

TERMS OF REFERENCE

Consultancy for diagnosis of Peru's STI governance system and institutional assessment for the enhancement of CONCYTEC and public innovation agencies.

[Peru]

[PE-T1510]

[Web link to approved document]

Supporting the institutional strengthening of Peru's National Science, Technology, and Innovation System.

1. Background and Justification

- 1.1 Peru's gross domestic product (GDP) averaged 4.6% annual growth from 2000 to 2019 (ECLAC, 2020). Signs of a slowdown, however, had already emerged by the end of this period. The crisis caused by the COVID-19 pandemic ended two decades of growth, with GDP declining 11.1% in 2020. Potential GDP growth was already on a long-term decline, from 7.1% in 2007 to 3.1% in 2019 (IMF, 2020). This growth depends on the accumulation of capital and labor and the productivity with which they are used. Productivity, which depends on innovation, grew 1.3% annually between 2000 and 2013 but since then has contracted by -0.2% per year (IDB, 2020). The slowdown in productivity is associated with the stagnation of innovation efforts since 2015.
- 1.2 Although Peru's national spending on science and technology has increased throughout the last decades (from 0,08% of the GDP in 2008 to 0,16% in 2019), it is still well below the Latin American average (0,56%). Low STI investment impacts negatively on productivity (about 60% of the USA) and competitiveness (60% of exports are concentrated in non-processed minerals).
- 1.3 The leading organization in charge of the institutional governance of STI system is the National Council for Science, Technology, and Innovation (CONCYTEC). Nevertheless, most of the STI policies in Peru are designed and implemented by sectorial Ministries (mainly the Ministries of Production, Agriculture, Mining and Education) due to a lower hierarchical structure CONCYTEC has towards the ministries, challenging coherent execution of STI policies and monitoring and evaluation. As consequence, more than 160 STI government programs are provided by different ministries, of which only 13 programs account for 75% of the total STI budget- meaning that most of the programs are very small in scale. About 85% of these programs are under the 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 execution resulting in low effectiveness of STI policy.
- 1.4 In 2021, the Government of Peru enforced a set of institutional reforms in an effort to resolve the above-mentioned challenges. First, two new national programs were created by absorbing some of

the functions of the individual programs that had been existing: 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 had funded scientific research and science, technology, engineering, and mathematics (STEM) scholarships, while PROINNOVATE gathers most of the resources related to technological development and innovation at the firm and start-ups level. Second, the Ministerial Commission for Science, Technology and Innovation was created at the Prime Minister's Office level to oversee the strategic orientation of STI. All the key line ministries are part of this Commission. Third, the Advisory Commission for Science, Technology and Innovation was also established with the participation of the private, academic, and non-governmental sectors to provide advice to the Ministerial Commission.

- 1.5 Regarding the governance gaps of the STI system, 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 impeller 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. However, the rector role of CONCYTEC still remains stable regardless and the STI governance needs to be enhanced to empower CONCYTEC to carry out its certain functions they are weak at today, such as policy design, monitoring, evaluation and, horizontal coordination with sectorial ministries. Furthermore, an important task remains with CONCYTEC to identify and help MEF 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.
- 1.6 Challenges remain at the implementation level as well. In the medium and long term, it is expected to unify the execution of STI funds into two national programs: PROCIENCIA and PROINNOVATE. The entities use competitive matching grants to accomplish respective goals with an expectation of expanding their instruments into loans, technological guarantees, and equity investment, particularly in the case of PROINNOVATE. Nevertheless, its current institutional capacity makes it challenging to meet the incremented responsibilities emerging from the institutional reform. PROINNOVATE's institutional capacity is at an intermediate level compared with other equivalents in the region, mostly due to the low level of autonomy and organizational flexibility in exploring innovation opportunities. In addition, lack of information technology infrastructure and high staff turnover also contribute to the weak institutional capacity.
- 1.7 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 meet 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 make operation highly dependent on the Treasury's budget transfers. Deploying reimbursable instruments

such as loans, equity investments, and issuing guarantees will help PROINNOVATE be more financially solid and stable.

- 1.8 About PROCENCIA, its interventions need to evolve to address the productive, social, and environmental challenges of Peru. Currently, most of the instruments that PROCENCIA operates are horizontal without strategic orientation. To counter this problem, PROCENCIA 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, PROCENCIA needs to tackle gender issues and regional imbalances. 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, PROCENCIA 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, PROCENCIA needs to improve the operations of Peru's large scientific research equipment by promoting practices of shared use, open access, networks of users, and collaboration across institutions.

2. Objectives

- 2.1. The general objective of this consultancy is to propose recommendations for strengthening CONCYTEC's functions and to explore ways to improve the existing and future innovation agencies' performance given the recent institutional reform in the STI system in Peru.

