

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

ECUADOR

**STRENGTHENING OF THE INNOVATION ECOSYSTEM IN
COASTAL ECUADOR**

(EC-L1261)

LOAN PROPOSAL

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2.	Monitoring and evaluation plan
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ABBREVIATIONS

AWP	Annual work plan
EDGE	Excellence in Design for Greater Efficiency
ESPOL	Escuela Superior Politécnica del Litoral
FORD	Fields of Research and Development
GDP	Gross domestic product
ICB	International competitive bidding
IICQ	International individual consultant selection based on qualifications
LOES	Higher Education Act
MSMEs	Micro, small, and medium-sized enterprises
NCB	National competitive bidding
PCU	Program coordination unit
QCBS	Quality- and Cost-Based Selection
R&D	Research and development
SIRR	Social internal rate of return
SNPV	Social net present value

PROJECT SUMMARY
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Financial Terms and Conditions				
Borrower:			Flexible Financing Facility ^(a)	
Escuela Superior Politécnica del Litoral (ESPOL)			Amortization period:	25 years
Executing agency:			Disbursement period:	5 years
ESPOL			Grace period:	5.5 years ^(b)
Guarantor:			Interest rate:	SOFR-based
Republic of Ecuador			Credit fee:	^(c)
Source	Amount (US\$)	%	Inspection and supervision fee:	^(c)
IDB (Ordinary Capital):	40,000,000	100	Weighted average life:	15.25 years
Total:	40,000,000	100	Approval currency:	U.S. dollar
Project at a Glance				
Project objective/description: The program's general development objective is to enhance business labor productivity in the coastal region through greater investment in science, technology, and innovation activities. The specific development objectives are to: (i) strengthen ESPOL's scientific output and links focused on the needs of the productive sector in the coastal region; and (ii) promote the creation and growth of new technology-based ventures in Guayaquil.				
Special contractual conditions precedent to the first disbursement of the loan: The borrower will provide evidence to the Bank's satisfaction of: (i) approval by ESPOL's Polytechnic Council of the program Operating Regulations and entry into force of the Regulations in accordance with the terms and conditions previously approved by the Bank; and (ii) appointment by ESPOL of key staff members to the program coordination unit, including: (a) program Executive Director; (b) analyst for procurement using international organization funding and policies; and (c) financial management support analyst (paragraph 3.9).				
Exceptions to Bank policies: A partial waiver has been requested from the Board of Executive Directors of the Bank policy on Guarantees Required from the Borrower (Operational Policy OP-303), with respect to the stipulation by the Republic of Ecuador to guarantee the counterpart and performance obligations (paragraph 3.10).				
Strategic Alignment				
Challenges: ^(d)	SI <input type="checkbox"/>	PI <input checked="" type="checkbox"/>	EI <input type="checkbox"/>	
Crosscutting themes: ^(e)	GE <input checked="" type="checkbox"/> and DI <input type="checkbox"/>	CC <input checked="" type="checkbox"/> and ES <input type="checkbox"/>	IC <input checked="" type="checkbox"/>	

- ^(a) Under the terms of the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes to the amortization schedule, as well as currency, interest rate, commodity, and catastrophe protection conversions. The Bank will take operational and risk management considerations into account when reviewing such requests.
- ^(b) Under the flexible repayment options of the Flexible Financing Facility, changes to the grace period are permitted provided that they do not entail any extension of the original weighted average life of the loan or the last payment date as documented in the loan contract.
- ^(c) The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with the applicable policies.
- ^(d) SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).
- ^(e) GE (Gender Equity) and DI (Diversity); CC (Climate Change) and ES (Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem to be addressed, and rationale

- 1.1 **Country macroeconomic context.** Growth in the Ecuadorian economy averaged 3.5% annually over the 2000-2019 period. Due to the COVID-19 pandemic, gross domestic product (GDP) fell 7.8% in 2020 before expanding 4.2% in 2021. Growth in 2022 is expected to be below that of emerging and developing countries (2.9% versus 3.7%) [1].¹
- 1.2 **Profile of the region.** Ecuador's coastal region² generates 47% of GDP [2], and its agricultural, aquaculture, and fishing sector has a specialized exporting tradition, accounting in total for 26.1% of the region's production and 49.9% of its exports.³ Constant problems arise with regard to the main export goods, demanding collective innovation efforts that are important not only for the region's productivity (paragraphs 1.3 and 1.4), but also for enhancing its climate resilience.⁴ The economic heart of the region is the city of Guayaquil, which hosts 50.4% of Ecuador's companies and 71.4% of those in the coastal region [3].⁵ Small and medium-sized enterprises account for 7% of companies in Guayaquil, while 92% are microenterprises [3]. The latter segment is linked more to entrepreneurship by necessity, rather than opportunity [25] (paragraph 1.5).
- 1.3 **Problem.** In common with the rest of the country,⁶ the region exhibits structural productivity problems: between 2012 and 2019, labor productivity declined by 0.4% each year on average, and this trend deteriorated even further in subsequent years due to the COVID-19 pandemic [3]. The main factors hindering productivity growth in the coastal region are: (i) insufficient scientific research and coordination with the regional productive sector, and (ii) the lack of a dynamic entrepreneurial system that would help to increase the complexity of the economy [9][10].
- 1.4 **Insufficient scientific research and coordination with the productive sector.** Levels of research and development (R&D) are low in Ecuador compared with those in high-income countries (0.4% of GDP, versus 2.4% on average in countries belonging to the Organisation for Economic Co-operation and Development). This weakness is even more pronounced in the coastal region, where the indicator is only 0.2% [5].⁷ Scientific output is 75% below that of the Sierra (highland) region,⁸ which

¹ For references in brackets, see the Bibliography ([optional link 7](#)).

² The coastal region consists of seven provinces: Guayas, Manabí, Santo Domingo, Esmeraldas, Los Ríos, Santa Elena, and El Oro.

³ Authors' calculations based on Central Bank of Ecuador and Servicio de Rentas Internas [Internal Revenue Service] data, respectively. For example, the banana industry alone generates approximately US\$3 billion in free-on-board value each year [29] (35% of agricultural GDP and 2% of national GDP) [30].

⁴ Bananas, for example, are threatened by the Fusarium Tropical race 4 (TR4) disease, which is already present in Colombia and Peru. Should it spread to Ecuador, it could potentially decimate the country's entire output. In the case of fine cocoa, 45% of samples exceed cadmium levels permitted by the European Union.

⁵ Includes only profit-seeking companies. Guayaquil's zone of influence (planning zone 8) includes the cities of Durán and Samborondón.

⁶ Between 1990 and 2019, total factor productivity accounted for only 1% of economic growth in the country [7]. The economic complexity of exports has declined over the last decade [8].

⁷ In particular, national investment in R&D in the agroindustry sector is the lowest in Latin America [12].

⁸ Scopus publication database [5].

is of similar economic importance. One strategy for promoting private sector investment in R&D is by encouraging collaboration with academia: the evidence shows that companies that collaborate with universities increase their R&D expenditure per employee by 30% [13], while also generating positive externalities that improve the performance of the rest of the companies in the same sector and region [21][34]. Nonetheless, collaboration between universities and companies does not come about easily, as each has a different system of incentives [14].⁹ In the case of Guayas—the main coastal province—the proportion of companies engaging in R&D activities with universities fell from 4% in 2012-2014 to 1% in 2019-2021 [11]. This reduces the competitiveness of the productive sector, which depends on an ongoing basis on the existence of local research capabilities [5] (paragraph 1.2).

- 1.5 **The coastal region lacks an established system of dynamic and innovative enterprises.** Only 17% of technology start-ups in Ecuador are located in Guayaquil, while 58% are in Quito [31].¹⁰ This reflects inadequacies in the institutional framework for support to high-impact ventures,¹¹ aimed at facilitating both the creation of management capacities and access to financing. The evidence indicates that providing buildings and programs to create networks between start-ups and corporations helps to promote innovative behavior and knowledge spillovers [16][17]. The problem is even more significant in the case of women-led enterprises ([optional link 3](#)), which in Ecuador face greater challenges in growing and surviving, particularly those focused on technology and digital services. Many women are excluded from advances in the digital economy [18] and have lower levels of education and training [19][20] (paragraph 1.16).
- 1.6 **The Escuela Superior Politécnica del Litoral (ESPOL) as a promoter of regional productivity.** Located in Guayaquil, ESPOL is the top university in the country in terms of research capacity [4].¹² It has the number one business school in the country (the ESPOL Postgraduate Business School (ESPAE)) and the main Center for Entrepreneurship and Innovation in the coastal region (i3lab) [6]. ESPOL generates abundant scientific output, organized around 13 research centers and 9 laboratories. In 2015, it designed the Innovation Zone for Ecuador's Coastal Region (ZILE) as a strategy for bringing actors in the quadruple helix together to promote regional development. In 2017, it obtained government approval to operate a Special Economic Development Zone (ZEDE), allowing knowledge-intensive enterprises that establish themselves in a specific area of its campus to obtain tax benefits. According to a recent analysis of regional productive development [10], there is no lead entity engaged in coordinating innovation activities in the coastal region. As the main university in the region, ESPOL occupies a privileged position

⁹ While universities tend to supply new knowledge and disseminate it openly, the private sector focuses on appropriating its returns.

