameters for research proposals: See 'Evaluation sheet (Offline).docx'
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Case 4

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