3. Scope of Services

The scope of the consultancy is detailed as follows:

- 3.1. To analyze the current status of the national STI governance system in Peru focusing on overlaps in functions and inefficiency in the deployment of resources from horizontal relations (across ministries) and vertical relations (between ministries, programs, and public institutes) of the national actors.
- 3.2. To diagnose the current institutional capacities of CONCYTEC as a steering body of Peru's STI system and propose set of recommendations and, preferably an action plan to strengthen the governing functions of CONCYTEC in relation to STI policy (design, articulation, monitoring, and evaluation), particularly focusing on the budgeting for STI in relation to the public and private investment system of the Ministry of Economy and Finance.
- 3.3. To closely work with the local consultancy assigned for the assessment of the MEF's National Investment System for supporting the STI sector and reflect its core findings in the recommendations for CONCYTEC.
- 3.4. To conduct a benchmark study on the STI governance system drawing on the model cases and experiences from Korea, OECD countries and other Latin American countries which can provide relevant implications for Peru with recommendation for tailored application to the Peruvian context.

- 3.5. Analyze and provide recommendations on the design of the ecosystem of public agencies for innovation including the existing public agencies (i.e PROINNOVATE and PROCIENTIAS) and other potential agencies in technological extension, public procurement for STI, industrial property, among others.
- 3.6. To assess strategic, operational, and technical capacity of PROCIENTIA and PROINNOVATE and identify capacity gaps to improve institutional effectiveness
- 3.7. To provide recommendations to close institutional capacity gaps and present a set of development roadmaps for PROCIENTIA and PROINNOVATE
- 3.8. To provide holistic policy recommendations on the STI Governance system in Peru to overcome the current institutional challenges.

4. Key Activities

- 4.1. Draft a work plan in coordination with the key government counterparts (CONCYTEC, PROCIENTIA, PROINNOVATE, and the working group under the Prime Minister's Office).
- 4.2. Conduct a literature study on the governance of the Peruvian STI system using existing documents focusing on horizontal and vertical coordination, resource allocation, and monitoring and evaluation of the STI policies, programs, and projects.
- 4.3. Validate and complement the information collected from literature review through focus-group interviews or survey in the national STI actors in Peru.
- 4.4. Select out case-specific Korean experiences and practices in the application of STI policy that holds high implications for the current situation in Peru.
- 4.5. Identify and evaluate the current capacities of CONCYTEC analyzing the existing weaknesses and challenges and draw out set of recommendations and action plan to close these capacity gaps to act as a steering body of the STI system in Peru.
- 4.6. on the design of the ecosystem of public agencies for innovation (technological expansion, public purchases, among others, beyond PROINNOVATE and PROCIENTIAS).
- 4.7. Analyze strategic, political, operational, and technical capacities of PROCIENTIA and PROINNOVATE.
- 4.8. Review and evaluate strategic vision, mission, goals, roles, governance, instruments portfolio, funding mechanisms, management structure, staff profiles, technological platform, selection and monitoring of projects, and impact evaluation of PROCIENTIA and PROINNOVATE
- 4.9. Identify institutional capacity gaps to improve the effectiveness of PROCIENTIA and PROINNOVATE
- 4.10. Provide recommendations to close the institutional capacity gaps identified and present a set of development roadmaps for PROCIENTIA and PROINNOVATE
- 4.11. Provide recommendations for future direction and prioritization of STI policy and desired layout of STI governance system in Peru, reflecting on new national demands on the STI sector.
- 4.12. Present the final report to the key national STI actors in Peru (CONCYTEC, PROINNOVATE, PROINNOVATE) to disseminate the findings.

5. Expected Outcome and Deliverables

5.1. The expected outcome from this consultancy is to help inform the innovation policy makers for an enhanced STI system and associated governance in Peru by providing a set of policy recommendations on the strengthening of CONCYTEC and the design of innovation agencies.

5.2. The deliverables to be submitted are as follows:

- Work Plan
- Interim report
- Final report
- Dissemination seminar

6. Project Schedule and Milestones

Milestones	Schedules
1. Work Plan	15 days after signing the contract
2. Interim report	12 months after signing the contract
3. Final report	20 months after signing the contract
4. Dissemination seminar	23 months after signing the contract

7. Reporting Requirements

7.1. *All reports and presentations should be delivered in English.*

#	Deliverable	Expected contents
1.	Work Plan	A detailed Work Plan including proposed activities, their sequence and timing, the proposed technical team, and the methodology to be used, specifying people responsible for each milestone.
2.	Interim report	<p>An interim report drafted based on the result of the interview contains at least but not limited to:</p> <ul style="list-style-type: none"> • Analysis of the current status of the STI governance system in Peru • Identification of existing and potential inefficiencies and drawbacks of the current STI governance system and its main actors • Identification of needs and capacity gaps of CONCYTEC and other national STI actors to improve their effectiveness. • Institutional assessment conducted by a panel of international peer reviewers composed of at least two reviewers experienced in Korean peer agencies, one reviewer experienced in another OECD country's peer agency, and one experienced in Latin American peer agency: assessment of PROCENCIA and PROINNOVATE on strategic vision,