¹⁰ Start-ups in the Province of Guayas also exhibit lower rates of survival than in Pichincha, and their founding teams have less experience and lower levels of education than in the rest of the country [15].

¹¹ There are no business accelerators in the coastal region, and the four incubators recognized by the Department of Higher Education, Science, Technology, and Innovation serve a limited number of companies each year.

¹² ESPOL accounts for more than 40% of scientific output in the coastal region [5].

that has not been fully leveraged because of limitations in infrastructure and coordination capabilities with respect to the private sector.

- 1.7 With respect to research, ESPOL's agroindustry-related laboratories and research centers¹³ are scattered across the 690 ha of its main campus, hindering synergies and interaction between them. Difficulties in upgrading laboratories¹⁴ have curtailed research opportunities in fields that are important for regional economic activity (paragraph 1.4). In 2022 alone, 63 R&D project opportunities were lost in the area of agricultural biotechnology, with a total value of US\$275,972, as well as 10 projects in the food sector valued at more than US\$1 million ([optional link 8](#)). This infrastructural deficiency also limits the extension and technology transfer capabilities needed to establish links with the productive sector.
- 1.8 With respect to promoting the entrepreneurial ecosystem, ESPOL lacks a physical space for coordinating its activities with startups (paragraph 1.6). It is also located far from the urban innovation corridor that has been established on the city's coast (paragraph 1.9), hindering interaction with the main actors in the innovation ecosystem ([optional link 9](#)).
- 1.9 **Proposed intervention.** Supported by a sovereign guarantee from the Republic of Ecuador, ESPOL¹⁵ has requested the Bank's support to design a program to strengthen the innovation ecosystem in the coastal region. The program aims to strengthen the innovation ecosystem in the region, with a focus on ESPOL as the coordinator of scientific and entrepreneurial activity in the region. Through its two components, it seeks to resolve ESPOL's infrastructure constraints in order to strengthen its coordination with the private sector.¹⁶ Component 1 will support scientific output and coordination between the academic and business sectors. It provides for the construction and equipping of an agroindustry building in ESPOL's Gustavo Galindo Campus (paragraph 1.20); this will house laboratories of varying degrees of complexity, some of which will be unique in the country (paragraph 1.14). This will allow critical biological research to proceed regarding the region's main export crops (paragraphs 1.4 and 1.7). It also includes financing for collaborative R&D projects between ESPOL and companies in the aquaculture and agroindustrial sectors (paragraph 1.21). To strengthen university-business coordination, extension and technology transfer capabilities will be reinforced and technology extension projects will be developed (paragraph 1.23). Component 2 centers on the creation and expansion of technology-based companies in Guayaquil. To this end, facilities will be upgraded in Distrito 100 (paragraph 1.27), a heritage building that belongs to ESPOL and is located in the city's innovation corridor ([optional link 9](#)). The aim will

¹³ These include the laboratories in the Ecuadorian Center for Biotechnological Research (CIBE), Agricultural Sciences, Food, and Ocean Sciences.

¹⁴ [Optional link 8](#) describes the deficiencies in the laboratories concerned, accompanied by photographic records in Annex 3 of the link.

¹⁵ ESPOL is an autonomous, nonprofit legal entity under public law. This allows it to generate its own revenues in addition to those allocated by the public administration.

¹⁶ Between 2010 and 2020, ESPOL executed the Multiyear Investment Program in the amount of US\$80.6 million in order to improve its infrastructure, including works such as: (i) the Information Technology Center building; (ii) the STEM Postgraduate Studies building; and (iii) the remodeling of the National Aquatic and Marine research Center.

be to provide a hub for business incubator and pre-accelerator activities (paragraph 1.28), thus leveraging the benefits of agglomeration and network economies (paragraph 1.10). Open innovation challenges will also be included with anchor companies, as well as activities to promote digitalization (paragraph 1.28).

- 1.10 **International evidence** highlights the role of academia in promoting R&D activities in companies [13], as well as the spillover effects of collaborative research projects between universities and companies on productivity in the geographical region in which they are based [21]. Studies of the region also highlight the coordinating role of universities in dynamic entrepreneurship systems, which in turn allows them to keep their curriculums up-to-date in response to changing market requirements [22]. While the promotion of such ventures through incubator and accelerator activities has been shown to have a positive impact on the performance of entrepreneurs in the region [23][24], proximity and network economies are also important for driving innovation and knowledge spillovers [16][17].
- 1.11 **Bank experience in the region and country.** The Bank has extensive experience in promoting the region's innovation ecosystems. The following programs in particular have served as benchmarks for this operation: (i) the Innovation Program for Productive Development ([3315/OC-UR](#), [3316/CH-UR](#), approved in 2014), which included similar strategies for promoting collaborative innovation to those included in Subcomponent 1.2 of this operation (paragraph 1.21); (ii) the Business Innovation and Entrepreneurship Project ([4329/OC-UR](#), approved in 2017), which included idea and business incubation and acceleration activities that served as a benchmark for the design of Subcomponent 2.2 of this operation (paragraph 1.28); (iii) the Innovation, Technological Modernization, and Entrepreneurship Program ([5287/OC-PE](#), approved in 2021), which, as in the case of this operation, focused on fostering both collaborative innovation and innovative entrepreneurship (among other things); (iv) the Federal Innovation Program ([5293/OC-AR](#), approved in 2021), which includes the creation and strengthening of technology centers that offer services to companies in its area and financing for the improvement, renovation, or new construction of buildings for the effective functioning of the country's science and technology institutions; and (v) Enhancing the National Quality Infrastructure for Economic Diversification and Trade Promotion ([3824/BL-GY](#), approved in 2016), which included the expansion of the facilities of the Guyana National Bureau of Standards, including laboratories for metrology, testing, chemistry, microbiology, and legal metrology. The program is also based on a series of studies in Ecuador that were contracted under client support technical cooperation agreement [ATN/OC-15686-EC](#) (approved in 2016 for US\$250,000, 100% disbursed); these analyzed international experiences and the innovation and entrepreneurial ecosystem in Ecuador's coastal region.
- 1.12 **Complementarity with other IDB Group operations.** The program is complemented by the following operational support technical cooperation agreements: (i) Support for Institutional Strengthening of ESPOL ([ATN/OC-17827-EC](#), approved in 2019 for US\$146,487, 81.52% disbursed); and (ii) Strengthening ESPOL's Capacities to Eliminate Productivity Gaps in the Coastal Region ([ATN/OC-19768-EC](#), approved in 2019 for US\$200,000, 0% disbursed). Both of these contribute to the design of the operation and the strengthening of ESPOL's institutional capacities so that it can execute the activities under this operation in a timely and appropriate manner. They will strengthen administrative, fiduciary, and procurement capabilities in response to the new activities within the framework of this operation (paragraph 2.4).

- 1.13 **Lessons learned.** The Innovation, Science, and Technology Sector Framework Document (document GN-2791-3) indicates that: (i) investment in innovation is a priority against a backdrop of accelerating technological change, and (ii) it is important to leverage the capabilities of existing institutions in innovation systems, a factor that justifies executing the intervention through an established agent such as ESPOL (paragraph 1.6). Regional experience (paragraph 1.11) highlights the importance of: (i) creating multisector and multidisciplinary R&D capabilities by promoting collaborative innovation (paragraph 1.21); (ii) adopting mission-driven research agendas concentrating on specific challenges for the region (paragraphs 1.21 and 1.23); (iii) developing linkages between technology centers and industry to ensure that research is relevant (paragraphs 1.21 and 1.23); (iv) planning for the long term in building R&D capabilities and achieving results (paragraphs 1.23 and 1.28); and (v) ensuring in advance the identification, availability, and technical viability of the site where there are plans to build or modify a work (paragraphs 1.20 and 1.27). These lessons are included in the design of both components, with support to strengthen ESPOL's linkage capabilities and collaborative activities with the private sector (to mitigate the risks identified in paragraph 2.4).
- 1.14 **Bank additionality and value added.** This operation draws on diagnostic assessments that are based on work carried out under the technical cooperation agreements with ESPOL (paragraphs 1.11 and 1.12). Component 1 of this operation includes the construction and furnishing of biosafety Level 3 laboratories,¹⁷ which do not currently exist in the country and are necessary for critical research regarding the main export crops. The joint funding of R&D activities with the private sector (paragraph 1.21) will ensure the relevance of this research. Component 2 will boost ESPOL's high-impact startup development activities by concentrating these efforts in a single physical space (paragraph 1.27) that is connected with actors in Guayaquil's urban innovation ecosystem. This will strengthen the role of ESPOL in the entrepreneurial ecosystem.
- 1.15 **Strategic alignment.** The program is aligned with the second Update to the Institutional Strategy (document AB-3190-2), and with the productivity and innovation challenge specifically, as it fosters knowledge generation and innovation activities in companies. It is directly aligned with the crosscutting themes of: (i) Institutional Capacity and Rule Of Law, as it strengthens ESPOL's institutional capacities; (ii) Climate Change, as the buildings financed will obtain EDGE (Excellence in Design for Greater Efficiency) green building certification, the equipment procured will have energy efficiency seals, and funding will be provided for research and innovation activities to address climate change challenges (based on the [multilateral development banks' joint methodology](#) for estimating climate financing, it is estimated that 86.3% of project funds will contribute to climate change objectives); and (iii) Gender Equity, since it promotes dynamic entrepreneurship in Guayaquil with a gender approach (devoting at least 33% of the prototyping funds for incubation-acceleration programs under subcomponent 2.2 (paragraph 1.16)). In addition, the program is coordinated with the Gender and Diversity Sector Framework Document

¹⁷ This level allows work with pathogens that typically cause serious illness in humans and animals but which are not normally transmitted from one infected individual to another (high individual risk, low community risk).

(document GN-2800-13) and with one of the priority thematic areas in the IDB Group Gender and Diversity Action Plan 2022-2025 (document GN-3116-1): improving economic opportunities for women (at least 50% of the training budget for technical profiles under subcomponents 1.3 and 2.2 will be devoted to women professionals (paragraph 1.16)). The operation fulfills the established guidelines for alignment with Category 1 of the Employment Action Framework with a Gender Perspective (documents OP-2289-1 and GN-3057), as it provides for analyses, interventions, and indicators relating to the companies, enterprises, and talent pillars, and consistently mainstreams a gender approach within these pillars. The operation also contributes to the “enterprises provided with technical assistance” indicator under the Corporate Results Framework 2020-2023 (document GN-2727-12). It is consistent with line of action 2 of the Innovation, Science, and Technology Sector Framework Document (document GN-2791-13)—boost investment in key public goods for innovation—as it expands scientific research efforts and infrastructure. The program is furthermore aligned with the Sector Strategy on Institutions for Growth and Social Welfare (document GN-2587-2), as regards the priority area of strengthening institutional capacities for implementing innovation policies. Similarly, it is aligned with the IDB Group country strategy with Ecuador 2022-2025 (document GN-3103-1), through the strategic objective of expanding the coverage and quality of physical and technological infrastructure, with consideration given to the inclusion of women’s leadership. Lastly, the operation is included in the 2023 Operational Program Report (document GN-3154-1).

- 1.16 **Gender considerations.** Ecuador’s total early-stage entrepreneurial activity (TEA) rate is one of the highest in the world, as is its female TEA. However, few women-led businesses establish themselves in the Ecuadorian market (11.1% in 2019) [25]. This is associated with a lack of dynamism in entrepreneurial ecosystems, as well as the barriers faced by women (economic violence,¹⁸ limited access to resources, and human capital barriers), all of which place them at a disadvantage compared with men when developing and sustaining ventures (particularly digitally-based ones). The main reason that female entrepreneurs abandon their businesses is the perception that they lack the skills and knowledge to succeed [26]. Only 16% of female entrepreneurs in Ecuador have completed university or technical vocational education [20], and the rate of digital illiteracy among women in the country is three percentage points higher than for men [19]. In terms of scientific research, only 35% of accredited researchers in Ecuador are women [32]. Although female participation in engineering and technology research is among the highest in the region, the gap between men and women remains wide (37% versus 63%) [33]. This operation will promote technology-based female entrepreneurship through the incubation and acceleration of women-led businesses (paragraph 1.28), for which subcomponent 2.2 will devote at least: (i) 33% of the prototyping funds included in the incubation and acceleration programs for women-led startups; (ii) 12.5% of the funds allocation to open innovation challenges will address issues of gender equality; and (iii) 50% of the funds allocation to training digital facilitators will be devoted to women. Gender-equitable training will also be provided technology transfer, devoting 50% of the funds allocated for such purposes under subcomponent 1.3 to women

¹⁸ Economic or property violence is any act that impairs women’s economic or capital resources, including the common property of married or cohabiting couples.

professionals (paragraph 1.25). In addition, technical cooperation resources will be used to ensure that these outcomes are achieved (paragraph 1.12).¹⁹

- 1.17 **Climate change considerations.**²⁰ Ecuador is vulnerable to climate change. For example, among major coastal cities, Guayaquil is the third most vulnerable to floods according to the relative vulnerability index.²¹ The coastal region lies within the zone of influence of the El Niño-Southern Oscillation phenomenon, which creates hydrometeorological threats such as floods, droughts, heat waves, and changes in precipitation that are exacerbated by climate change. These have significant effects on the agricultural sector: increased rainfall and temperatures could significantly reduce the productivity of crucial crops such as coffee, cocoa, and bananas. Having signed and ratified the Paris Agreement, Ecuador has committed to reduce greenhouse gas emissions and increase the resilience and adaptation capacity of its most vulnerable regions, prioritizing sectors including agriculture, ranching, aquaculture, fishing, and tourism [28]. As a result, strengthening ESPOL's research and innovation agenda with respect to climate change resilience, mitigation, and adaptation (paragraph 1.22) will be useful for assisting the coastal region to reduce and prepare for the impacts of climate change. At the same time, through the use of EDGE criteria, care will be taken regarding the impact of infrastructure works under the program (paragraphs 1.20 and 1.27).

B. Objectives, components, and cost

- 1.18 **Objective.** The program's general development objective is to enhance business labor productivity in the coastal region through greater investment in science, technology, and innovation activities. The specific objectives of this operation are to: (i) strengthen ESPOL's scientific output and links focused on the needs of the productive sector in the coastal region; and (ii) promote the creation and growth of new technology-based ventures in Guayaquil.
- 1.19 **Component 1. Strengthening research, extension, and technology transfer capabilities for the sustainable development of Ecuador's coastal region (US\$19,960,900).** This component focuses on strengthening R&D for the coastal region's main economic activities (primarily agroindustrial in nature). It has three subcomponents:
- 1.20 **Subcomponent 1.1. Strengthening of sustainable infrastructure and equipment for research (US\$15,599,366).** To expand ESPOL's research capabilities, this subcomponent provides for the architectural and engineering design, construction, and equipping of an agroindustry building at ESPOL. This building is designed around five platforms: (i) bioincubation (bioproducts), (ii) biotechnologies for agroindustry, (iii) agroindustrial extension, (iv) clean technologies for agroindustry, and (v) shared services. Located in an available area of 25,230 m² within ESPOL's Gustavo Galindo Velasco Campus, the building (9,875 m²) will have biosecurity level 2 and

¹⁹ Thus, the budgetary allocation to gender issues is expected to be higher than these percentages, which are based on ESPOL's experience in similar programs, as detailed in the Results Matrix.

²⁰ Throughout this document, all references to activities that contribute to climate change objectives relate to climate resilience and the adoption of adaptation measures and mitigation actions.

²¹ The relative vulnerability index measures average annual losses due to floods as a percentage of GDP [27].

3 laboratories;²² a pilot food processing plant; greenhouses; a waste processing area; an area for businesses; and an administrative area (see [optional link 8](#)). Design of the facilities will follow principles of sustainability and efficiency in consumption and materials, and EDGE certification will be secured. In addition, the information technology and laboratory equipment procured during the equipping stage will have energy efficiency seals, yielding expected energy savings of at least 20%. The specific procurement terms for specialized goods are listed in the [program Operating Regulations](#).

