RESEARCH ASSESSMENT PRACTICES OF SCIENCE AND INNOVATION RESEARCH FUNDING PROGRAMS IN SOUTH ASIA

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2 https://www.clacso.org/folec/investigacion/

3 https://www.clacso.org/

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I. INTRODUCTION

Research assessment involves decisions about what is essential in academic research, i.e., what is to be valued in academic careers and research outputs (Bonn and Bouter, 2021). It also entails who decides what is essential in research and what is necessary to be measured. "*Research assessment shapes the research landscape and influences how research is performed, who it is performed by, and how it is disseminated.*" The debate on the form and method of research assessment began in the 1980s when growth in research funding led to an increase in the research workforce. An increase in the number of researchers raises the need for a fairer distribution of research funding, resources, hiring, promotion, and tenure decisions. There is a growing call for research evaluation to be more transparent, responsible, and just.

Responsible research assessment is an overarching term used for methods of assessment that "incentivise, reflect and reward the plural characteristics of high-quality research, in support of diverse and inclusive research cultures" (Curry et al., 2020). It draws on broader underpinnings for responsible research and innovation and applies to the development and application of evaluation, assessment, and review processes. Research evaluation thus includes assessing research quality and impact of the scholarly works ex-ante and ex-post (Biagetti et al., 2020). Ex-ante evaluation of research encompasses the assessment of grant proposals for funding. It usually refers to assessing funding proposals' quality, feasibility, and potential contributions. The ex-post evaluation of research involves assessments of the research's scientific, societal, and economic impacts.

Researchers funded from public money must participate in the research evaluation exercises[1]. These research assessment exercises are commonplace with government, private, and non-profit funding agencies. While the principal features of the research assessments have mainly stayed the same since the early days, recent national and international policy initiatives have begun reworking the ways science is, and ought to be, assessed. Initiatives such as the 2013 San Francisco Declaration on Research Assessment[2], the

1 Research evaluation needs to change with the times: https://www.nature.com/articles/d41586-022-00056-z [Accessed on 21-May-2022]

2 The San Francisco Decralaration on Research Assessment penned in 2012 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.

2015 Leiden Manifesto for research metrics[3], and the 2020 Hong Kong Principles[4] for assessing researchers are examples of leading change in assessment processes worldwide.

Peer review of interdisciplinary research proposals poses unique challenges to authors, reviewers, and grant administrators not only in establishing assessment criteria (such as the significance of the research, appropriateness of methods to be employed, etc.) but also in identifying peer reviewers or community of peers to assess the research proposal effectively (Bammer, 2016).

Peer review is one of the most common assessment methods of scientific merit and individuals' scientific contribution. Peer review is an endogenous evaluation in science undertaken by scientists' colleagues working on similar topics (Laudel, 2006) and is often employed to evaluate merit in scientific publications/ communications and the research funding/grantmaking process. Most science councils and funding agencies use the peer-review system to evaluate and assess research grant proposals to select the meritorious ones (Gallo et al., 2021). Laudel (2006) argues that peer review is a process of collective and negotiated knowledge production characterised by a specific actor constellation.

Peer reviews are particularly problematic in the case of interdisciplinary research proposals. Porter and Rossini (1985) contend that the peer review process disadvantages multidisciplinary research in favour of research belonging to the research discipline/ field of the reviewer/s. Contrasting peer-review in discipline-based and interdisciplinary research proposals, Bammer (2016) notes, "*The situation for interdisciplinary research is very different. There is no college of peers and professional associations are small and relatively powerless. Unlike disciplines, interdisciplinarity is unorganized.*" Peer review of interdisciplinary research proposals poses unique challenges to authors, reviewers, and grant administrators not only in establishing assessment criteria (such as the significance of the research, appropriateness of methods to be employed, etc.) but also in identifying peer reviewers or community of peers to assess the research proposal effectively (Bammer, 2016).

Another conventional method relies on metrics and indicators such as the number of published articles, citations, etc., in assessing scientists' impact. These metrics are indicators of journal quality and prestige, such as the journal impact factor, the published article, the number of citations, or the author, such as the h-index (Pourret et al., 2022). Further, these metrics are also employed to measure the scientific impact and reputation of institutions, authors, and research teams. A central problem with widespread use and sole reliance on quantitative metrics is that they only benefit some scientists and do not encourage widespread dissemination of knowledge to the public. Consequently, communication of research findings to the public is a de-facto voluntary effort on the part of the scientific community that does not influence the scientific evaluation practices. Irawan et al. (2021) note that research assessment methods relying on quantitative indicators create barriers for the research community from the global south and non-English speaking countries. Scientists from the global south, and non-native English-speaking countries, are expected to publish their research in reputed English language

Irawan et al. (2021) note that research assessment methods relying on quantitative indicators create barriers for the research community from the global south and non-English speaking countries. Scientists from the global south, and non-native English-speaking countries, are expected to publish their research in reputed English language journals to meet standards set by the current research assessment methods; and engage in outreach using local languages to undertake societal responsibilities.

3 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.

4 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.

journals to meet standards set by the current research assessment methods; and engage in outreach using local languages to undertake societal responsibilities.

Pourret et al. (2022) raise serious concerns and point to specific challenges of existing research assessment methods that indicator-based evaluations of scientists and researchers. First, academic productivity and impact are primarily judged only by the production of journal articles creating significant barriers for the researchers to engage with other actors outside academia, such as policymakers, industry, or society. Second, the time and costs required to publish datasets, engage the public, and communicate findings are significant for small research teams, institutions, and projects with constrained research funding. Therefore, open science mandates and practices demand a more substantial contribution from small research groups to achieve their objectives. Third, the need for diversity in the research team is another important and disregarded factor in the assessment process. Representation of different groups based on gender, background, nationalities, and career stages can expand perspectives in a research project. Metric-based indicators tend to support scientists with a recognized publication history, leaving out early-career scholars who have yet to establish their credentials.

Policymakers, funding bodies, and scientific bodies acknowledge the need to address the inherent problem in the metric-based evaluation system, and several initiatives have come about in the last decade. The DORA: San Francisco Declaration on Research Assessments is among the most prominent declaration calling for less weightage to publication metrics and advocating for more inclusive outputs other than published articles[5]. Further, DORA points out the flaws in the assessment tools using the impact factor of journals to decide on hiring, promotion, and funding (Bladek, 2014)[6].

Similarly, the Leiden Manifesto[7], named after the STI Conference 2014 in Leiden, The Netherlands (the 19th International Conference on Science and Technology Indicators), offers best practices in metrics-based assessments of scientists and researchers (Hicks et al., 2015). The manifesto is an effort to take scientometric knowledge into a broader policy arena and has found its way into practice. Loughborough University in the United Kingdom (UK) was among the first universities to adopt the Leiden Manifesto as part of its strategy (Coombs and Peters, 2017). The Leiden Manifesto emphasizes situatedness in terms of research and the broader socio-economic, national, and regional context[8]. The European University Association (EUA), comprising more than 800 universities in 48 European nations, also published a roadmap to develop practices associated with responsible research assessment by considering open science exercises (Curry et al., 2020). The EUA, in a 2019 paper, describes the key concepts, actors, and issues in research assessment with specific attention to the new practices developed and implemented. The report emphasizes that researchers, universities, research institutes, funding organizations, and policymakers will have to work together "*to develop and implement accurate, transparent, and responsible approaches to research evaluation" (Saenen and Borrel-Damian, 2019).*

Research excellence is another fashionable policy-relevant buzzword in science funding and research assessment. Tijssen and Kraemer-Mbula (2017) note that research excellence's meaning and implementation, in practice and management, are situated within the political, social, cultural, and organisational environments in which researchers and scholars operate. Though there is no single accepted definition of research excellence, however; several perspectives on its meaning are discussed in the academic literature and practice. The UK's Research Excellence Framework (REF) provides performance-based funding to universities and promotes high-quality research through competitive schemes (Kraemer-Mbula et al., 2020). The REF received support from various stakeholders for promoting rigorous standards

5 For more on DORA, see: https://sfdora.org/read/ [Accessed on 25 May 2022]

6 The biggest flaw pointed out was that the impact factor varies from one field to another. For instance, mathematics journals have fewer impact factors compared to biology. DORA put forward recommendations for the scientific community. Institutions and funding agencies should consider research outputs other than journal articles.

7 For more on the Leiden Manifesto, see: http://www.leidenmanifesto.org [Accessed on 25 May 2022]

8 The Leiden Manifesto for Research Metrics was awarded the EASTS 2016 John Ziman Award for 'a significant innovative cooperation in a venture to promote public interaction with science and technology'. Available at: https://www.cwts.nl/news?article=n-q2x294 [Accessed on 25 May 2022]

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.

of research and increasing accountability and transparency. The scientific community of the UK was critical of it for promoting over-competition within scientific disciplines and an output-driven logic.