		<p>mission, goals, roles, governance, instruments portfolio, funding mechanisms, management structure, staff profiles, technological platform, selection and monitoring of projects, and impact evaluation.</p> <ul style="list-style-type: none"> • Institutional capacity gaps identified to improve PROCENCIA and PROINNOVATE's effectiveness, recommendations to close the gaps and a development roadmap for each agency. • A survey form and its responses and/or interview guide and its responses transcribed in the annex.
3.	Final report	<p>A Final report drafted including the following elements but not limited to:</p> <ul style="list-style-type: none"> • Recommendations for the STI governance system in Peru
4.	Dissemination seminar	<p>An online/in-person seminar held to present the final report to the key national STI actors in Peru (CONCYTEC, PROINNOVATE, PROINNOVATE) to disseminate the findings.</p>

8. Acceptance Criteria

- 8.1.** The consulting firm will submit each deliverable in electronic format to the IDB Team Leader for evaluation. IDB will review deliverables in collaboration with government counterparts, if necessary and share collective feedback to which the CF should reflect and address in the final version. When deliverables reach a certain level of acceptance criteria, IDB will announce an approval of deliverables via email for processing payment. Deliverables must contain the corresponding supporting information in annexes and in the case of database, they must be incorporated as part of the deliverables.
- 8.2.** The Bank is the only responsible for accepting the products generated through the consultancy.

9. Other Requirements

N/A

10. Supervision and Reporting

- 10.1.** The IDB person in charge for giving comments to all deliverables and the supervision of work by the Consulting firm is the Team Leader, Juan Pablo Ventura, Sector Senior Specialist of the Competitiveness, Technology, and Innovation Division (CTI) at the IDB. It will be at the consulting firm's responsibility to decide the frequency of meetings with the relevant government counterparts, and ensure such meetings are conducted and reports are submitted to the Bank.
- 10.2.** As for the technical coordination in the pilot project, the supplier will have the Director of CONCYTEC as a focal point. The focal point monitors the development of the consultancy, supporting the supervision work of the Team Leader of the IDB. In this regard, CONCYTEC may provide observations, comments or instructions for changes, or a favorable technical opinion.

11. Schedule of Payments

- 11.1.** Payment for this lump-sum contract is up to \$335,000 and payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.
- 11.2.** The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
Deliverable	%
Contract signed and upon approval of the work plan	15%
Upon approval of Deliverable 2 and 3	45%
Upon approval of Deliverable 4	40%
Total	100%

Selection process #.....

TERMS OF REFERENCE

Assessment of the MEF's National Investment System for supporting the STI sector and alternative sources of financing

**[Peru]
[PE-T1510]**

Supporting the institutional strengthening of Peru's National Science, Technology, and Innovation System.

1. Background and Justification

Peru's gross domestic product (GDP) averaged 4.6% annual growth from 2000 to 2019 (ECLAC, 2020). Signs of a slowdown, however, had already emerged by the end of this period. The crisis caused by the COVID-19 pandemic ended two decades of growth, with GDP declining 11.1% in 2020. Potential GDP growth was already on a long-term decline, from 7.1% in 2007 to 3.1% in 2019 (IMF, 2020). This growth depends on the accumulation of capital and labor and the productivity with which they are used. Productivity, which depends on innovation, grew 1.3% annually between 2000 and 2013 but since then has contracted by -0.2% per year (IDB, 2020). The slowdown in productivity is associated with the stagnation of innovation efforts since 2015.

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), it is still well below the Latin American average (0,56%). Low STI investment impacts negatively in productivity (about 60% of the USA) and competitiveness (60% of exports are concentrated in non-processed minerals). 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. However, the methodologies used for the identification and formulation of STI projects (such as gap indicators and guidelines) are seriously outdated.

In the scope of the National System of Multiannual Programming and Investment, the gap indicators are used for the preparation and approval of projects in the Multiannual Investment Programming phase as well as for prioritization of projects in the sector portfolio. In the case of the STI sector, the gap indicators are prepared by CONCYTEC and approved by the PCM. The current indicators focus on the lack of capacities in public institutions while leaving behind private institutions. The General Guidelines for Public Investment Projects contains a set of recommendations for the identification of PIP that contribute to closing gaps. These guidelines orient investment actions towards the effectiveness, efficiency and impact of public investments. However, for the STI sector, there is a lack of investment guidelines to support the

formulation of PIP for knowledge generation, scientific and technological infrastructure and equipment, training of highly qualified human capital, scientific culture, and generation of innovations given the challenges that STI projects have in terms of intangibility of science and innovation and uncertainty of scientific and innovation results.