- 1.21 **Subcomponent 1.2. Financing of research projects in priority areas (US\$2,200,376).** This will consist of the design and implementation of three competitions aimed at cofinancing at least nine multi- or cross-disciplinary research projects in ESPOL's priority areas.²³ Each individual project will last up to 24 months, with a maximum budget of US\$300,000. ESPOL will contribute a maximum of 70% of the total, and part of the counterpart financing may be provided in kind, consistent with the requirements set out in the [program Operating Regulations](#). Preliminary project designs may be submitted by individual companies, consortiums, or companies working with third parties (trade associations, government agencies, nongovernmental organizations, etc.). Participating companies must be legally incorporated and located in Ecuador. They may be of any size, and preference will be given to companies that are ESPOL startups or spinoffs, or are located or being incubated/accelerated in ESPOL.
- 1.22 Preliminary project designs must meet the minimum criteria set out in the [program Operating Regulations](#), which include addressing the agroindustrial and aquacultural needs of the coastal region and contributing to climate change objectives. The [program Operating Regulations](#) also establish desirable criteria that will allow projects with the same expected level of social benefit to be prioritized, including a preference in favor of women-led projects (see the [program Operating Regulations](#) for criteria). Project evaluation will be carried out by an external committee, the composition of which will be stipulated in the [program Operating Regulations](#).
- 1.23 **Subcomponent 1.3. Strengthening of ESPOL's capacity for providing extension and technology transfer services (US\$2,161,158).** To boost agroindustrial innovation processes in the coastal region, training and institutional strengthening will be carried out in ESPOL to support the delivery of extension and technology transfer services.
- 1.24 With regard to technology extension, at least six projects will be implemented to help disseminate the outputs of different ESPOL agroindustrial and aquacultural research projects to companies in the region. Of these, at least two will contribute to climate change objectives, for the eligible activities established in the [program Operating Regulations](#).
- 1.25 In terms of technology transfer, activities will be carried out to support the institutional strengthening of ESPOL in the area of intellectual property management, including

²² There are currently no biosecurity level 3 laboratories in the country.

²³ ESPOL has [10 priority research areas](#), including: sustainable and innovative industry; economic development; agricultural and aquacultural production and processing; and environment, climate, and disaster risk reduction.

training the coordinators and managers of R&D units (with efforts to ensure gender parity, devoting at least 50% of the budget to women professionals); training ESPOL researchers and professional staff in technology transfer management (half of whom will be women); organizing technology events; and procuring specialized intellectual property management software.

- 1.26 **Component 2. Strengthening Guayaquil's dynamic entrepreneurial and innovation ecosystem (US\$17,465,530).** This component focuses on developing Guayaquil's dynamic entrepreneurial ecosystem, taking into account gender and climate change dimensions. It will promote the creation of technology-based companies; synergies between these and established companies and innovative micro, small, and medium-sized enterprises (MSMEs); and the development of digital and innovation capabilities. It has two subcomponents:
- 1.27 **Subcomponent 2.1. Renovation of Distrito 100 infrastructure and equipment (US\$14,917,979).** This subcomponent provides for the renovation and equipping of the Distrito 100 building located in Guayaquil's innovation corridor, with the aim of providing services to startups, companies, and other relevant actors in the city's entrepreneurial ecosystem. The building will contain the facilities stipulated in the [program Operating Regulations](#), including offices for anchor companies, startups, and ecosystem promoters; co-working space for 100 people; laboratories for big data, the Internet of Things, and user experience; a multipurpose room; and areas for rest and interaction. Design of the renovation process will be aimed at securing EDGE green building certification, and the procurement of information technology equipment with energy efficiency seals is planned for the equipping stage. Companies located in the building will meet the eligibility and desirability criteria established in the [program Operating Regulations](#), including participating in sectors of interest (agroindustry, banking, retail, and information and communication technologies) and collaborating with ESPOL on projects or programs. It is anticipated that thirty percent of the startups located in the building will have been founded or cofounded by women.
- 1.28 **Subcomponent 2.2. Promoting dynamic entrepreneurship in the city of Guayaquil (US\$2,547,551).** This subcomponent seeks to boost the economy of the city of Guayaquil and its area of influence through the following activities:
- (i) Promoting dynamic entrepreneurship.²⁴ This includes: (a) an idea incubation program that provides for the cofinancing of product prototypes for successful program candidates (at least 33% of these funds will be devoted to women-led ventures); (b) a startup pre-accelerator program that includes a certification and validation fund to ensure market access; (c) a program to support networking within the ecosystem; and (d) linkages with other ecosystems. Open competitions will be held for programs (a) and (b). Eligibility criteria will focus on identifying dynamic entrepreneurship proposals based on their quality and that of their teams, and these will vary according to the venture's life cycle stage. The criteria will be evaluated by committees established in accordance with the [program Operating Regulations](#). Details of eligibility

²⁴ Targets are included for enterprises founded or cofounded by women (paragraph 1.30).

and the categories that are included or excluded from financing will be stipulated in the [program Operating Regulations](#).

- (ii) Developing corporate sector innovation capacities. This includes the design and execution of: (a) a corporate innovation program; (b) meetings between the corporate sector and startups in the ecosystem; (c) 20 open innovation challenges (with at least two in the area of gender and two for climate change, with each topic absorbing at least 12.5% of the budget); and (d) business studies concerning digital innovation and transformation. The details and criteria for each case are stipulated in the [program Operating Regulations](#).
- (iii) Promoting digital culture in MSMEs. This includes: (a) designing and executing a program to support digital transformation in MSMEs; (b) training of digital facilitators (at least half of whom will be women); and (c) digital culture awareness-building activities.

1.29 **Program administration, monitoring, and evaluation and contingencies (US\$2,573,570)**. Financing will be provided for program monitoring and evaluation costs, as well as external audits.

1.30 **Beneficiaries**. ESPOL will benefit, as the program will strengthen its infrastructure and equipment for conducting scientific research in the areas of agroindustry and aquaculture; enhance its capacity for technology transfer and extension; and provide a space for concentrating its enterprise incubator and accelerator activities. Given ESPOL's strategic role (paragraph 1.6), its strengthening will also benefit: (i) 31 researchers and 41 analysts belonging to ESPOL's soil, ecotoxicology, and Ecuadorian Center for Biotechnological Research (CIBE) laboratories; (ii) agroindustrial companies participating in the collaborative R&D projects (at least nine); (iii) agroindustrial companies benefiting from the six technology extension projects; (iv) 20 professionals trained in technology transfer management (at least 10 of whom will be women); (v) 13 anchor companies and 10 startups that will occupy the Distrito 100 building (at least 30% of which will have been founded or cofounded by women), benefiting from the interactive synergies inherent to executing their activities in the heart of Guayaquil's innovation corridor; (vi) startups and entrepreneurs in the coastal region that receive incubator and pre-accelerator services (100 beneficiaries, of which 34 will have a female founder or cofounder); (vii) 120 professionals trained in corporate innovation; (viii) companies and startups participating in the 20 open innovation challenges; and (ix) 60 digital facilitators trained (half of whom will be women). Given ESPOL's role as the most important academic institution in the coastal region and its strong links to the private sector (paragraph 1.6), which will be enhanced by the operation, the entrepreneurial ecosystem will benefit from the externalities and spillover effects of the knowledge outputs obtained as a result of this operation.

C. Key results indicators

1.31 **Impact and expected outcomes**. Attainment of the general objective will be evaluated using two indicators: (i) spending on science, technology, and innovation activities as a percentage of sales by companies in Guayas, and (ii) labor productivity in companies in the coastal region. Five indicators will be used to measure the outcomes associated with specific objective 1: (i) publications by

ESPOL-affiliated authors in research fields linked to the priority areas (cumulative number over five years); (ii) publications by ESPOL-affiliated authors with corporate collaboration in research fields linked to the priority areas; (iii) percentage of collaborative research, development, and innovation projects between ESPOL and companies financed by the program in which the participating company expresses an intention to continue working with ESPOL; (iv) intellectual property rights applications arising from ESPOL scientific output in research fields linked to the priority areas; and (v) the first biosecurity level 3 research laboratory established for research into fields linked to the priority areas. With respect to the measurement of outcomes associated with specific objective 2, five indicators will be used: (i) percentage of ventures supported by ESPOL with a validated minimum viable product; (ii) percentage of pre-accelerated companies under the program that obtain external financing; (iii) anchor companies located in the Distrito 100 building; (iv) start-ups located in the Distrito 100 building; and (v) women-led start-ups located in the Distrito 100 building.