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. The International Development Research Centre (IDRC) introduced the Research Quality Plus (RQ+) assessment framework, and instrument, to evaluate research quality[9]. The RQ+ approach holds three central tenets (McLean and Sen, 2018): 1) accept a multidimensional view of quality that is based on the values and objectives driving the research agenda, 2) acknowledge that research takes place in a situated context, embrace and learn from this, and 3) recognize that evaluative judgments about research need to be underpinned by empirical evidence, and not just opinion. The assessment framework of RQ+ consists of three components: 1) research quality dimensions and subdimensions, 2) contextual factors, and 3) evaluative rubrics. In short, the RQ+ approach presents a value-based, context-specific, empirically driven, and systematic approach to defining, managing, and evaluating research quality (Kraemer-Mbula et al., 2020).

The Latin American Council of Social Sciences (CLACSO) and Mexico's National Council of Science and Technology held the Latin American Forum for Research Assessment (FOLEC) in 2019 in Mexico City. The forum served as a platform for the regional experts, policymakers, and researchers to deliberate on different facets of research assessment and develop proposals from Latin America and the Caribbean in tune with international trends and best practices[10]. FOLEC's consultation exercises and policy reports call for region-specific research assessment guidelines. The *Evaluating Scientific Research Assessment*[11]*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*[12] *propose constituting a foundation for regional deliberation to devise recommendations.* The FOLEC literature identifies a critical flaw of conventional research assessment methodologies that favour publishing articles in the English language and disadvantage communications in local and regional languages, thereby affecting knowledge generation and production in large parts of the world.

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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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9 The RQ+ approach of IDRC: https://www.idrc.ca/en/rqplus [Accessed on 25 May 2022]

10 For further information on the activities of FOLEC, see: https://www.clacso.org/en/folec/what-is-folec/ [Accessed on 28 May 2022]

11 The document can be found here: https://www.clacso.org/en/evaluating-scientific-research-assessment/ [Accessed on 25 May 2022]

12 The document can be found here: https://www.clacso.org/wp-content/uploads/2020/05/FOLEC-DIAGNOSTICO-INGLES.pdf [Accessed on 15 May 2022]

research proposal assessment methodologies and their rationale in the situated contexts of the funding agency/program. Data collection for the study involved online surveys and in-depth, semi-structured personal interviews with science officers, reviewers, and members/chairpersons of research assessment panels of various schemes and programs of select funding agencies based in the three countries.

The rest of the report is structured as follows: Section II discusses the fieldwork methodology and describes the sample of respondents in the study. Section III describes results from the survey questionnaire, and Section IV summarizes key findings from the South Asia component of the research study. Finally, six in-depth case studies accompanying this report highlight the variety of research assessment practices and qualitative methodologies undertaken in the South Asia region.

II. METHODOLOGY AND SAMPLE

This section describes the study's purpose, fieldwork methodology, and respondents' sample. The research study aims to understand, describe, and analyze targeted research proposals' assessment practices in the South Asia region, specifically India, Sri Lanka, and Bangladesh. To this end, combined fieldwork, consisting 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[13].

This study is South Asia's first comprehensive survey on research evaluation/ assessment processes.

Within the framework of this research project, the survey questionnaire on forms of evaluation of targeted research proposals developed by the Sectoral Commission for Scientific Research (CSIC) of the University of the Republic, Uruguay, and CLACSO-FOLEC coordinating team (Gras, 2022) was adopted, with appropriate modifications, for the South Asia region. The two antecedents to the survey are the Global Research Council (GRC) survey of responsible research evaluation policies and practices (Curry et al., 2020); and the Science Europe study on research evaluation practices (Calatrava Moreno et al., 2019). This study is South Asia's first comprehensive survey on research evaluation/assessment processes. Combined fieldwork questionnaires are (uploaded to zenodo); please see: 'CLACSO Survey Instrument V6 20220203. docx'.

A total of 28 respondents participated in the study: 16 were from India, eight from Sri Lanka, and four from Bangladesh. Table 1 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.

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13 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. The web survey was distributed by CLACSO-FOLEC and contained 33 questionnaire on three dimensions: i) contextual and instrumental characteristics of the organizations, ii) general characteristics, and ex-ante and ex-post evaluation procedures of the program/call for proposals, and iii) evaluation criteria in assessing the targeted research proposals.

Table 1: Description of the Survey Respondents

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
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 1 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.

III. SURVEY RESULTS

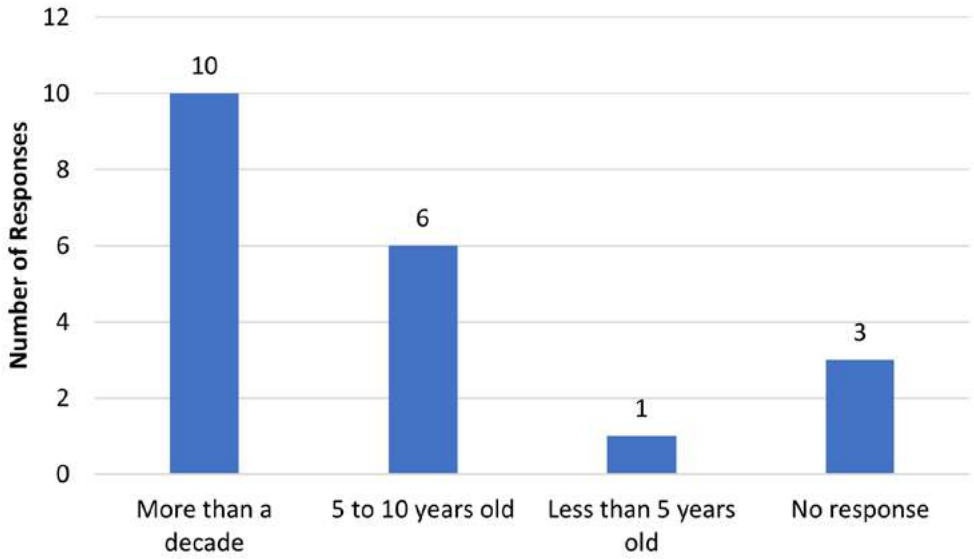
This section of the report describes the results from the survey fieldwork component in the South Asia region. A total of 21 respondents are in the sample. Results are described in five thematic parts: (i) General Characteristics of Targeted Research and Innovation Funding Programs; (ii) Responsible Evaluation of Research Proposals, (iii) Systems of Evaluation and Ex-Ante Procedures, (iv) Criteria for Evaluation and Informational Inputs, and (v) Transparency and Ex-post procedures in Research Assessment.

III.1 General Characteristics of Targeted Research and Innovation Funding Programs

III.1.A Temporal Aspects

Fifty percent (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. Thirty percent (six) of the programs were initiated in the last five-to-ten years; only one program was less than five-year-old.

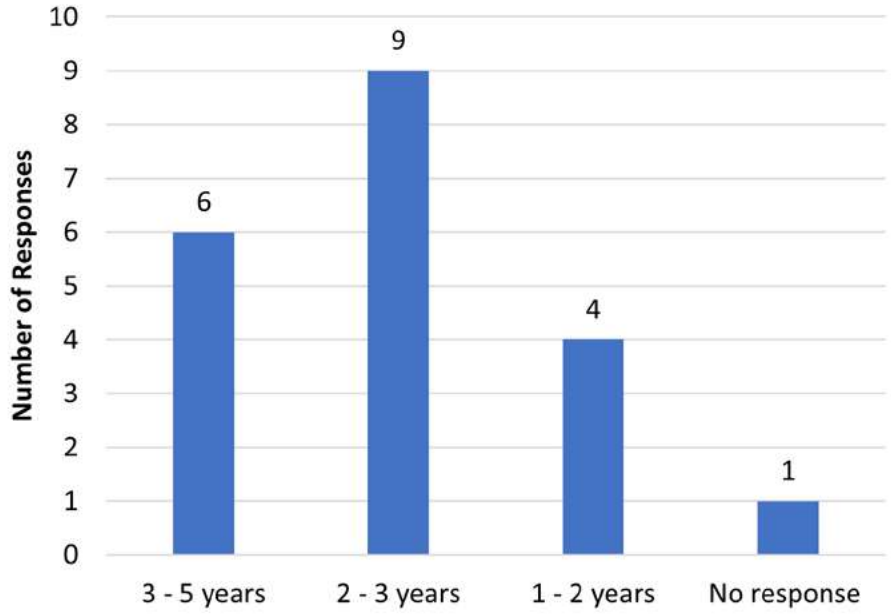
Figure 1: Financing Periods



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. Figure 1 illustrates the results of financing periods of the surveyed programs.