The Ministry of Finance (MEF), who is the responsible for allocating fiscal resources to finance STI activities, finds it necessary not only streamlining the budget allocation process but also increasing the public and private investment for STI activities. In the last 15 years, the main source of public funding for STI has been loans from the World Bank and the IDB as well as fiscal surpluses from the public treasury. Although these efforts have made it possible to increase the availability of resources for STI, they are still not sufficient if we consider how much a country with the same degree of per capita income as Peru invests in STI, market sophistication, population size, human capital and complexity of the productive structure should be investing. In this sense, it is urgent to mobilize resources through the National System of Multiannual Programming Investment, defining a set of gap indicators that reflects well the current necessities of STI system and that generates a permanent and growing flow of resources to finance STI activities.

In the private realm, Peruvian businesses do not invest much in innovation (2.0% of sales in 2017, compared with the respective regional and OECD averages of 2.5% and 4.0%) and do not present a neat pattern. An alternative to increase private investment in STI is to work within the National System for Private Investment Promotion, which establishes several instruments to mobilize private resources to finance public services and goods. Two important investment instruments of this system are the public-private partnerships (PPP), works for taxes (Oxl¹) and active projects (AP). Although the current PPP and Oxl legislation includes applied research and technological innovation projects in its typology, the definition of this typology is unclear and do not include infrastructure, capacity building and public services for STI, which has restricted the number of projects financed by this mechanism.

In this context, this consultancy aims to explore and improve public and private funding mechanism for supporting STI activities by assessing the MEF's National System of Multiannual Programming Investment and the National System for Private Investment Promotion, regarding investment gap indicators for the STI sector and methodological guidelines for the identification and formulation of public and private investment in STI.

2. Objectives

- 2.1.** The general objective is to assess the MEF's National System of Multiannual Programming Investment and the National System for Private Investment Promotion for supporting the STI sector.

3. Scope of Services

¹ Obras por impuestos (Oxl)

The scope of the consultancy is detailed as follows:

- 3.1. Update the STI sector gap indicators used for the preparation and approval of projects in the National System of Multiannual Programming Investment and the National System for Private Investment Promotion.
- 3.2. Improve the governance model to prioritize and approve STI projects.
- 3.3. Design guidelines and methodological approaches for design and implement STI investment projects in both systems

4. Key Activities

- 4.1. Draft a work plan in coordination with CONCYTEC.
- 4.2. Review and analyze current legislation regarding the National System of Multiannual Programming Investment and the National System for Private Investment Promotion
- 4.3. Propose an update the STI sector gap indicators of the National System of Multiannual Programming Investment and the National System for Private Investment Promotion (PPP, OXI, AP) in the scope of the Law 31250, the National STI Policy, the methodological guidelines of National Center for Strategic Planning (CEPLAN) and the Strategic Plan for National Development to 2050.
- 4.4. Elaborate a guideline for designing public investment projects in STI sector in the framework of National System of Multiannual Programming Investment and a methodological guide necessary for their implementation.
- 4.5. Propose a methodological guide for the use of PPP, Oxi and AP mechanisms in the framework of National System for Private Investment Promotion as alternative sources of private STI financing.
- 4.6. Analyze and propose the best governance option, including MEF and CONCYTEC, to prioritize and approve STI projects in both systems.
- 4.7. Present the results to the authorities of CONCYTEC and the IDB.
- 4.8. Participate of coordination meeting with CONCYTEC and the IDB.

5. Expected Outcome and Deliverables

5.1. The deliverables to be submitted are as follows:

- Work Plan. Detailed Work Plan including proposed activities, their sequence and timing, the proposed technical team, and the methodology to be used, specifying people responsible for each step.
- Preliminary report 1. A proposal for public investment gap indicators for STI sector and for governance for project prioritization.
- Preliminary report 2. Guidelines to design STI public investment projects, a methodological guide to implement STI public investment projects, and a methodological guide for the use of PPP, Oxi and AP mechanisms.
- Final report. This report integrates all the previous reports and the presentation of the results

to the CONCYTEC and the IDB.

6. Project Schedule and Milestones

Milestones	Deadline
5. Work Plan	15 days after signing the contract
6. Preliminary report 1	90 days after signing the contract
7. Preliminary report 2	160 days after signing the contract
8. Final report	180 days after signing the contract

7. Reporting Requirements

7.1. All reports and presentations should be delivered in Spanish.

8. Acceptance Criteria

8.1. The consultant will submit each deliverable in electronic format to the IDB Team Leader for evaluation. IDB will review deliverables in collaboration with government counterparts, if necessary and share collective feedback to which the CF should reflect and address in the final version. When deliverables reach a certain level of acceptance criteria, IDB will announce an approval of deliverables via email for processing payment. Deliverables must contain the corresponding supporting information in annexes and in the case of database, they must be incorporated as part of the deliverables.

8.2. The Bank is the only responsible for accepting the products generated through the consultancy.

9. Qualifications

9.1. The consultant must be a professional in economics, engineering or related disciplines and have national and / or international experience of at least 10 years in the design, implementation, or evaluation of STI policies, as well as at least 5 years of experience in public investment projects and/or in public-private mechanisms. The consultant should provide a list of relevant projects or consulting services provided in the last 10 years.

9.2. The consultant will be responsible for the overall coordination of the project activities, including communications with the IDB and the CONCYTEC.

10. Supervision and Reporting

10.1. The IDB person in charge for giving comments to all deliverables and the supervision of work by the consultant is the Team Leader, Gustavo Crespi, Principal Specialist of the Competitiveness,

Technology, and Innovation Division (CTI) at the IDB. It will be at the consultant's responsibility to decide the frequency of meetings with the relevant government counterparts, and ensure such meetings are conducted. and reports are submitted to the Bank.

- 10.2.** As for the technical coordination in the pilot project, the supplier will have the Director of STI Policies of CONCYTEC as a focal point. The focal point monitors the development of the consultancy, supporting the supervision work of the Team Leader of the IDB. In this regard, CONCYTEC may provide observations, comments or instructions for changes, or a favorable technical opinion.

11. Schedule of Payments

- 11.1.** Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.
- 11.2.** The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
Deliverable	%
Contract signed and upon approval of the work plan	15%
Upon approval of Preliminary report 1	20%
Upon approval of Preliminary report 2	30%
Upon approval of Final report	35%
Total	100%

TERMS OF REFERENCE

Consultancy for Technical Assistance in Technological Appraisal and Technological Guarantee Pilot in Peru

**Peru
IFD/CTI**

PE-T1510

Supporting the institutional strengthening of Peru's National Science, Technology, and Innovation System.

1. Background and Justification

- 1.9 Peru's gross domestic product (GDP) averaged 4.6% annual growth from 2000 to 2019 (ECLAC, 2020). Signs of a slowdown, however, had already emerged by the end of this period. The crisis caused by the COVID-19 pandemic ended two decades of growth, with GDP declining 11.1% in 2020. Potential GDP growth was already on a long-term decline, from 7.1% in 2007 to 3.1% in 2019 (IMF, 2020). This growth depends on the accumulation of capital and labor and the productivity with which they are used. Productivity, which depends on innovation, grew 1.3% annually between 2000 and 2013 but since then has contracted by -0.2% per year (IDB, 2020). The slowdown in productivity is associated with the stagnation of innovation efforts since 2015.
- 1.10 The performance of science, technology, and innovation (STI) system is reflected in Peru's productive structure, which has not undergone major changes in the last two decades remaining poorly diversified and concentrated in traditional commodity products. According to the Economic Complexity Index, which measures the relative knowledge intensity of an economy, Peru in 2017 ranked 81 out of 126 countries, below the other countries in the LAC region. The index reflects the current structure of the country's exports, which continue to be mainly oriented towards traditional products, mostly mining. Although non-traditional exports have increased in the last two decades mainly due to the increase in exports of agro-industrial products, they represent on average 26% of the total exports (BCRP, 2019). In addition, exports of high-tech products represent only 5% of total exports while in the LAC region this indicator is around 10% (World Bank, 2019). This situation makes the country highly vulnerable to the volatility of international commodity prices, uncertainty of international demand, especially from China, and external shocks (OECD, 2011 and 2016).
- 1.11 This background constitutes the rationale of the country to promote innovation and technology-oriented development; however, no substantial progress has been made in reducing gaps in this area in the past decades. One of the greatest challenges in this area is building national innovation agency's institutional capacity to support business innovation and technological development whose demand has greatly increased due to the recent institutional reforms in the national STI system.

- 1.12 The National Program for Technological Development and Innovation (Proinnovate), created by the Supreme Decree 009-2021-PRODUCE, carries out actions for business innovation, innovative entrepreneurship, and technology adoption. Although its functions and institutional capacity has not fully developed yet, it uses competitive matching grants to accomplish its goals, and expect to expand their financial instruments for business support into loans, guarantees and equity investments for technology promotion and innovation. One of the main pillars of Proinnovate's function is leveraging financial and non-financial measures for business innovation and technology development. In this regard, evaluating enterprises based on its technology level and issuing guarantees according to technology appraisals qualifies enterprises of low collateral capacity and/or in poor financial situation for private investment which in turn will result in country's long-term innovation and productivity.
- 1.13 Distinguished from conventional grants instruments, guarantee issuance based on companies' technology appraisals allows early staged tech-based SMEs and innovative start-ups liquidity from private investment. Peru developed the Peruvian Technology Rating System (PTRS) through the 17/18 Korea Knowledge Sharing Program² partnered with KOTEC/KIBO (hereinafter KIBO) where set of recommendations for implementation of PTRS were presented and technological appraisal model was customized to the Peruvian context. This model needs to be adopted and tested through the IDB loan PE-L1263 ("Innovation, Technological Modernization, and Entrepreneurship Program") with participating agencies (FOGAPI, COFIDE and Proinnovate), as part of individual business innovation and development of the technology extension services market subcomponents of the loan project.
- 1.14 Through the loan, Proinnovate in cooperation with FOGAPI and COFIDE will test and implement the PTRS by issuing innovation guarantees and technology modernization guarantees to 20 enterprises for approximately 6 to 8 months (total 60 enterprises for 4 to 5 years) ; 1) innovation guarantees will be provided for SMEs with innovation scaleup projects which will allow private financing for these projects up to 80% of the cost, for a maximum of US\$200,000 and up to 36 months; 2) technology modernization guarantees will be issued for SMEs with technology modernization plan suggested by the CITEs which will allow private financing for technology modernization projects for up to 80% of the cost, for a maximum of US\$240,000 and up to 48 months.
- 1.15 The 17/18 KSP project developed PTRS in close coordination with Peru having Peruvian SMEs as the main subjects for PTRS and selecting manufacturing and service sectors as industries for rating. It is noted that given the status quo of Peruvian industry and the overall requests by the Peruvian side, the KTRS-SM model, developed for evaluating startups, was considered more suitable for the case of PTRS and therefore adopted as the base model for PTRS.
- 1.16 As shown in the tables below, PTRS was developed with the set of indicators for manufacturing and service sectors from which indicators for other industries can be adjusted and developed. Corresponding weights for each indicator were drawn from AHP analysis for the PTRS rating.

² 2017/18 Knowledge Sharing Program with Peru: Promotion of Technology Guarantees and Technology Appraisal for MSMEs with Innovative and Technological Potential

Main category	Sub-subcategory	Objective		Subjective
		Metric	Non-metric	
1	Management capability	1.1.1 Experience in the same industry	O	
		1.1.2 Technology knowledge level	O	
		1.1.3 Degree of understanding of technology		O
		1.2.1 Entrepreneurship	O	
		1.2.2 Management skill	O	
2	Technology	2.1.1 Technology (design) personnel status	O	
		2.1.2 Record of technology development and awards	O	
		2.1.3 R&D infrastructure	O	
		2.2.1 Distinctiveness of technology		O
		2.2.2 Difficult to imitate	O	
		2.2.3 Position in technology lifecycle		O
		2.3.1 Completeness of technology		O
		2.3.2 Independence of technology		O
3	Market	3.1.1 Structure of targeted market	O	
		3.1.2 Growth prospect of market	O	
		3.2.1 Status of related industry	O	
		3.2.2 Competitiveness status		O
		3.3.1 Market barrier	O	
		3.3.2 Competitive edge	O	
4	Business feasibility	4.1.1 Production capacity	O	
		4.1.2 Adequacy of investment volume		O
		4.2.1 Marketing competency		O
		4.2.2 Potential to recover investments	O	

*4.2.2 has two options: metric and non-metric.

<Figure 1> PTRS Indicator Composition (Manufacturing)


Source: 2017/18 Knowledge Sharing Program with Peru

Large		Medium		Small	
1	Management capability	1.1	Knowledge Level	1.1.1	Experience of the Same Industry
				1.1.2	Technology Knowledge level
				1.1.3	Degree of Understanding in Technology
		1.2	Management Capability	1.2.1	Entrepreneurship
				1.2.2	Management Skill
2	Service	2.1	Service Infrastructure	2.1.1	Degree of recognition of service
				2.1.2	Service infrastructure
				2.1.3	Service experience
		2.2	Innovation Level of Service	2.2.1	Excellence of service
				2.2.2	Comparative Edge over among competing companies
				2.2.3	Competitiveness of service
		2.3	Completeness of Service	2.3.1	Degree of improvement effort of service quality
				2.3.2	Loyalty on Service
				2.3.3	Synergy Effect of Service
3	Market	3.1	Market Status	3.1.1	Structure of targeted market
				3.1.2	Growth prospect of market
		3.2	Competition Factors	3.2.1	Status of Related Industry
				3.2.2	Competitiveness Status
		3.3	Competitiveness	3.3.1	Market Barrier
				3.3.2	Competitiveness Edge
4	Business Feasibility	4.1	Production Capability	4.1.1	Production Capacity
				4.1.2	Adequacy in Investment Volume
		4.2	Profit Prospect	4.2.1	Marketing Competency
				4.2.2	Potential to recover investments


<Figure 2> PTRS Technology Rating Indicators (Services)

Source: 2017/18 Knowledge Sharing Program with Peru

1.17 Moreover, findings of the KSP proposed two final rating options for PTRS, combining technology rating from KTRS and existing credit rating from FOGAPI (See figure 3). Institutions in charge were expected to select either Option A or B or to design its own new option based on the two options presented.



	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	
R1	AAA		AA			BBB		BB			
R2	AA				A	BBB			B		CC
R3	BBB					BB			CCC		
R4	BB	B				CCC			CC	C	
R5	CC			C					D		



	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
R1	AAA		AA		A	BBB	BB	B	CCC	CC
R2	AA		A		BBB		B	CCC	CC	C
R3	A		BBB		BB					
R4	BB		B			CCC				D
R5	B	CCC		CC		C		D		

<Figure 3> Proposal on How to Combine Ratings for PTRS
Source: 2017/18 Knowledge Sharing Program with Peru

2. Objectives of the consultancy

2.1 The general objective of this consultancy is to provide technical assistance alongside the pilot testing of Peru's technological rating system (PTRS), accompanying Proinnovate, FOGAPI and COFIDE in the whole phase of design and implementation, as well as partially providing technical consultation on the monitoring and evaluation for technological rating for innovative SMEs.

2.2 Specific objectives of this consultancy are as follows:

- To diagnose the current situation and development stage of PTRS based on the 17/18 KSP recommendations including validating the implementation of final ratings calculation method proposed for PTRS in consultation with Proinnovate and FOGAPI
- To conduct a needs analysis for designing an updated model for PTRS since the previously developed model through 17/18 KSP in close consultation with FOGAPI and Proinnovate and if needed, to support modifying relevant indicators to suit other desired industries or project areas by setting different weights for business areas or key industries.
- Supervise and provide technical assistance throughout the whole process of pilot testing, from preparation to implementation, evaluation and monitoring stage of the technology appraisal.
- Identify gaps between the prerequisites for the to-be-developed PTRS and the current institutional capacities of FOGAPI, Proinnovate and COFIDE in their respective roles.
- To provide a technical training for experts and practitioners in charge of technology appraisal from participating agencies.
- Propose tailored approach and strategies and actions for executing agencies for successful and sustainable implementation of PTRS in the country.

3. **Key activities**

- 3.1 Draft the work plan in coordination with the executing agencies (FOGAPI, PROINNOVATE and COFIDE).
- 3.2 Review available information and conduct focus group interview or survey with the executing agencies to set a baseline for the pilot, diagnosing the current status and analyze a new to-be model for a pilot project based on the previously conducted KSP project.
- 3.3 Revisit and validate recommendations and models proposed in the KSP final report with execution agencies in terms of data availability, indicator hierarchy, applicability, etc in the context of preparing a pilot updating on necessary information.
- 3.4 Prepare a work manual for PTRS which will be served as a guide for technical staff in charge of PTRS work.
- 3.5 Identify potential exogenous environmental variables that would best suit the Peruvian context during the mission in Peru.
- 3.6 Review business plans and relevant document of 20 participating enterprises for pilot technology appraisals and conduct due diligence with technical experts from Proinnovate.
- 3.7 Provide technical assistance in designing and executing a pilot of PTRS in close coordination with Proinnovate.
- 3.8 Conduct a capacity building seminar for technology appraisals experts and professionals of executing agencies before the launch of the pilot.
- 3.9 Evaluate the operation of PTRS that will be implemented through the pilot, providing lessons learned and a set of recommendations for future application.
- 3.10 Determine exogenous environmental variables, evaluation indicators, and associated evaluation structure based on improved indicators during the span of assignment. Verify applicability and determinability of initial indicators based on the results of pilot PTRS and provide measures for regular update of exogenous environmental variables in close cooperation with local technical experts.
- 3.11 Propose a set of action plans to strengthen PTRS considering the inter-institutional coordination between FOGAPI, COFIDE and Proinnovate.

4. **Deliverables**

Deliverables to be submitted for each project milestone are described as follows:

#	Deliverable	Expected contents
1	Work Plan	a detailed Work Plan including proposed activities, their sequence and timing, the proposed technical team, and the methodology to be used, specifying people responsible for each milestone.
2	Diagnosis report and pilot plan	Diagnostic report drafted to identify the current status to implement PTRS based on the result of survey and/or interview containing the following aspects but not limited to: <ul style="list-style-type: none"> Analysis of the current status of PTRS operation and the level of adoption and development since the 17/18 KSP project.

		<ul style="list-style-type: none"> • Update the needs of participating agencies through survey and/or interview for pilot to optimize the model for the pilot since the KSP recommendations. • Identification of prerequisites and what is already in place for the pilot • Identification of gaps to implement a PTRS model through pilot and proposition of a methodology to optimize the new model for pilot. • A survey questionnaire with its response and/or interview guide with the transcription should be annexed in diagnosis report. <p>A pilot plan prepared in close coordination with Proinnovate based on the current status identified from the diagnostic report including the followings but not limited to:</p> <ul style="list-style-type: none"> • Clear description of the timeline of each phase of pilot, roles of participating institutions, activities to be executed in each phase (preparation, implementation and validation and evaluation) and other components the CF may see necessary.
3	Technology appraisal experts training	<p>On-site training for experts and professionals in charge of technology appraisals including the following aspects:</p> <ul style="list-style-type: none"> • Definition and types of technology appraisal • Workflow of technology appraisal procedure • Scope and method of collecting data for technology appraisal • Guide on how to write a technology-based business plan for firms applying for technology guarantees • Evaluation criteria and detailed guidelines for PTRS
4	Work manual for technology appraisal	<p>A technical manual developed, detailing step-by-step workflow for experts implementing the PTRS including the following aspects:</p> <ul style="list-style-type: none"> • Roles and responsibilities of executing agencies • Detailed step by step guideline for PTRS each index
5.	Pilot report and presentation	<p>A report summarizing phased activities of the executed pilot from preparation to implementation and evaluating the results of the pilot conducted including the following aspects but not limited to:</p> <ul style="list-style-type: none"> • To identify challenges and areas of improvement in practical application, evaluate the appropriateness of rating variations, convenience of evaluation, and indicator determinability. • A seminar held to present the pilot report sharing experience and disseminating lessons learned from the pilot to the executing agencies and the IDB.

5. Acceptance Criteria

5.1. The consulting firm will submit each deliverable in electronic format to the IDB Team Leader for evaluation. IDB will review deliverables in collaboration with government counterparts, if necessary and share collective feedback to which the CF should reflect and address in the final version. When deliverables reach a certain level of acceptance criteria, IDB will announce an approval of deliverables via email for processing payment. Deliverables must contain the corresponding supporting information in annexes and in the case of database, they must be incorporated as part of the deliverables.

5.2. The Bank is the only responsible for accepting the products generated through the consultancy.

6. Qualifications

6.1. General requirements: The team must have national and / or international experience of at least 10 years in executing and advising on technology appraisals and technology guarantee issuance. The team must include at least one team leader that will be responsible for the overall coordination of the project activities and management of the team and will act as the primary contact for communications with the IDB and Proinnovate.

6.2. Team Composition: The team should be comprised of practitioners and researchers in technology appraisals including at least one specialist in rating indicators classification and sophistication, one specialist in public innovation agency capacity building, and one specialist in testing Korea's Technological Rating System in developing countries.

7. Characteristics of the Consultancy

- Contract category and modality: Products and External Services Contractual(PEC), International, Firm, Lump Sum
- Workplace: mostly remote with mission trips to Lima, Peru (*The advertised consultancy is expected to have three missions with one additional preliminary mission at the cost of the consulting firm*)
- Contract duration: 8 months

8. Schedule of Deliverables and Milestones

Deliverables	Deadline
1. Work Plan	15 days after signing the contract
2. Analysis report and pilot model	16 th week
3. Technology appraisal experts training	20 th week
4. Work manual for technology appraisal	24 th week
5. Pilot report and presentation	32 th week

- a. The deadline of deliverables indicated above can be adjusted by the mutual consent between KOTEC and IDB, which will be negotiated based on the technical proposal submitted by KOTEC.

9. **Supervision and Reporting**

- 9.1 The person responsible in the IDB for the consultancy and the comments to the reports generated by the Consulting firm will be Juan Pablo Ventura, Senior Specialist of the Competitiveness, Technology, and Innovation Division (CTI) at the IDB. It will be consulting firm's responsibility to ensure that all required meetings in the countries are conducted, and reports are submitted to the Bank.
- 9.2 As for technical coordination in pilot project, the supplier will have the Director of Proinnovate as a focal point. The focal point monitors the development of the consultancy, supporting the supervision work of the Team Leader of the IDB. In this regard, Proinnovate may share observations, comments or instructions for changes, or a favorable technical opinion.

10. **Payment and Conditions**

- 10.1 Payment for this lump-sum contract is up to \$100,000 and the payment terms will be based on project deliverables. The Bank wishes to receive the most competitive cost proposal for the services described herein. The official IDB exchange rate indicated in the RFP will be applied for the necessary conversions of payments in local currency. Payments are made pending the approval of the corresponding deliverables, according to the detailed schedule:

Payment Schedule	
Deliverable	%
Upon reception and approval of Deliverable 1	15%
Upon reception and approval of Deliverable 2, 3	40%
Upon reception and approval of Deliverable 4, 5	45%
Total	100%