- 1.32 **Economic analysis.** An [economic analysis](#) was prepared with a 15-year time horizon. This evaluation showed that the program has a positive social net present value (SNPV) of US\$15.1 million and a social internal rate of return (SIRR) of 21.9%, above the 12% annual discount rate used by the Bank. Consistent with the objectives and outcome indicators under this program, monetization of the main benefits relates to the expected increase in scientific output in the agricultural science area; the business performance of enterprises executing R&D and extension projects with ESPOL; the performance of anchor companies and startups located in the Distrito 100 building; the performance of incubated and accelerated enterprises; and the performance of companies that solve open innovation challenges. These figures are conservative, as they do not (among other things) take into account externalities within the targeted economic sectors or spillovers to other important economic activities in the coastal region. For Component 1, the SNPV is US\$11.7 million and the SIRR is 29.6%. For Component 2, the SNPV is US\$3.4 million and the SIRR is 15.9%. The results are robust to a sensitivity analysis of the main program parameters, with an 82.7% probability that the project's SNPV will be positive.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 The total amount of the operation will be US\$40 million, financed from the Bank's Ordinary Capital through an investment loan for specific projects. This instrument was selected due to the loan's comprehensive approach, in which the activities financed under Component 1 are complemented by the investments associated with Component 2, reflecting the need for a joint approach to innovation promotion actions in both traditional economic activities (agroindustry and aquaculture) and high-impact ventures. Table 1 sets out the budget broken down by components. The disbursement period will be five years, and the program will be executed according to the detailed schedule set out in Table 2.

Table 1. Estimated program costs (US\$)²⁵

Components	Total (IDB)	%
Component 1. Strengthening research, extension, and technology transfer capabilities for the sustainable development of Ecuador's coastal region	19,960,900	49.9
Subcomponent 1.1 Strengthening of sustainable infrastructure and equipment for research	15,599,366	39.0
Subcomponent 1.2 Financing of research projects in priority areas	2,200,376	5.5
Subcomponent 1.3 Strengthening of ESPOL's capacity for providing extension and technology transfer services	2,161,158	5.4
Component 2: Strengthening Guayaquil's dynamic entrepreneurial and innovation ecosystem	17,465,530	43.67
Subcomponent 2.1 Renovation of Distrito 100 infrastructure and equipment	14,917,979	37.3
Subcomponent 2.2 Promoting dynamic entrepreneurship in the city of Guayaquil	2,547,551	6.37
Program administration, monitoring, and evaluation and contingencies	2,573,570	6.43
Total	40,000,000	100.00

Table 2. Disbursement schedule (US\$)²⁶

Source	Year 1	Year 2	Year 3	Year 4	Year 5	Total
IDB (Total)	10,450,138	21,612,844	4,940,567	1,733,371	1,263,081	40,000,000
%	26.13	54.03	12.35	4.33	3.16	100.00

B. Environmental and social risks

- 2.2 The operation is classified as a category “C” operation under the Environment and Safeguards Compliance Policy (Operational Policy OP-703),²⁷ as environmental, social, and natural disaster risks are low. No financing will be provided for projects in environmental categories “A” or “B.” Although the program provides for the construction and upgrading of spaces to improve scientific research capabilities and the innovation ecosystem in Guayaquil, the associated negative environmental and social impacts will be negligible ([optional link 6](#)).

C. Fiduciary risks

- 2.3 **Economic and financial context.** A medium-high risk has been identified that delays in securing budget appropriations for the operation would prevent the execution of planned activities in each component, thus undermining the attainment of development objectives. This risk will be mitigated by: (i) immediately

²⁵ Cost figures are indicative.

²⁶ The fourth quarter of 2023 is taken as a reference for the start of Year 1 of disbursement.

²⁷ As this operation achieved initial eligibility in May 2020, the applicable environmental policy is Operational Policy OP-703.

incorporating the project into the budget request once it has been approved by the IDB Board of Executive Directors; (ii) developing precise financial plans so as to avoid rejection of the budget request or the cancellation of appropriations due to a failure to execute; and (iii) informing the Ministry of Economy and Finance in advance of the budget requirements for the project.

D. Other key issues and risks

2.4 Risks. Risks classified as medium-high are as follows:

a. Institutional environment:

- (i) A lack of interest on the part of companies, which would prevent the coordination and management of R&D projects involving university-enterprise partnerships and R&D networks based on university-productive cluster partnerships that contribute to climate change adaptation and/or mitigation. This risk will be mitigated by: (i) developing flexible financing arrangements for the project, including the possibility of in-kind contributions by companies or contributions through associations; and (ii) disseminating information about the process and its conditions sufficiently far in advance to gather information from interested parties and make adjustments in response to the market.
- (ii) If there is no private sector interest in participating in the technology extension projects, this will prevent implementation of the planned technology extension modules and projects. This risk will be mitigated by identifying synergies with local and international actors in order to publicize the benefits of technology extension-focused projects.

b. Technical design:

- (i) Difficulties in recruiting and/or training transfer analysts with the required qualifications would prevent implementation of the planned technology extension modules and projects. This risk will be mitigated by: (i) developing and implementing a free training program to certify transfer analysts; and (ii) developing campaigns to identify candidates with the appropriate background from among the ESPOL's staff, job exchange, and former students for receiving free training or performing transfer analyst activities.
- (ii) If there is no intellectual property management platform available in the market that meets the project's requirements, the existing platform will need to be adapted or a new one developed, and this will hinder intellectual property management. This risk will be mitigated by developing a market study to identify availability of the platform or the need to include its development in project activities.

2.5 Sustainability. The program includes medium- and long-term sustainability measures in three dimensions, supported by the strengthening of existing coordination efforts between ESPOL and the private sector (paragraph 1.6). The first dimension relates to improving ESPOL's technical capabilities and human resources so that it can address the needs of the productive sector in the coastal region through its research activities. The second concerns deepening links between researchers and the region's productive fabric, which will facilitate collaboration

processes even after the program has come to an end. The third refers to generating financial resources as a result of the program activities themselves, which will allow these activities to be sustained over time.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 ESPOL will be the borrower, with the sovereign guarantee of the Republic of Ecuador, and it will also be the executing agency.²⁸ ESPOL satisfies the Bank's legal, financial, and institutional criteria as a borrower, in accordance with the policy on eligible borrowers (Operational Policy OP-301). ESPOL conducted an analysis and confirmed its ability to pay, which was certified by the MEF, where it states that the debt will be covered by resources from the "income tax offsets" (see [optional link 10](#)).
- 3.2 ESPOL will be responsible for both strategic management of the program and its implementation, including progress on expected outputs, outcomes, and impacts, based on the satisfactory mapping of actors, dissemination processes, and support for key stakeholders. It will also facilitate coordination with the productive sector and will lead the identification of priority topics for R&D projects. It will also be responsible for program management, including fiduciary aspects.
- 3.3 ESPOL will be responsible for tasks including: (i) formal communications with the Bank; (ii) documenting the use of resources and submitting disbursement requests to the Bank; (iii) requesting no objections to contracts; (iv) managing external audits; (v) coordinating monitoring and evaluation activities; (vi) coordinating program execution-related issues with other institutions in the ecosystem; (vii) managing resources; (viii) procuring works, goods, and services; (ix) preparing work plans (including the [program Operating Regulations](#), [multiyear execution plan](#), [annual work plan \(AWP\)](#), financial programming, and [procurement plan](#)); (x) preparing progress reports; (xi) contracting evaluations; and (xii) coordinating technical aspects of the procurement of works, goods, and services with the relevant departments or units.
- 3.4 **Coordination.** ESPOL will create a program coordination unit (PCU) that will be responsible for proper execution of the loan. To this end, the services of technical and professional directors specialized in procurement, financial management, communications, monitoring, sustainable construction, and heritage buildings will be contracted. The minimum staff complement for the PCU will be set out in the [program Operating Regulations](#).
- 3.5 **Execution mechanism.** A Strategic Committee will be created, consisting of the following members: (i) a representative of the Office of the Rector, who will chair the committee; (ii) the Vice Rector for Research, Development and Innovation (or his/her delegate); (iii) a representative of the Strategic Planning Department; (iv) a representative of the Finance Department; and (v) the Executive Director of the PCU, who will serve as Technical Secretary for the committee as a nonvoting member. The committee will be responsible for reviewing the [multiyear execution](#)

²⁸ ESPOL served as the executing agency for two earlier operations with the Bank in 1972 and 1978.

[plan](#), AWP, and semiannual reports, as well as approving changes to initial plans and to the Results Matrix.

- 3.6 **Strategic coordination.** To support execution, a Consultative Committee will be formed for the ecosystem with the purpose of providing inputs regarding the research and technology needs of related industries. The Consultative Committee will consist of: (i) one representative of academia; (ii) one business representative; and (iii) one public sector representative. ESPOL will play a coordinating role in the Committee with respect to academia, entrepreneurs, businesses, and the public sector. ESPOL's Office of the Rector will determine the selection criteria for the members and their functions, and these will be set out in the [program Operating Regulations](#).
- 3.7 The Executive Director's main functions will be as follows: (i) leading the team in achieving the agreed objectives, while ensuring efficient resource management, risk management, and expenditure control; (ii) requesting and approving initiation of the processes set out in the annual procurement plan; (iii) planning (comprising the timeline, budget, assumptions, constraints, and risks); (iv) supervising the execution of procurement and financial management; (v) monitoring planned actions, as well as times and costs; and (vi) ensuring closure of the program.
- 3.8 **Execution and administration.** An institutional capacity analysis confirmed that ESPOL has a high capacity for undertaking program management, planning, supervision, monitoring, and resource management and administration activities. Nonetheless, its technical and operational capabilities need to be strengthened in order to fulfill the planned execution timeframe (paragraphs 2.4 and 3.4). The following actions have been identified in response: (i) timely contracting of the minimum PCU staff complement at the launch stage; (ii) team with experience in IDB projects and country systems, with job descriptions that are harmonized with ESPOL structures and who are integrated into the organizational culture; (iii) planning of joint IDB-ESPOL training so as to familiarize staff with IDB policies, digital processes in online IDB systems, operational tools, and the use of Agile, PM4R, and PM4R Agile; (iv) operational planning using IDB tools; (v) securing no objections for terms of reference; (vi) determining the PCU's equipment needs and physical location; (vii) ensuring coordination between the ESPOL and PCU teams; (viii) approval of the [program Operating Regulations](#) at the launch stage; and (ix) close monitoring of climate change-related procurement contracts and required maintenance.
- 3.9 **Special contractual conditions precedent to the first disbursement of the loan.** The borrower will provide evidence to the Bank's satisfaction of: (i) approval by the ESPOL's Polytechnic Council of the [program Operating Regulations](#) and entry into force of the Regulations in accordance with the terms and conditions previously approved by the Bank; and (ii) appointment by ESPOL of key staff members to the PCU, including: (a) program Executive Director; (b) analyst for procurement using international organization funding and policies; and (c) financial management support analyst. The first contractual condition seeks to ensure effective implementation of the program, including the environmental and social management plan, while the second refers to the strengthening of the ESPOL's financial and procurement capabilities.

- 3.10 **Waiver of the Bank policy on Guarantees Required from the Borrower.** A partial waiver has been requested from the Board of Executive Directors of the Bank policy on Guarantees Required from the Borrower (Operational Policy OP-303), with respect to the stipulation by the Republic of Ecuador to guarantee the counterpart and performance obligations. The partial waiver, linked to guaranteeing the performance obligations and the timely release of the local contribution, is justified and supported by the Constitution of Ecuador and the Higher Education Act (LOES). Pursuant to these legal standards, universities enjoy academic, administrative, financial, and organizational autonomy. ESPOL is a university, established pursuant to the Constitution of Ecuador and the LOES, and therefore has its own legal standing and, in its capacity as a contracting party for the loan, is responsible for executing the projects financed with those resources, and enjoys legal stability enabling it to ensure long-term legal certainty in its operations, while maintaining its administrative, financial, economic, and management autonomy, in accordance with the Ecuadorian Constitution and other laws. Lastly, pursuant to the Organic Code of Planning and Public Finances, and its regulations, the Ministry of Economy and Finance, on behalf of the Republic of Ecuador, will provide the sovereign guarantee of the payment obligations for public sector entities and agencies, including universities, upon verification of compliance with the country's legal requirements. The request has precedent in operations with similar execution structures in Ecuador (loan [5676/OC-EC](#)) and in the region (loan [5653/OC-RG](#)).
- 3.11 **Procurement of goods, works, and consulting and nonconsulting services.** Procurement financed in whole or in part with proceeds from the Bank loan will be undertaken in accordance with the Policies for the Procurement of Works and Goods Financed by the IDB (document GN-2349-15) and the Policies for the Selection and Contracting of Consultants Financed by the IDB (document GN-2350-15), or any updated versions thereof accepted by the borrower. Supervision will be conducted on an ex post basis, with the exception of those cases in which ex ante supervision is warranted.
- 3.12 **Disbursements.** Disbursements will be made in the form of advances of funds reflecting the program's liquidity needs. Supporting documentation for advances will be provided pursuant to the provisions of the Financial Management Guidelines for IDB-Financed Projects (document OP-273-12) or those in effect at the time of program execution. They will be determined based on payment needs, following the provisions of the Financial Management Guidelines for IDB-financed Projects (document OP-273-12) and the Fiduciary Arrangements and Requirements (Annex III). At the borrower's request, reimbursement of expenses and/or direct payments to suppliers may also take place.
- 3.13 Resources will be employed in accordance with the [AWP](#), and ESPOL will be required to use country systems from the planning stage through to the reporting stage. Participating ESPOL departments will be responsible for: (i) procuring goods and services as planned; (ii) processing payments relating to the consulting services and/or goods purchased; and (iii) recording information regarding consultants and associated invoices for subsequent recording and audit. These activities will be supported by the Finance Department, the Administrative Department, and the PCU.
- 3.14 **Financial statements and audit.** Audited program financial statements will be requested annually within 120 days following the end of each fiscal year or, once

execution has been completed, following the date of the last loan disbursement. Audits will be financed with program resources. ESPOL will be responsible for the financial accounting of transactions and disbursements, and for maintaining financial records. The PCU will submit semiannual progress reports and audited financial statements, which will be prepared by an independent audit firm acceptable to the Bank. These audits will be performed annually and will cover the entire execution period and the final audit.

B. Summary of arrangements for monitoring results

- 3.15 **Monitoring.** The executing agency will use the following documents for program monitoring: (i) the Results Matrix, (ii) [monitoring and evaluation plan](#); (iii) progress monitoring report; and (iv) semiannual progress reports. Within 60 days of the end of each six-month period, the borrower/executing agency will submit reports to the Bank covering achievements in relation to the output and outcome indicators set out in the Results Matrix and [monitoring and evaluation plan](#). Reports for the second six-month period of each year will include an [AWP](#) and revised targets for the rest of the program ([required link 2](#)).
- 3.16 **Evaluation.** The results evaluation will be reflexive, in combination with a quasi-experimental evaluation using the difference-in-differences with matching (DDM) method, which will be performed subject to data availability (see [monitoring and evaluation plan](#)). In the case of the results indicators not subject to evaluation using these methodologies, these will be measured before and after the intervention period to allow comparison. In showing that the interventions supported by the program contributed to observed improvements in the results indicators, it will be argued that improvements of the magnitudes reflected in the targets would have been unlikely in the absence of such interventions. The evaluation strategy is described in the [monitoring and evaluation plan](#).
- 3.17 **Data for monitoring and evaluation.** The executing agency will be responsible for monitoring and evaluation ([required link 2](#)). Information on outputs will be obtained through evidence of the completion of activities, implementation of outputs, and other details, which the executing agency will submit to the IDB from the date of loan approval until the disbursements are fully executed. Information on outcomes will be obtained through reports on progress under each of the components and overall program performance in relation to the Results Matrix. The executing agency will submit these reports to the IDB at the end of each six-month period. For purposes of the evaluation, the executing agency will compile, store, and keep all information, indicators, and parameters necessary to prepare the project completion report, including annual plans and the final evaluation. The final evaluation will include a quasi-experimental impact evaluation aimed at measuring the effectiveness of the program in relation to: (i) the percentage of ventures supported by ESPOL with a validated minimum viable product; and (ii) the percentage of pre-accelerated ventures that obtain external financing ([required link 2](#)).

Development Effectiveness Matrix		
Summary		EC-L1261
I. Corporate and Country Priorities		
Section 1. IDB Group Strategic Priorities and CRF Indicators		
Development Challenges & Cross-cutting Issues	-Productivity and Innovation -Gender Equality and Diversity -Climate Change -Institutional Capacity and the Rule of Law	
CRF Level 2 Indicators: IDB Group Contributions to Development Results	-Enterprises provided with technical assistance (#)	
2. Country Development Objectives		
Country Strategy Results Matrix	GN-3103-1	Expand the coverage and quality of physical and technological infrastructure
Country Program Results Matrix	GN-3154-1	The intervention is included in the 2023 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability		Evaluable
3. Evidence-based Assessment & Solution	9.7	
3.1 Program Diagnosis	2.5	
3.2 Proposed Interventions or Solutions	3.2	
3.3 Results Matrix Quality	4.0	
4. Ex ante Economic Analysis	10.0	
4.1 Program has an ERR/NPV, or key outcomes identified for CEA	1.5	
4.2 Identified and Quantified Benefits and Costs	3.0	
4.3 Reasonable Assumptions	2.5	
4.4 Sensitivity Analysis	2.0	
4.5 Consistency with results matrix	1.0	
5. Monitoring and Evaluation	9.5	
5.1 Monitoring Mechanisms	4.0	
5.2 Evaluation Plan	5.5	
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood	Medium High	
Environmental & social risk classification	C	
IV. IDB's Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)	Yes	Financial Management: Budget, Treasury, Accounting and Reporting. Procurement: Information System.
Non-Fiduciary		
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project	Yes	EC-T1436 "Support to the Institutional Strengthening of the Escuela Superior Politécnica del Litoral (ESPOL)"; EC-T1500 "Strengthening the capacities of the ESPOL to close productivity gaps on the coast"

Evaluability Assessment Note: Ecuador's economy currently shows low levels of investment in scientific research and development and little collaboration with the productive sector compared with high income countries (0.4% GDP vs 2.4% for the OECD). This weakness is more pronounced in Ecuador's Coastline where it reaches 0.2% of GDP. There is ample international evidence of the benefit of academic collaborative research and investing in research infrastructure. Moreover, the ecosystem of entrepreneurship is incipient in Guayaquil. The ESPOL is the lead university in scientific activity in the area. In the year 2022 alone 63 collaboration opportunities in R&D projects in agricultural biotechnology and 10 in the food industry (some with critical export goods) were lost given a deficiency in infrastructure. In this context, the general objective of the program is to increase firms' labor productivity in the Coastline through a greater investment in science, technology, and innovation.

The specific development objectives are: (i) to strengthen the scientific production and scope of the ESPOL that caters to the needs of the Coastline's productive sector; and (ii) to promote the creation and growth of new technological companies in Guayaquil. The program will channel US\$40MM in several activities including: (i) construction of ESPOL's Agro-industrial Building including the first laboratory with biosecurity level 3 in the country; (ii) the co-financing of multidisciplinary and innovative projects; (iii) the remodeling and equipping of District 100 for entrepreneurs; projects to support companies and co-finance their prototypes; among others.

The results indicators are appropriately defined to measure achievement under each specific objective. Some of the main outcomes include: (i) publications in research areas with authors affiliated to ESPOL; (ii) intellectual property rights solicited derived from ESPOL's scientific production; (iii) the first operational biosecurity level 3 laboratory in the country; the percentage of entrepreneurs supported that have a minimum viable product; the startups situated in District 100 including those lead by women. The economic analysis shows the project is of net benefit to society with an IRR of 22%. At closure, a reflexive comparison will be used for all outcome results indicators as well as an ex-post cost benefit analysis. For two outcomes, the program is exploring the possibility of conducting a quasi-experimental impact evaluation.

RESULTS MATRIX

Program objective:	The specific development objectives are to: (i) strengthen ESPOL's scientific output and links focused on the needs of the productive sector in the coastal region; and (ii) promote the creation and growth of new technology-based ventures in Guayaquil. Achieving these specific development objectives will further the program's general development objective of enhancing business labor productivity in the coastal region through greater investment in science, technology, and innovation activities.
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GENERAL DEVELOPMENT OBJECTIVE

Indicators	Unit of measure	Baseline value	Baseline year	Expected year achieved	Target	Means of verification	Comments
Overall development objective: Enhance business labor productivity in the coastal region through greater investment in science, technology, and innovation activities							
1.1 Spending on science, technology, and innovation activities as a percentage of sales by companies in Guayas.	%	0.87%	2021	2028	1.1%	National Survey of Science, Technology, and Innovation Activities (ACTI), Guayas	See monitoring and evaluation plan .
1.2 Labor productivity in companies in the coastal region.	US\$	58,155	2021	2028	63,796	Business Directory, National Statistics and Census Institute	

SPECIFIC DEVELOPMENT OBJECTIVES

Indicators	Unit of measure	Baseline value	Baseline year	Project end	Means of verification	Comments
Specific development objective 1: Strengthen ESPOL's scientific output and links focused on the needs of the productive sector in the coastal region						
1.1 Publications by ESPOL-affiliated authors in research fields linked to the priority areas (cumulative number over five years)	Number	251	2022	280	Scopus database of scientific publications (using Scival)	Publications will be understood as articles submitted, accepted, and/or published. For an article to be counted, only the highest state achieved will be considered. The indicator is constructed by identifying publications in indexed journals that have at least one author affiliated with an ESPOL-based institution. The priority areas are those identified as agricultural sciences under the Fields of Research and Development (FORD) classification. The baseline is 251, which is the cumulative number of publications in the agricultural sciences field (FORD classification) in the 2017-2022 period. A target of 280 publications has been set for the end of the project, representing the cumulative sum of additional publications

Indicators	Unit of measure	Baseline value	Baseline year	Project end	Means of verification	Comments
						between 2023 and 2027. This is based on the upward trend in the number of ESPOL publications in fields linked to the priority areas, as well as the expected impact of the program based on previous experiences. The target is a conservative one, as the previous experiences studied measure the treatment effect over a longer period than the one encompassed by this project (greater than five years). Klavans et al. (2020), for example, predicts exceptional growth of between 35.7% and 50% in emerging sciences publications as a result of long-term investments in infrastructure. The evaluation will be reflexive.
1.2 Publications by ESPOL-affiliated authors with corporate collaboration in research fields linked to the priority areas (cumulative number over five years)	Number	7	2022	10	Scopus database of scientific publications	Publications will be understood as articles submitted, accepted, and/or published. For an article to be counted, only the highest level achieved will be considered. The indicator is constructed by identifying publications in the Scopus database that have at least one ESPOL-affiliated author and corporate collaboration. The priority areas are those identified as agricultural sciences according to the Fields of Research and Development (FORD) classification. The baseline is 7, which reflects the cumulative indicator from 2017 to 2022. The target is for a cumulative number of 10 publications from 2023 to 2027, based on previous experiences of the impact of scientific research support programs. The target is a conservative one, as previous experiences have measured the treatment effect over a longer period than the one encompassed by this project (greater than five years). Klavans et al. (2020), for example, predicts exceptional growth of between 35.7% and 50% in emerging sciences publications as a result of long-term investments in infrastructure. The evaluation will be reflexive.
1.3 Percentage of collaborative research, development, and innovation projects between ESPOL and companies financed by the program in which the participating company expresses an intention to continue working with ESPOL	%	0	2022	30	Project execution unit report	The baseline is considered to be zero as it involves new projects financed under the program. Collaboration intentions will be measured through a survey of participating companies at the end of the project, in collaboration with ESPOL. The target is based on ESPOL experiences in previous collaborative instances with the private sector, and on Scandura (2016), who shows that support for collaboration between companies and universities in the United Kingdom increases the intensity of R&D investments in participating companies by 30%. The evaluation will be reflexive.
1.4 Intellectual property rights applications arising from ESPOL scientific output in research fields linked to the priority areas (cumulative number over five years)	Number	36	2022	46	World Intellectual Property Organization/National Intellectual Property Rights Service (SENADI)	Consistent with the classification laid out in Article 89 of the Inventor's Code, intellectual property rights consist primarily of copyrights and associated rights; industrial property (trademarks, patents, and industrial designs and secrets); and new plant varieties. The baseline takes the number of intellectual property rights applications over the last five years for the research fields linked to the priority areas. The target for the 2023-2027 period is

Indicators	Unit of measure	Baseline value	Baseline year	Project end	Means of verification	Comments
						46 applications, consistent with the relationship between patents and publications identified by Crespi et al. (2010). The evaluation will be reflexive.
1.5 First biosecurity level 3 research laboratory established for research into fields linked to the priority areas	Number	0	2022	1	Project execution unit report	The laboratory may serve other research areas in addition to the priority ones (e.g. human health), and its main purpose is to minimize the exposure risk of ESPOL staff and the environment in the vicinity of the new building's laboratories. The biosecurity laboratory will be considered established once it has all the necessary equipment to perform level 3 activities. The baseline is zero, as ESPOL does not currently have a laboratory with this security level. The target is set at 1, consistent with financing under the program. The evaluation will be reflexive.
Specific development objective 2: Promote the creation and growth of new technology-based ventures in Guayaquil						
2.1 Percentage of ventures supported by ESPOL with a validated minimum viable product	%	22	2022	27	Project execution unit report	The indicator refers to those enterprises with a validated minimum viable product, i.e., a prototype or product that has been validated by at least one company. The baseline is based on data for companies supported (incubated and/or pre-accelerated) by i3lab, the ESPOL's entrepreneurship and innovation center. The target (27%) is conservative and represents growth of 23% in the indicator, which is below that observed in other, similar programs. For example, the beneficiaries of an incubation and/or acceleration program under Startup Peru have a 60% probability of selling a minimum viable product five years after accessing the treatment. However, these program beneficiaries receive seed capital and, in some cases, technical assistance from an incubator for the ecosystem. Given that the treatment financed under this program consists solely of technical assistance for incubation, a conservative target of 23% is considered appropriate. The evaluation will be reflexive.
2.2 Percentage of pre-accelerated ventures that obtain external financing	%	21.85	2022	27.01	Project execution unit report	External financing refers to national or international public or private funding. The baseline is based on data for companies supported (incubated and/or pre-accelerated) by i3lab, the ESPOL's entrepreneurship and innovation center. 21.85% is the average figure for the indicator from 2018 to 2022; this is used as a proxy given that the indicator was not recorded in 2022. The target is a conservative one and is based on the average of two programs with a similar objective: Startup Peru, in which beneficiaries have an 18% probability of securing external financing, and the Cali Chamber of Commerce, where the probability is 30%. The growth target for this indicator, therefore, is 24%, with an end-of-project target of 27.01%. The evaluation will be reflexive.

Indicators	Unit of measure	Baseline value	Baseline year	Project end	Means of verification	Comments
2.3 Anchor companies located in the Distrito 100 building	Number	0	2022	11	Project execution unit report	The number of anchor companies located in the building refers to companies in sectors prioritized under the program that are involved in an innovation plan or project and have at least US\$5 million in annual sales. An anchor company is considered to be located in the building when its team responsible for innovation or new products, processes, or projects is based in one of the offices in District 100. The baseline is zero, as the District 100 building is not operational. The target of 11 companies at the end of the project is calculated based on an 85% occupation rate in the space designed for this purpose in the operational District 100 building. The building's total capacity is 13.
2.4 Startups located in the Distrito 100 building	Number	0	2022	6	Project execution unit report	Startup companies are early-stage companies with innovative models oriented toward dynamic entrepreneurship. They will be considered to be located in the District 100 building once they occupy a space in the building. The baseline is zero, as the District 100 building is not operational. The target of 6 companies at the end of the project is calculated on the basis of an 85% occupation rate in the space designed for this purpose in the operational District 100 building. The total available capacity is 10.
2.5 Women-led startups located in the Distrito 100 building	Number	0	2022	2	Project execution unit report	Pro-gender. Startups are considered women-led where they have at least one woman in their founding team, and the target reflects ESPOL statistics from the i3lab programs. The target represents 30% of the startups located in the Distrito 100 building.

OUTPUTS

Indicators	Unit of measure	Baseline value	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	End of project	Means of verification	Comments
Component 1: Strengthening research, extension, and technology transfer capabilities for the sustainable development of Ecuador's coastal region											
Subcomponent 1.1: Strengthening of sustainable infrastructure and equipment for research											
1.1 Architectural designs for the agroindustry research building completed	Number	0	2022	1	0	0	0	0	1	Project execution unit report	See monitoring and evaluation plan .
1.2 Construction of agroindustry research building completed with EDGE certification	Number	0	2022	0	1	0	0	0	1	Project execution unit report Final certificate of receipt for the works	
1.3 Equipment installed in the agroindustry research building	Number	0	2022	0	1	0	0	0	1	Project execution unit report	

Indicators	Unit of measure	Baseline value	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	End of project	Means of verification	Comments
Subcomponent 1.2: Financing of research projects in priority areas											
1.4 R&D projects involving university-enterprise partnerships and R&D networks based on university-productive cluster partnerships that contribute to climate change adaptation and/or mitigation	Number	0	2022	0	4	3	2	0	9	Contracts signed	See monitoring and evaluation plan .
Subcomponent 1.3: Strengthening of ESPOL's capacity for providing extension and technology transfer services											
1.5 Technology extension projects implemented (excludes 1.6)	Number	0	2022	1	1	1	1	0	4	Project execution unit report	See monitoring and evaluation plan .
1.6 Technology extension projects implemented that contribute to climate change adaptation and/or mitigation	Number	0	2022	0	1	0	1	0	2	Project execution unit report	
1.7 Professionals from coastal region and ESPOL researchers trained in technology transfer management (excludes 1.8)	Number	0	2022	0	5	5	0	0	10	Project execution unit report	
1.8 Female professionals from coastal region and female ESPOL researchers trained in technology transfer management (excludes 1.7)	Number	0	2022	0	5	5	0	0	10	Project execution unit report	Pro-gender. See monitoring and evaluation plan .
1.9 Intellectual property management platform implemented	Number	0	2022	0	0	1	0	0	1	Project execution unit report	See monitoring and evaluation plan .
Component 2: Strengthening Guayaquil's dynamic entrepreneurship and innovation ecosystem											
Subcomponent 2.1: Renovation of District 100 infrastructure and equipment											
2.1 District 100 building renovated with EDGE certification	Number	0	2022	0	1	0	0	0	1	Project execution unit report Final certificate of receipt for the works	See monitoring and evaluation plan .
2.1 District 100 equipment installed	Number	0	2022	0	0	1	0	0	1	Project execution unit report	

Indicators	Unit of measure	Baseline value	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	End of project	Means of verification	Comments
Subcomponent 2.2: Promoting dynamic entrepreneurship in Guayaquil											
2.3 Enterprises incubated and/or pre-accelerated (excludes 2.4)	Number	40	2022	5	10	15	18	18	66	Project execution unit report that includes the list of output beneficiaries	See monitoring and evaluation plan .
2.4 Enterprises with female founders or cofounders incubated and/or pre-accelerated (excludes 2.3)	Number	20	2022	3	5	8	9	9	34	Project execution unit report that includes the list of output beneficiaries	Pro-Gender. See monitoring and evaluation plan .
2.5 Professionals trained in corporate innovation management	Number	0	2022	0	20	30	30	40	120	Project execution unit report	See monitoring and evaluation plan .
2.6 Open innovation challenges implemented (excludes 2.7 and 2.8)	Number	1	2022	1	3	4	4	4	16	Project execution unit report that includes the list of output beneficiaries	
2.7 Open innovation challenges implemented in gender equality topics	Number	0	2022	0	0	1	1	0	2	Project execution unit report that includes the list of output beneficiaries	Pro-Gender. See monitoring and evaluation plan .
2.8 Open innovation challenges implemented in climate change topics	Number	0	2022	0	1	0	1	0	2	Project execution unit report that includes the list of output beneficiaries	See monitoring and evaluation plan .
2.9 Studies of the local entrepreneurship and innovation ecosystem completed	Number	0	2022	0	1	0	0	1	2	Project execution unit report	
2.10 Digital facilitators trained (excludes 2.11)	Number	0	2022	0	10	10	20	20	60	Project execution unit report	
2.11 Female digital facilitators trained	Number	0	2022	0	10	10	20	20	60	Project execution unit report	Pro-Gender. See monitoring and evaluation plan .

Country: Ecuador **Division:** IFD/CTI **Operation number:** EC-L1264 **Year:** 2023

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Executing agency: Escuela Superior Politécnica del Litoral (ESPOL)
Operation name: Strengthening of the Innovation System in Coastal Ecuador

I. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY

1. Use of country systems in the operation

<input checked="" type="checkbox"/> Budget	<input type="checkbox"/> Reporting	<input checked="" type="checkbox"/> Information systems	<input type="checkbox"/> National Competitive Bidding
<input checked="" type="checkbox"/> