TC ABSTRACT

I. Basic project data

▪ Country/Region:	Peru
▪ TC Name:	Supporting the institutional strengthening of Peru's National Science, Technology, and Innovation System.
▪ TC Number:	PE-T1510
▪ Team Leader/Members:	Team Leader: Juan Pablo Ventura (IFD/CTI), Alternative Team Leader: Gustavo Crespi (IFD/CTI), Team members: Yunjung Shin (IFD/CTI), Sergio Rodriguez Soria (IFD/CTI), Raisa Ramos Sandoval (CAN/CPE), Legal: Monica Clara Angelica (LEG/SGO)
▪ Indicate if: Operational Support, Client Support, or Research & Dissemination.	Operational Support
▪ If Operational Support TC, give number and name of Operation Supported by the TC:	PE-L1263 Innovation, Technological Modernization and Entrepreneurship Program
▪ Reference to Request[1]: (IDB docs #)	
▪ Date of TC Abstract:	April 2022
▪ Beneficiary (countries or entities which are the recipient of the technical assistance):	National Council of Science, Technology, and Innovation of Peru (CONCYTEC), National Program for Technological Development and Innovation (PROINNOVATE) and National Program for Scientific Research and Advanced Studies (PROCIENCIA).
▪ Executing Agency and contact name	Inter-American Development Bank (IFD/CTI)
▪ IDB Funding Requested:	US$500,000
▪ Local counterpart funding, if any:	
▪ Disbursement period (which includes execution period):	30 months for disbursement
▪ Required start date:	May 2022
▪ Types of consultants (firm or individual consultants):	Firm and individual consultants
▪ Prepared by Unit:	IFD/CTI - Competitiveness, Technology, and Innovation Division
▪ Unit of Disbursement Responsibility:	CAN/CPE – Country Office Peru
▪ Included in Country Strategy (y/n);	Yes
▪ TC included in CPD (y/n):	Yes
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Productivity and Innovation Institutional Capacity and Rule of Law

II. Objective and Justification

2.1 The objective of this TC is to support the institutional strengthening of Peru's science, technology, and innovation (STI) system. Although Peru's national spending in science and technology has increased throughout the last decades (from 0,08% of the GDP in 2008 to 0,16% in 2019[2]), it is still well below the Latin American average (0,56%). Low STI investment impacts negatively in productivity (about 60% of the USA[3]) and

[2] RICYT-UNESCO (2022)
[3] Total Factor Productivity (TFP). PWT09

competitiveness (60% of exports are concentrated in non-processed minerals such as copper, iron, and zinc[4]). At the current level of development, most of Peru's national spending in STI still must come from the public sector. Most of fiscal resources for supporting STI activities come from public investment projects (PIP) financed either with the proceeds from specific taxes (such as canon or cooper tax) or external debt with multilateral organizations. The Ministry of Finance (MEF), who is the responsible for allocating fiscal resources to finance STI activities, finds it necessary not only increasing the budget for STI activities but also streamlining the budget allocation process. Doing this, however, is very complex because the current institutional setting of the STI system seriously undermines both horizontal (across ministries) and vertical (between ministries, programs, and public institutes) coordination leading to fragmentation, overlaps and agency problems that seriously affects the efficiency of fiscal resources. On top of this, the methodologies used for the identification and formulation of STI projects (such as gap indicators and guidelines) are seriously outdated.

2.2 The leading organization in charge of the institutional governance of STI system is the National Council for Science, Technology, and Innovation (CONCYTEC). CONCYTEC gathers representatives from the public, private and academic sectors in its steering committee and it is led by a president appointed by the President of the Republic. Nevertheless, most of STI policies in Peru are designed and implemented under the responsibility of sectorial Ministries (mainly ministries of Production, Agriculture, Mining and Education) while CONCYTEC has a lower rank in the executive branch than these ministries, leading to a poor coordination. Additionally, the current position in the bureaucratic structure of the State and composition of CONCYTEC discourages private sector participation. Therefore, there are more than 160 individual STI programs funded by the government scattered across the different ministries, among which only 13 accounts for 75% of the total STI budget meaning that most of the programs are of very small in scale to be effective. About 85% of these programs are under line ministries and only 15% of the public resources are supervised by CONCYTEC. Overlapping functions between CONCYTEC and line ministries leads to poor coordination and fragmentation of innovation funds resulting in low effectiveness of STI policy.

2.3 In 2021, the Government of Peru initiated a series of institutional reforms to improve the above-mentioned institutional context of the STI system. First, two big national programs were created by absorbing some of the functions of the individual programs so far in existence: the Science and Advanced Studies National Program (PROCIENCIA) and the Technological Development and Innovation National Program (PROINNOVATE). PROCIENCIA manages all the resources from previous programs that fund scientific research and science, technology, engineering, and mathematic (STEM) scholarships), while PROINNOVATE gathers most of the resources related to technological development and innovation at the firm level and start-ups. Second, a Ministerial Science, Technology and Innovation Commission at the Prime Minister Office level was created and put in charge of the strategic orientation of STI. All the line are part of this commission. Third, an Advisory Science, Technology and Innovation Commission was also established with the participation of the private, academic, and non-governmental sectors to provide advice to the Ministerial Commission. Lastly, the

[4] The country has important reserves of lithium that could be used as a platform for the development of new sector related with electro mobility. However, the country lacks the technological capabilities for this.

final big reform, is the elevation of CONCYTEC to a ministerial level by a creation of the Ministry of Science, Technology, and Innovation (MINCYT).

2.4 In respect to this reform, a working group for the creation of the MINCYT was established at the Office of the Prime Minister analyzing several alternatives for the design of the new ministry in coordination with the National Congress. Even though the draft law was approved by the STI commission of the Congress by June, the creation of new ministry remains uncertain as the Congress in July formed a new board of directors with a new priority agenda focused on political investigations to the president, who was the main impellor of MINCYT creation. In this respect, the National Congress has withdrawn the MINCYT agenda from the legislative agenda for this year, causing even greater uncertainty about how the STI reforms could materialize. In this respect, the needs to strengthen the capacity of CONCYTEC becomes even more significant replacing the role of a new Ministry that have been discussed and the governance of the STI system needs to be reconfigured in a way that it can empower CONCYTEC in carry outing its major functions they are weak at today, namely, policy design, monitoring, evaluation and, horizontal coordination with sectorial ministries. Furthermore, an important task remains with CONCYTEC to identify and help the Ministry of Economy and Finance to allocate the public STI budget to PROCIENCIA, PROINNOVATE and other National STI programs, as well as regularly evaluate the performance of these programs to propose evidence-based policy reforms and future institutional changes. Considering all these background and conditions, This TC will be focused on the following subjects: (a) institutional strengthening of CONCYTEC and the enhancement of the national STI system; (b) institutional strengthening of PROCIENCIA and PROINNOVATE; (c) technical assistance to PROINNOVATE for technology appraisals pilot.

2.5 Challenges remain at the implementation level as well. In the medium and long-term, it is expected to execute all country's STI funds through the two previously mentioned national programs: PROCIENCIA and PROINNOVATE. These two entities use competitive matching grants to accomplish their goals, but it is expected that, particularly in the case of PROINNOVATE, they can increase their instruments portfolio to include loans, technological guarantees, and equity investments. Nevertheless, with their current institutional capacities, they would not be able to meet the new functions emerging from the institutional reform. Current PROINNOVATE's institutional capacities are at an intermediate level compared with other similar programs in the region mostly due to low level of autonomy and organizational flexibility in taking advantage of innovation opportunities. In addition, its information technology infrastructure and high staff turnover are identified as relevant weaknesses. PROINNOVATE needs to become a more flexible organization capable of quickly responding to national challenges such as the COVID-19 pandemic and climate change related natural disasters. It also needs to enlarge its scope to attend the demands emerging from the increasing digitization of production across sectors (particularly mining and agriculture) and to tackle the needs of not only innovative firms and start-ups but also the large group of low productivity SMEs through technical assistance interventions. Moreover, PROINNOVATE needs to improve its financial sustainability. Currently 100% of its resources are allocated through competitive matching grants which makes its operation highly dependent on the Treasury's budget transfers. Using reimbursable instruments such as loan, equity investment and issuing guarantees will make PROINNOVATE's operations financially more solid and stable.

2.6 With regards to PROCIENCIA, its interventions need to evolve to address the productive, social, and environmental challenges of Peru more effectively. Currently, most of the instruments that PROCIENCIA operates are horizontal without strategic orientation. To counter this problem, PROCIENCIA needs to develop capacities to design and implement long-term strategic scientific programs in thematic areas (such as forestry, climate change, health, etc). In addition, PROCIENCIA needs to tackle gender issues and regional unbalances. Female researchers account for 31% of the total researchers in Peru which is one of the lowest in the region while 60% of researchers are concentrated in Lima. Furthermore, PROCIENCIA needs to develop an integrated digital platform to facilitate project application and evaluation. The presence of multiple platforms for each project stage makes the whole application and monitoring process inefficient. Lastly, PROCIENCIA needs to improve the operations the Peru's large scientific research equipment by promoting practices of shared used, open access, networks of users and collaboration across institutions.

2.7 Against this backdrop, Korean experience can provide a meaningful insight to Peru since the Korean National Innovation System has evolved over the past decades overcoming identical challenges of duplicated functions among organizations and ensuring effectiveness. Since the establishment of the Ministry of Science and Technology (MOST) [5] in 1969, various public organizations and agencies have been deployed to carry out specific institutional mandates at strategic, advisory, executive, and evaluation levels. For example, the Korean National Science and Technology Commission (NSTC) was created for horizontal and vertical policy coordination across ministries whose support programs were often overlapped. This experience can be very useful for the recently created Ministerial Commission for Science and Technology in Peru. The practice of the Ministry of Science and ICT (MSIT) and the Korea Institute of S&T Evaluation and Planning (KISTEP) can be very relevant for how the new Peruvian MINCYT will be designed. As to counterpart organizations for PROINNOVATE and PROCIENCIA, operations of several Korean STI agencies that implement STI programs, such as the National Research Foundation (NRF), the Korean Institute for the Advancement of Technology (KIAT), the Korean Technology and Information Promotion Agency for SMEs (TIPA) and Korea Technology Finance Corporation (KOTEC) among others can provide useful knowledge and experience.

III. Description of activities and outputs

3.1 **Component 1. A roadmap design for strengthening of CONCYTEC and recommendations on the STI governance system of Peru (US$250,000).** This component will analyze the status of the governance of Peru's national STI system given the recent institutional reform and support the strengthening of CONCYTEC as a steering body of the national STI system in Peru. A diagnostic study on the governance of Peru's national STI system will be conducted looking into the horizontal and vertical relations of the national actors, its overlapping functions as well as the deployment of resources at different levels[6]. Based on the diagnosis, a set of recommendations will be drawn for effective STI governance at the policy level. As a subcomponent, a case study on Korea's

[5] Currently the Ministry of Science and ICT.

[6] This will also include the assessment of the MEF's National Investment System regarding investment gap indicators for the STI sector and methodological guidelines for the identification and formulation of public investment in STI. The analysis will also include the mapping of the different sources of STI financing such as public-private investment instruments or sovereign funds.

experience with the evolution of the STI governance will be conducted with focus on the identification of main role, functions, regulations, and resources of the MSIT. Based on this, the current capacities of CONCYTEC in design, articulation, monitoring, and evaluation of STI programs and projects will be examined along with its capacity gaps to act as a governing body of the national STI system. In parallel, to enhance the specific capacity in STI budgeting in relation to the public and private investment projects (PIP) financed by the Ministry of Finance, the STI gap indicators will be updated and complemented by the identification of alternative STI financing other than PIP. As a result, a roadmap and a series of recommendations will be put forward to close these gaps. The above-mentioned work will be led by the Korea Science and Technology Policy Institute (STEPI), which will be supported by a local consultancy dedicated on the STI indicators and financing.

3.2 **Component 2. Institutional evaluation and strengthening of existing innovation agencies and recommendations for the innovation agency ecosystem (US$100,000).** This component will analyze the strategic, political, operational, and technical capabilities of the executing innovation agencies, i.e., PROCIENCIA and PROINNOVATE. The evaluation is expected to be carried out by a panel of reviewers composed of Korean and international experts with the scope including the following themes: strategic vision, mission, goals, roles, governance, instruments portfolio, funding mechanisms, management structure, staff profiles, technological platform, selection and monitoring process of projects, and impact evaluation, among others. Institutional capacities gaps to improve effectiveness will be identified and respective roadmaps and recommendations will be proposed to close these gaps. Based on preliminary conversations, the review will be led by STEPI with a team of reviewers holding relevant knowledge and insight on innovation agencies of Korea, OECD countries and other Latin American countries. In addition, this component will examine the general ecosystem of public innovation agencies in Peru and how other innovation agencies could be designed or improve their existing functions, e.g., technological extension, public purchases, among others, in parallel with PROCIENCIA and PROINNOVATE.

3.3 **Component 3. Technical assistance for the pilot for technology appraisals for MSMEs (US$100,000).** In this component the Peru's Technology Rating system (PTRS)[7] model will be tested and validated with carefully designed technical assistance of the Korean Technology Finance Corporation (KOTEC) in a pilot for technological appraisals for SMEs. KOTEC will draw a work manual for professionals in charge of technology appraisals and conduct a pilot in close consultation with PROINNOVATE and other executing agencies where the results for appraisals will be evaluated, and the model will be updated for improved precision. This component will be carried out in parallel with the IDB operation -Innovation, Technological Modernization, and Entrepreneurship Program (PE-L1263) which will provide a funding for the technological guarantees program. A KOTEC's support has been assured to accompany PROINNOVATE, FOGAPI and COFIDE in the pilot project.

[7] In 2017/18, KOTEC carried out a KSP program with Innovate Peru – the predecessor of PROINNOVATE -, the Small Industry Guarantee Fund (FOGAPI) and the Peruvian National Development Bank (COFIDE). The KSP program focused on sharing experience of the Korean technological guarantees model and assessed the conditions for its implementation, previous local adaptation, to the Peruvian context. A first version of Peruvian technological guarantees model was developed and this will be piloted with the IDB funding (PE-L1263).

IV. Budget

4.1 The total budget of this TC is US$500,000.

Indicative Budget

Activity/ Component	Description	IDB/Fund Funding	Counterpart Funding	Total Funding
Component 1	A roadmap design for strengthening of CONCYTEC and recommendations on the STI governance system of Peru	250,000	TBD	250,000
Component 2	Institutional assessment, roadmap design and recommendations for the strengthening of PROCIENCIA and PROINNOVATE.	100,000	TBD	100,000
Component 3	Technical assistance for the pilot of technology appraisals for MSMEs	100,000	TBD	100,000
Coordination and Evaluation		50,000	TBD	50,000
Total		500,000	TBD	500,000

V. Executing agency and execution structure

5.1 This TC will be executed by the Bank upon request of the beneficiaries. This is based on the Bank's capacity to implement technical cooperation projects, its knowledge to identify highly qualified international consultants, and its experience in similar operations among different countries in the region. Bank's execution complies the Procedures for the Processing of Technical Cooperation Operations and Related Matters (OP-619-4)

5.2 The procurement of individual consulting services will be carried out by the Bank, in accordance with the IDB's Human Resources Department regulations (AM-650). The procurement of firm consulting services will be carried out by the IDB in accordance with the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank (GN-2765-4).

VI. Project Risks and issues

6.1 Potential project risks are associated with the political uncertainty currently prevalent in the country related to the current presidency and a change of government which may lead to the change of institutional enabling environment for the designed project. To counter these risks, a close monitoring will be followed by the IDB country office in Peru which will maintain a permanent dialogue with the Office of the Prime Minister and the Ministry of Economy and Finance to unblock potential problems. With regards to PROCIENCIA and PROINNOVATE no major risks have been identified provided that both Programs are fully operational and have resources from both the World Bank and IDB to support the implementation of their respective reforms.

VII. Environmental and Social Classification

7.1 Based on the characteristics of the project, no negative environmental or social risks are expected, thus the classification of this operation is Category “C” in accordance with the Environment and Safeguards Compliance Policy (OP-703).