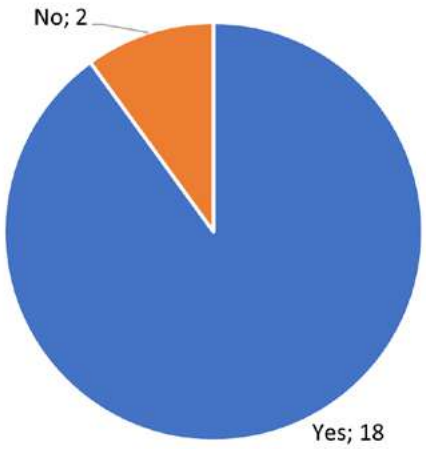
The funding periods for the surveyed research programs vary. Forty-five percent (nine) of the responses indicate that they fund research projects of two to three years; 30 percent (six) fund projects for three to five years; and 20 percent (four) fund projects which are up to one to two years duration. One respondent did not respond. Figure 2 depicts the duration of funding available for the research programs surveyed.

Figure 2: Duration of Surveyed Research Funding Calls



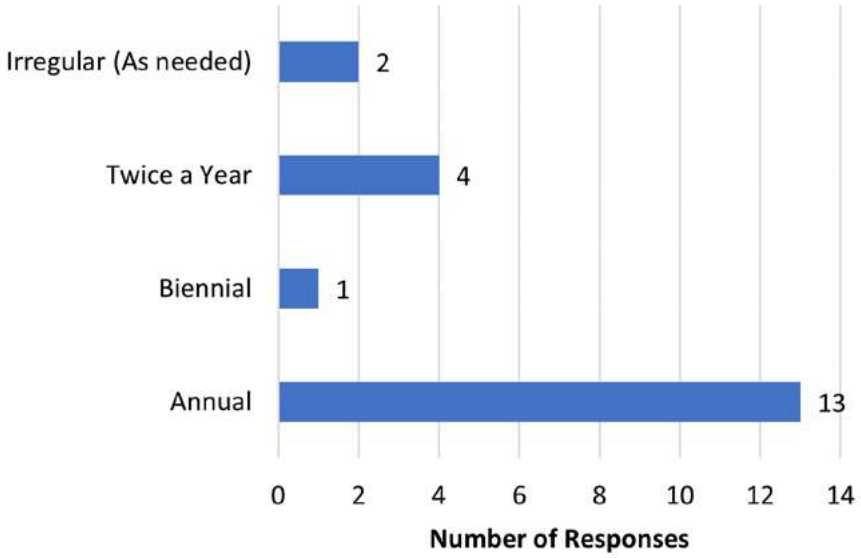
Respondents were asked about the periodicity of calls for research projects and whether the calls are/were regular. Ninety percent (18) of the research programs have a regular call for applications, while only 10 percent (two) did not have a regular call. Figure 3 depicts the number of responses on the periodicity of the calls for the surveyed research programs.

Figure 3: Regularity of Surveyed Research Funding Calls



Out of the 18 research programs with regular calls for applications, 72 percent (13) had annual calls for research projects; 22 percent (four) had calls for applications twice every year; only one of the surveyed research programs has a biennial call for application. Figure 4 depicts the periodicity of the calls for the surveyed research programs.

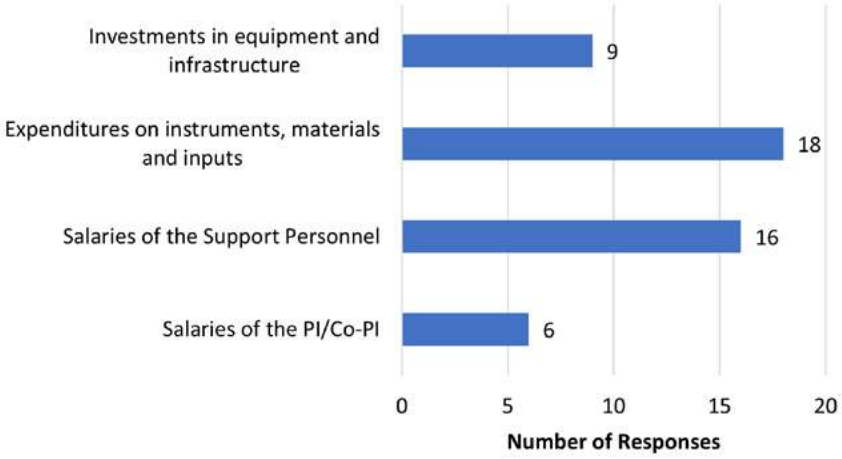
Figure 4: Periodicity of the Calls



III.1.B Financial Aspects

The survey questionnaire inquired which items could be financed with the funds allocated to the research team. Ninety percent (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 percent (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 percent (nine) respondents said that research funds allow for investments in equipment and infrastructure. Interestingly, 30 percent (six) respondents indicated that research funds could be used to fund the salaries of PI and Co-PI. These results are illustrated in Figure 5, below.

Figure 5: Research Items that can be Financed



III.1.C Cognitive Aspects

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. Sixty percent (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 percent 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. The results are presented in Figure 6 below.

Figure 6: Actors who can Apply for a Call

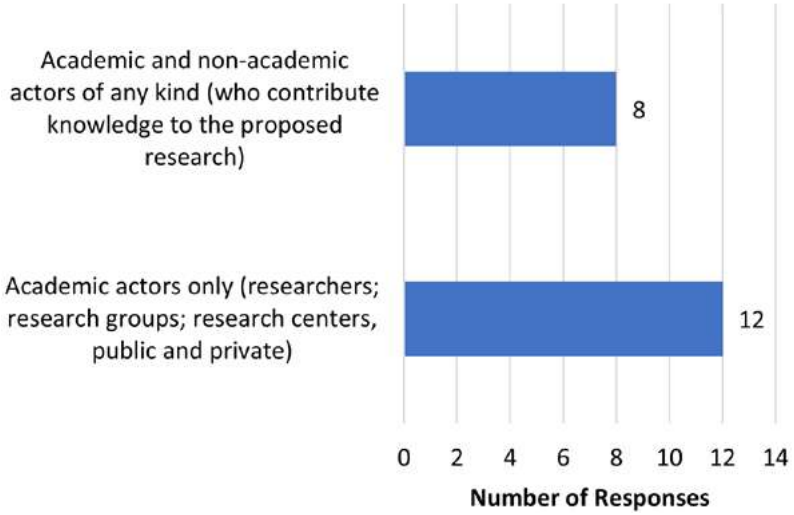
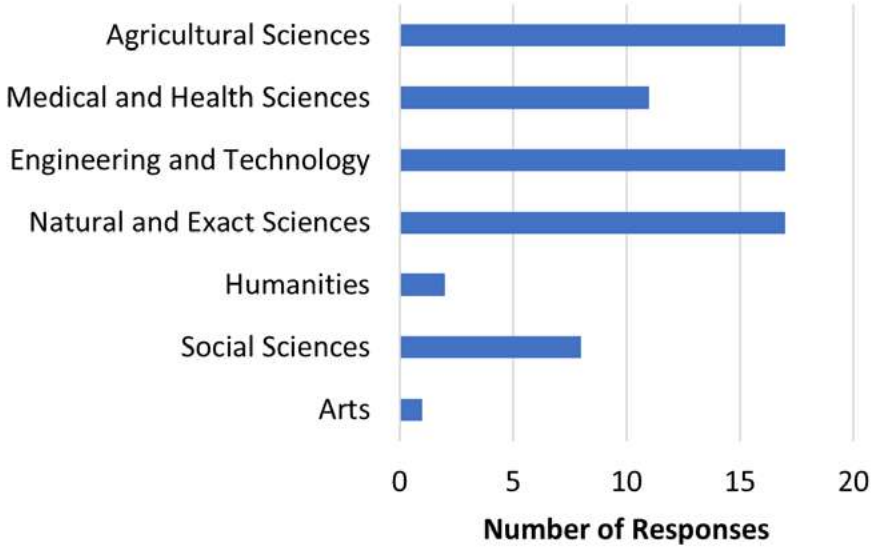


Figure 7 shows the fields of knowledge – alone or combined – that apply for projects in the surveyed research programs. Eighty-five percent (17) of the surveyed programs admit that applications are received from disciplines like Agricultural Sciences, Engineering and Technology, and Natural and Exact Sciences. Fifty-five percent (10) of the programs accept applications from Medical and Health Sciences; 40 percent (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.

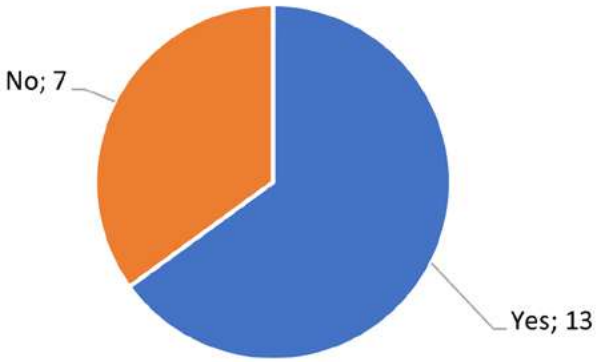
Figure 7: Fields of Knowledge involved in the Project



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. Sixty-five percent (13) of surveyed research programs responded that research proposals must address the issues delimited by the calls; only 35 percent (seven) of the surveyed calls indicated that they do not define the problems for the research proposals. Figure 8 depicts the results in this aspect.

Sixty-five percent (13) of surveyed research programs responded that research proposals must address the issues delimited by the calls; only 35 percent (seven) of the surveyed calls indicated that they do not define the problems for the research proposals.

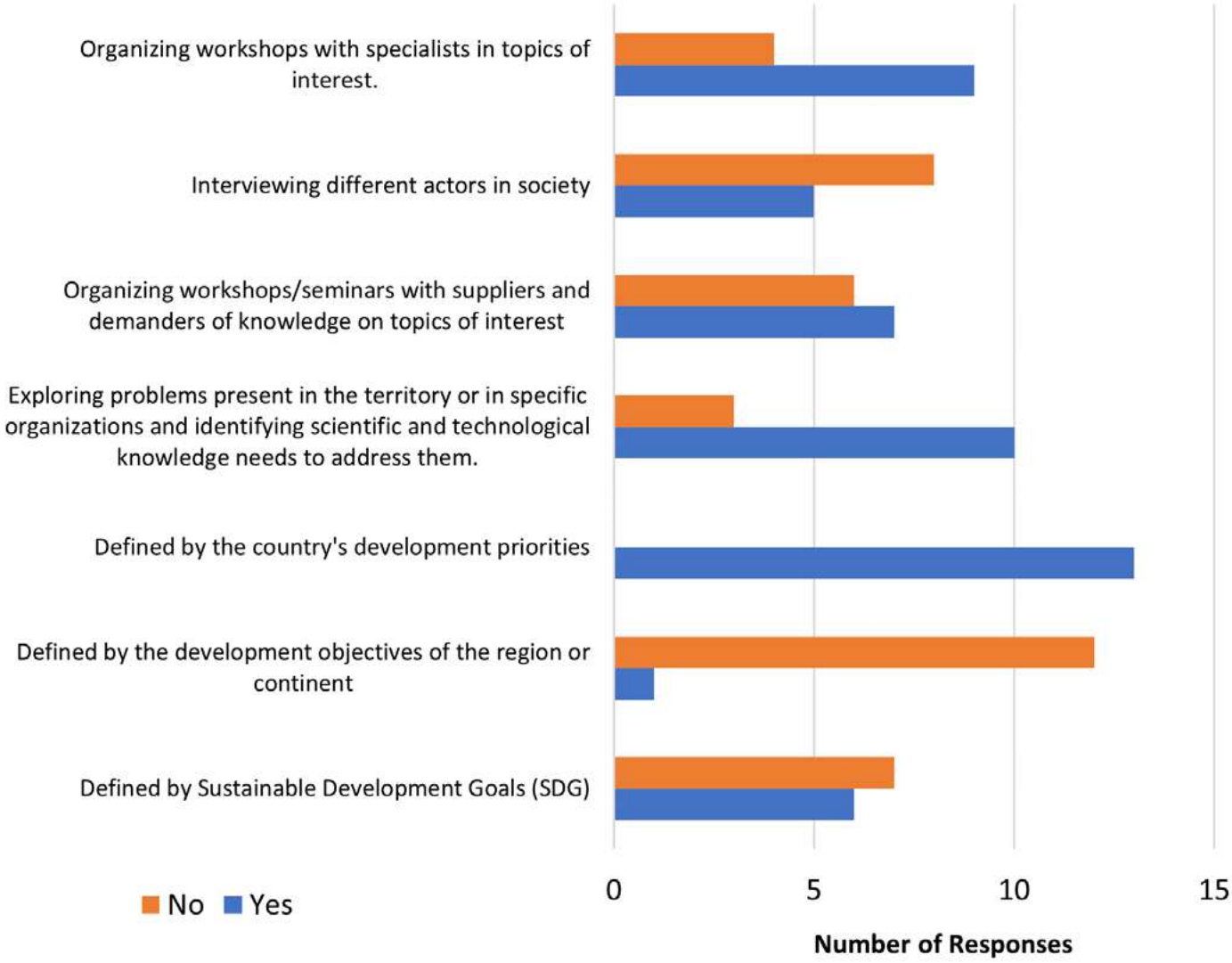
Figure 8: Delimitation of Problems for the Targeted Calls



The 13 research programs that define the problems for the research problems employ various strategies to identify the issues. Figure 9 below illustrates methods used to identify problems for targeted calls. Seventy percent (nine) of the respondents indicate that they organise workshops with specialists to delimit the topics for research proposals; 38 percent (five) indicate that interviews with various actors of the society help them to identify the problems; 36 percent respondents conduct workshops or seminars with the suppliers and demanders of knowledge; 77 percent (10) identify problems for the research

proposals based on the regional problems or organisational problems and the need to address them. Forty-six percent (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 9: Methods used to Identify Problems for Targeted Calls



III.2 Support for Declarations on Responsible Evaluation

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 percent) 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.

Of the 21 survey respondents, spanning programs of 17 organizations, only 6 (28 percent) 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.

III.3 Systems of Evaluation and Ex-Ante Procedures in Research Assessment

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 2 presents these results.

Table2: Evaluation modes adopted

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 percent of responses indicate double-blind peer review[14] by experts and specialists external to the organisation; notably, none of the organisations does a double-blind peer review by the internal experts. Forty-three percent 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[15] from external experts, and 38 percent use open reviews by internal experts.

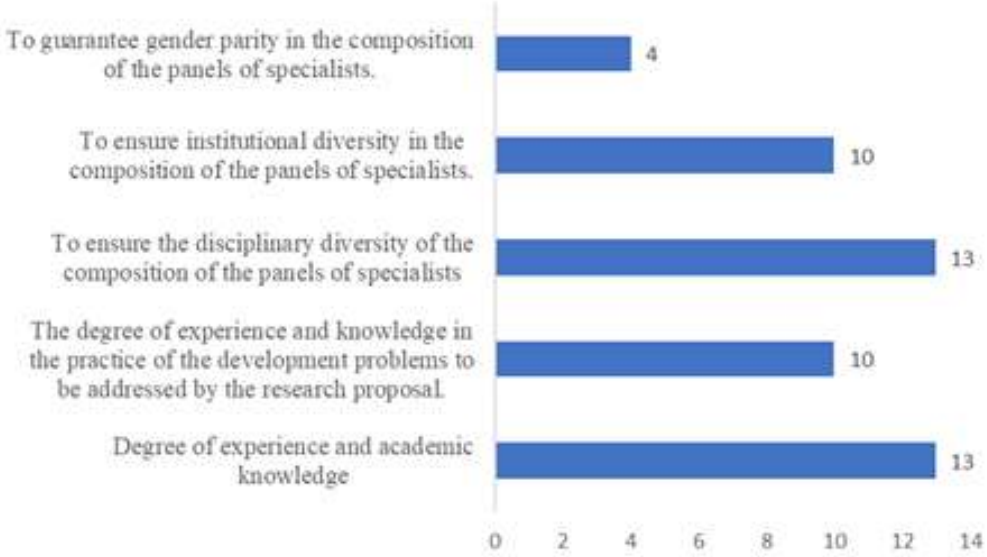
The respondents answering "external and/or internal panel of specialists" were further asked about the criteria used by their organisations for the integration of these panels. Figure 10 depicts these results. The main criteria to form the panels of specialists, as revealed by 68 percent of the responses, are: a) to ensure the disciplinary diversity of the panels of specialists and b) the degree of experience and academic knowledge.

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 10 depicts these results. The main criteria to form the panels of specialists, as revealed by 68 percent of the responses, are: a) to ensure the disciplinary diversity of the panels of specialists and b) the degree of experience and academic knowledge.

14 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.

15 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.

Figure 10: Criteria for the composition of the panels of internal and/or external specialists



As indicated by 53 percent of the responses, 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 percent of the responses indicate that the criteria to form the panels are to guarantee gender parity in the composition of the panels of specialists.

III.4 Criteria for Evaluation and Informational Inputs for Assessing Targeted Research Proposals

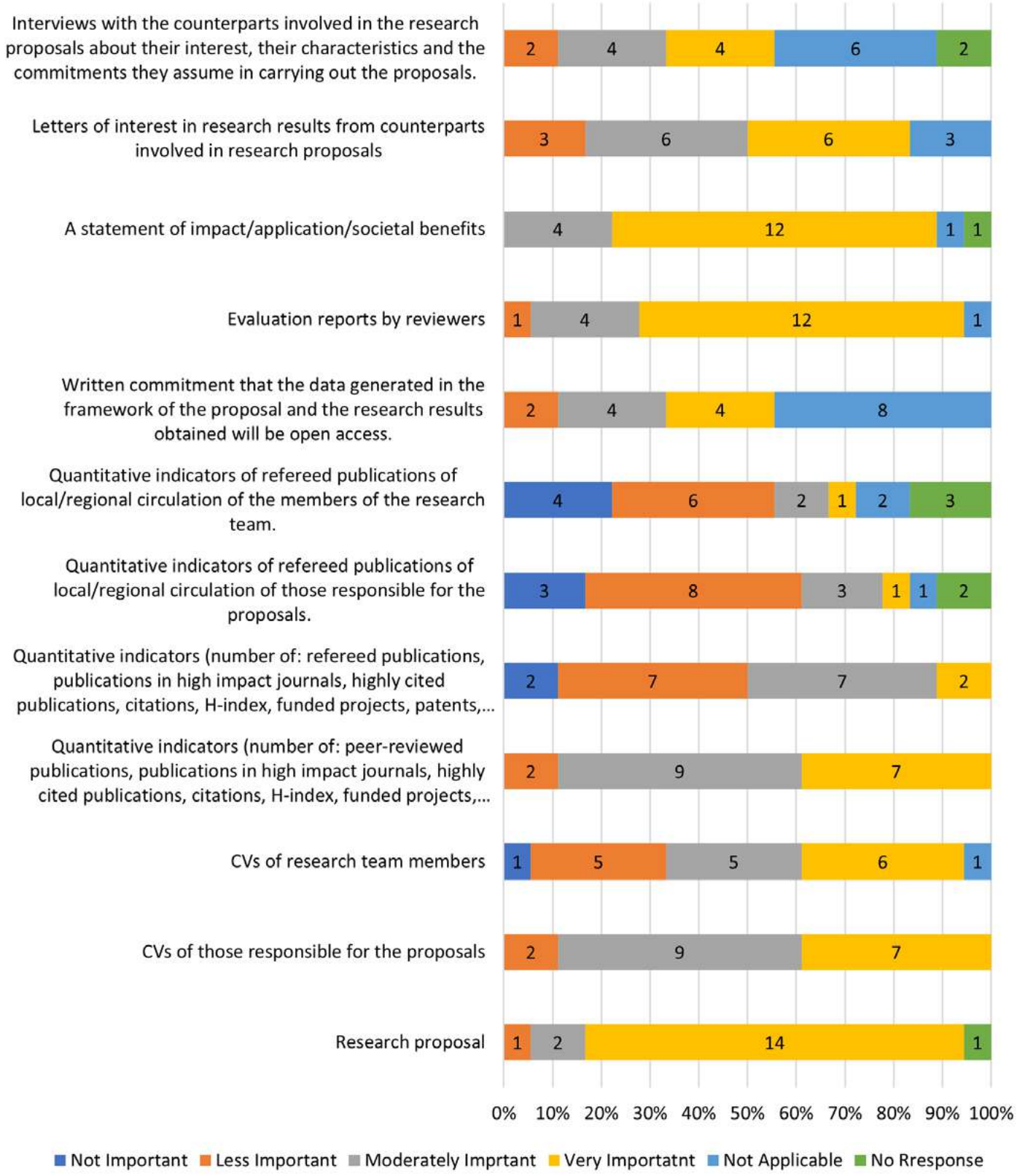
Organizations employ different methods to evaluate research proposals: they may undertake quantitative or qualitative methods or a combination of both. The three typical approaches followed by organizations to assess the targeted research proposals are 1) to assess the informational inputs; 2) to assess 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.

III.4.A. Informational Inputs in Evaluating Targeted Research Proposals

To ascertain the salience of informational inputs in evaluating the targeted research proposals respondents are asked to rate the following on a Likert scale of 1 (*not important)* through 4 *(very important):* i) research proposals, ii) curriculum vitae (CVs) of principal investigators (those who are responsible for the project) and other team members, iii) Quantitative indicators of investigators and team members, iv) open access of data generated and results obtained within the project, v) reviewer's evaluation reports, vi) statement of societal impact, and vii) expression of interest from the counterparts involved in the research proposal.

Figure 11 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.

Figure 11: Relative Emphasis on Informational Inputs for Evaluating Targeted Research Proposals in South Asia (n=18)



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.

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.*

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 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.

In summation, 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.

III.4.B. Evaluation criteria to assess the ability of research projects oriented to meet the objectives of the programs/ schemes/calls

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. One of the critical components of the responsible research evaluation process is to assay the ability of the targeted research proposals to meet the

programs/calls/schemes objectives. The survey attempted to understand which aspects or criteria are important while assessing the targeted research proposals' ability to meet the program's objectives.

Survey respondents were asked to rate the importance of the following evaluation criteria in determining the fit between the research proposal and the objectives of targeted research schemes on a Likert scale of 1 through 4. The evaluation criteria encompass the following broad aspects: i) importance of the stated problem, ii) research team/human capital inputs, iii) relevance, iv) potential, v) implementation and vi) actors/stakeholders/counterparts.

Figure 12 below illustrates survey responses on the degree of relevance of evaluation criteria in assessing the ability of research proposals to meet the objectives of the targeted research calls in South Asia. The importance of the stated problem 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.

The importance of the stated problem is the most critical criteria in determining the match between the research proposal and the objective of targeted research schemes

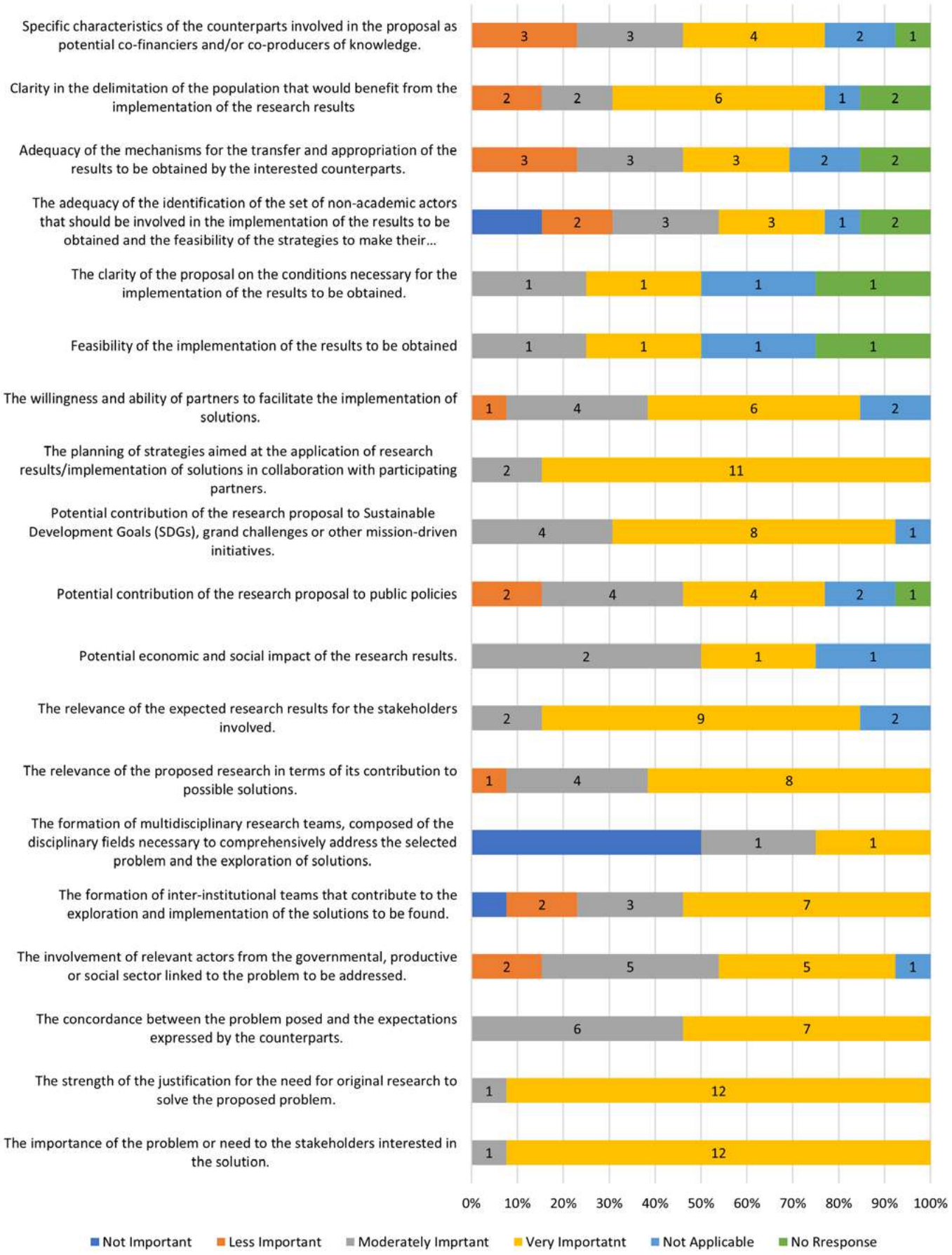
With specific reference to the importance of the stated problem, among its three aspects, the first two i.e., a) the importance of the problem or need to the stakeholders interested in the solution and b) the strength of the justification for the need for original research to solve the proposed problem 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.*

Regarding criteria of the research team/human capital inputs, 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.*

Turning now to the dimension of relevance, 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.*

Concerning potential criteria, the 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.*

Figure 12: Degree of Relevance of Evaluation Criteria to Assess the Ability of Research Proposals in meeting the Objectives of the Targeted Research Calls in South Asia (n=13)



The fifth dimension of evaluation criteria, i.e., implementation, constituted four aspects: 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.*

Finally, the sixth dimension, i.e., actors/stakeholders/counterparts, constituted four aspects: 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.

III.4.C. Evaluation Criteria to Assess the Academic Merits of Targeted Research Proposals

The academic merits of proposals for targeted research are essential aspects of responsible research evaluation. Therefore, it is imperative to understand the importance and relevance of the targeted research calls. To understand the key distinguishing factors among funded and unfunded research proposals, survey respondents were asked to rate the following five over-arching dimensions of academic merits on a Likert scale of 1 (*not important)* through 4 *(very important):* i) Theoretical and methodological rigor, ii) Originality, iii) Adequacy (relevance and impact of the research for the resolution of problems), iv) Feasibility and v) Relevance of academic impact.

Figure 13 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.

As per the responses obtained from participants on dimensions of the theoretical and methodological rigor, in particular, 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 v*ery 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.*

Regarding the originality of the research proposal, 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 v*ery 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.

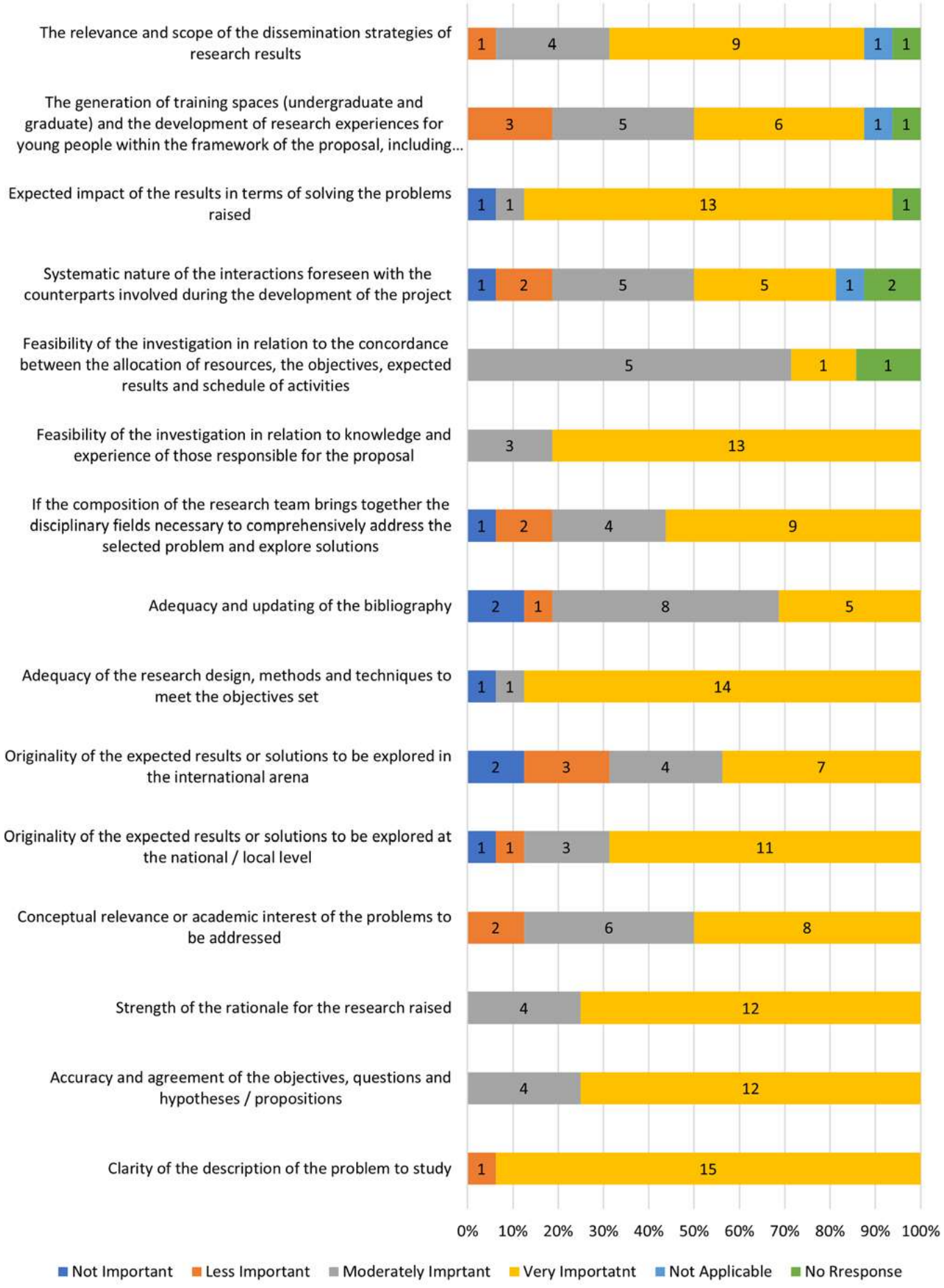
Turning now to the adequacy aspect, adequacy of the research design, methods, and techniques to meet the objectives set appeared to be the most preferred aspect in appraising the merits of the targeted research proposal. Approximately 88% of participants scored it as very important. Furthermore, a small 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.

Finally, among the three propositions of relevance and academic impact, the expected impact of the results in solving the problems raised 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.

Concerning the feasibility aspect, 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.

Finally, among the three propositions of relevance and academic impact, the expected impact of the results in solving the problems raised 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*.

Figure 13: Evaluation Criteria to Assess Academic Merits of Research Proposals in South Asia (n=16)



III.5 Transparency and Ex-post procedures in Research Assessment

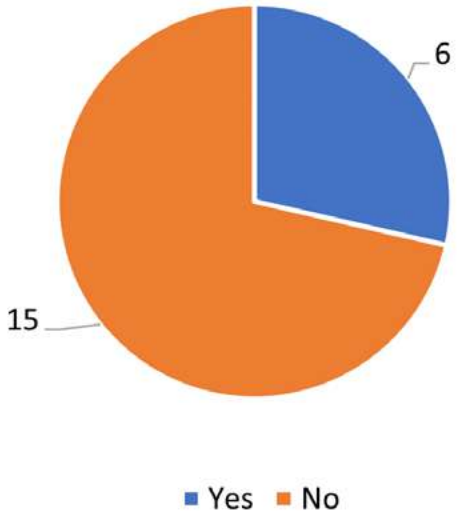
This subsection discusses ex-post research assessment procedures and transparency of science and innovation funding councils and programs in South Asia. Transparency of the evaluation process is a significant aspect of organizations' research assessment exercises. It helps them prepare their decisions, 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.

Figure 14 below presents survey responses on whether or not the evaluation results are made public, post research assessment exercises. Seventy-one percent of organisations (15) answer that they do not share the results publicly, while only 29 percent (six) publicly share the evaluation results.

Public Communication of Evaluation Results

Figure 14 below presents survey responses on whether or not the evaluation results are made public, post research assessment exercises. Seventy-one percent of organisations (15) answer that they do not share the results publicly, while only 29 percent (six) publicly share the evaluation results.

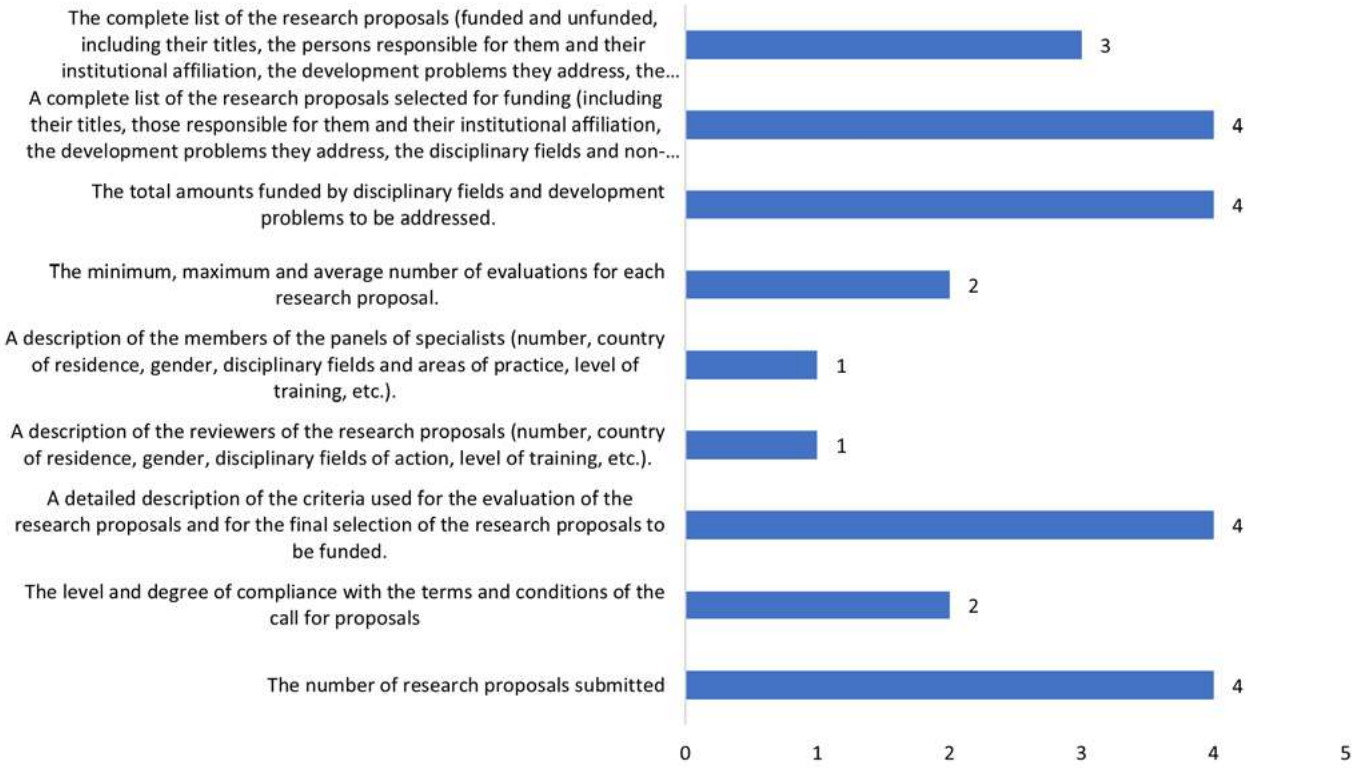
Figure 14: Evaluation results made public or not



Two organisations indicate that the minimum, maximum and average evaluations received for each proposal are made public. Only one organisation show they provide information on the members of expert panels and description of the reviewers of the proposals.

The organisations that make the evaluation results public and accessible are asked which information about the evaluation process is made publicly available. As indicated by the 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 show they provide information on the members of expert panels and description of the reviewers of the proposals. Figure 15 illustrates these results.

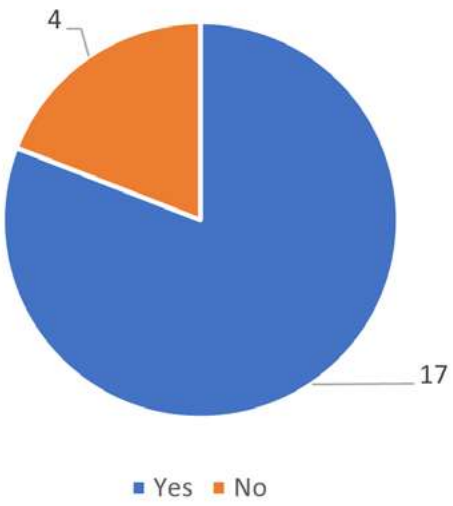
Figure 15: Information about evaluation that is made public and accessible (n=6)



Personalised Feedback to the Applicants

The survey respondents were asked whether personalised feedback is provided to applicants of the research projects. Almost 81 percent of the responses indicate that the applicants receive personalised input or opinions about evaluating their project proposals; only 19 percent (four) suggest that they do not send personalised feedback to the applicants. Figure 16 presents these results.

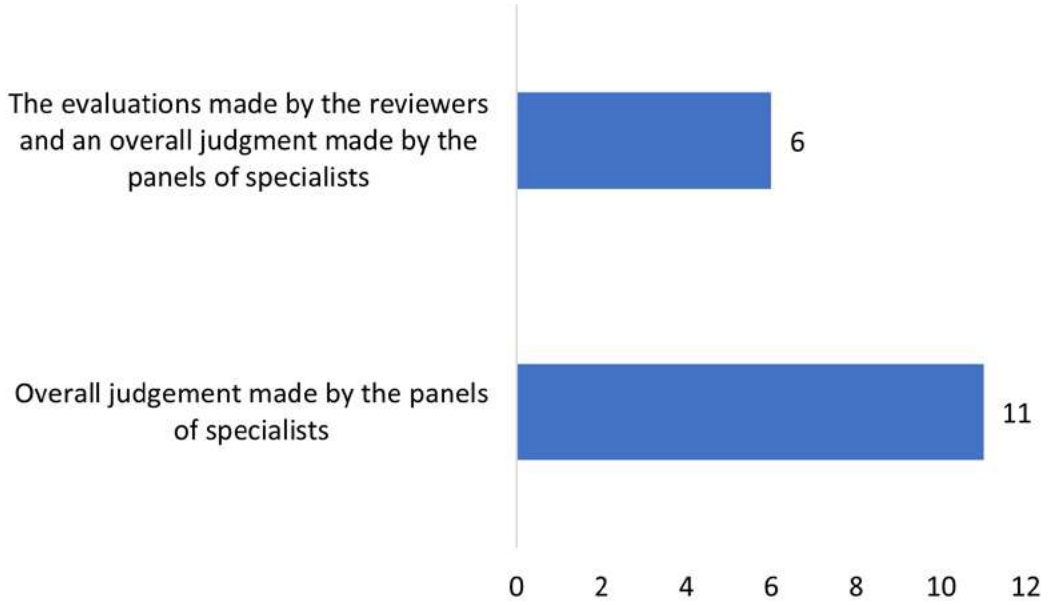
Figure 16: Personalised feedback provided to those who apply for the projects (n=21)



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

includes evaluations made by the reviewers and the overall judgement made by the panel of specialists. Figure 17 depicts these results.

Figure 17: Feedback provided to those who apply for the projects (n=17)



IV. DISCUSSION OF KEY FINDINGS AND POLICY RECOMMENDATIONS IN SOUTH AFRICA

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

✓ A wide range of science and innovation targeted research programs in South Asia were 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 common people (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.

Workshops/discussion sessions with common people (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.

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.

Focusing on the evaluation processes systems and heuristics is key to understanding research assessment practices in South Asia.

- ✓ 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.

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).

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.

- ✓ 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.

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CASE STUDIES

Six in-depth case studies of organizations managing programs and funding research in different disciplinary fields are detailed as part of the fieldwork undertaken in the South Asia region. 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 organisations/ programs with a relatively singular mandate or work area are chosen. 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 below, their organisational mandate was too broad to describe sufficiently in a brief case study.

CASE STUDY 1: NATIONAL INNOVATION FOUNDATION, INDIA

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1.A 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 the knowledge of the common people. 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

1.B 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 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 common people 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

1.C. 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 the knowledge of the common people. 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.

1.D. 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."*
>
> *Senior Innovation Officer, NIF, personal interview on April 11, 2022*

2. Most technological solutions for the poor are designed and implemented top-down. 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 the scientists' social responsibility. Hence, special consideration should be given to scientists who have collaborated with grassroots innovators or the knowledge of the common people.

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.

Accompanying Attachments

- Technical assessment of the scouted grassroots innovations and the projects of PIs related to internal screening: See 'Template for expert assessment of innovations.pdf' (uploaded to Zenodo)

- Composition of the research advisory committees of the NIF: See 'NIF-Research Council and Research Advisory Committees.pdf' (uploaded to Zenodo)

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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

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2.A. 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*."

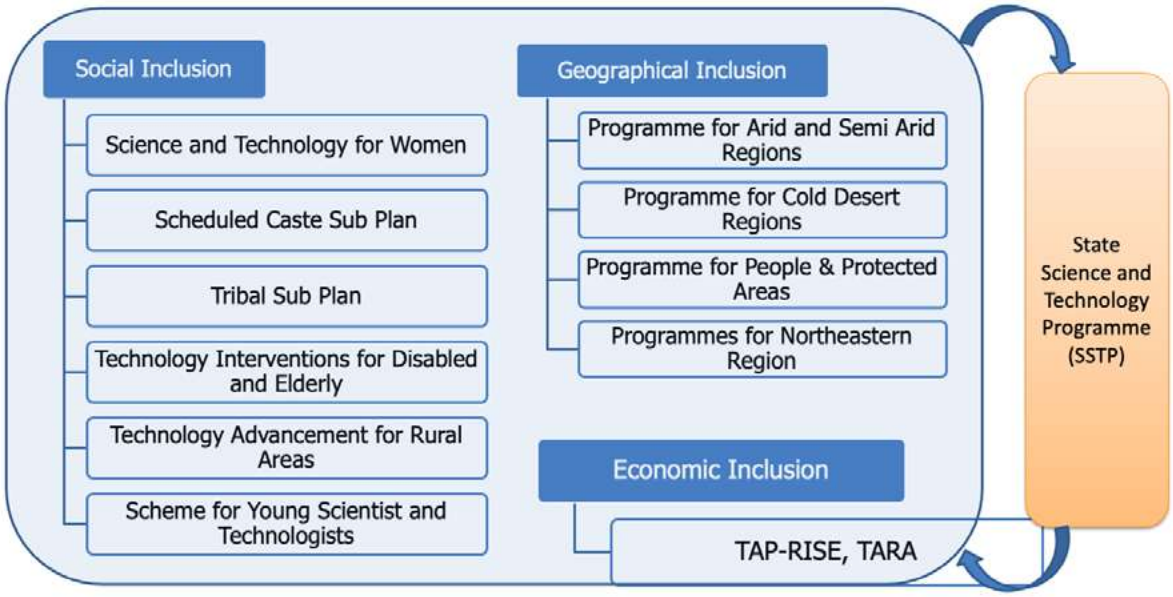
The SEED Division (hereafter interchangeably referred to as the Division) provides grant-in-aid support to project proposals from Knowledge Organisations (including Government and Private Academic Institutions, R&D Labs, etc.) and S&T-based NGOs for the "*delivery of science-led solutions and development & 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 Schemes and Programmes of the SEED Division majorly fall into three categories viz programs for social inclusion, geographical inclusion, and economic inclusion.

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.

2.B 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

2.C 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 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.

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.

2.D SEED's Approach for Science and Technology Interventions in Enhancing the Welfare System

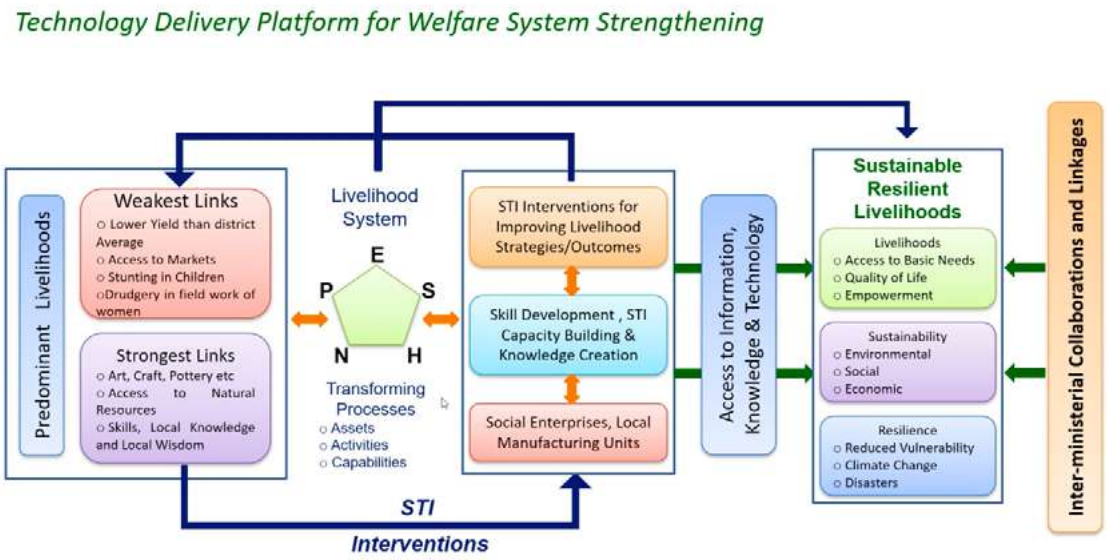
The SEED division's philosophy and the approach of its various programs and schemes can be traced to the discourse around the appropriate technology movement of the 1970s. The appropriate technology movement was essentially a critique of the technology transfer from the global north to the global south. 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)

Accompanying Attachments

- 2021 Call for Proposals of the Scheme for Young Scientists & Technologist (SYST): See 'SYST Call for Proposal_compressed.pdf'(uploaded to Zenodo)
- 2020 Call for Proposals and Proposal Format of the Women Technology Parks: See 'Format for Women Technology Parks September 2020.doc'(uploaded to Zenodo)
- Guidelines and Proposal Format for Tribal Sub Plan: Technological Interventions for Tribal Empowerment (TITE): See 'TSP Techno Interventions for Tribal Empowerment Proposal Format .doc'(uploaded to Zenodo)

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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

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3.A. 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 programmes 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 programmes 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 centresby providing grants for projects, international collaborations, capacity-building courses/programmes, and publications to promote research in social sciences in India.

3.B. 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 programme 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 discuss this on different platforms, and sometimes themes emerge out of our international collaborations. "*
>
> *Senior member of the ICSSR governing council, personal interview on April 26, 2022*

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.

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.

3.C. 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.

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 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.

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.

Accompanying Attachments

- Assessment Criteria Developed by ICSSR for Joint Research Projects between India and Partner Countries: See 'Evaluation Framework Developed by ICSSR.pdf'(uploaded to Zenodo)
- Evaluation Sheet, containing scoring parameters for research proposals: See 'Evaluation sheet (Offline).docx' (uploaded to Zenodo)
- Final Report Evaluation Form for Research Project: See 'Report Evaluation Format.docx' (uploaded to Zenodo)

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

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4.A. 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.

4.B. 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.

4.C. 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:

> *"[…] we do know much about the impact of climate change on agriculture from international literature. However, much of them are not specific to our country-specific situations; we are yet to understand fully how climate change impacts different components of agriculture, And then, once you know the impact, we can design different technologies that will make it implementable in the field. That's the research part. The second part demonstrates these technologies in the farmer's field."*
>
> *Senior official of NICRA, personal interview on May 6, 2022*

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.

> *"Several technologies are available throughout the country, from universities or research institutes of ICAR. [..] In technology demonstration, we have identified 151 vulnerable districts based on our analysis, considering the past climate and future*

climatic projections. We classified all the rural districts in the country into different risk and vulnerability categories."

Senior official of NICRA, personal interview on May 6, 2022

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.

4.D. 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.

The NICRA project follows a three-tier screening and approval process.

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

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.

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.

A committee identifies research themes, viz. the high-level monitoring committee which monitors the whole NICRA program.

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:

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.

> *"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.

Accompanying Attachments

- 'Proforma for preparing concept papers under NICRA's Competitive Grants': See '086_Proforma - Competitive Grants (Concept Note).doc' (uploaded to Zenodo)
- 'Proforma for preparing full proposal under NICRA's Competitive Grants': See '086_Proforma - Competitive Grants (Full Proposal).doc' (uploaded to Zenodo)
- 'Proforma for preparing concept papers under NICRA's Sponsored Grants.
- 'Proforma for preparing full proposal under NICRA's Sponsored Grants': See '086_Proforma - Sponsored Grants (Full Proposal).doc' (uploaded to Zenodo)

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

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5.A 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 endeavours. 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.

5.B. 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.

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.

5.C. 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.

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

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6.A. 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.

6.B. 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.

6.C. 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.

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 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.

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."

Senior member of the BUEP Technical Advisory Committee, personal interview on February 23, 2022

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.

Accompanying images and illustrations

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

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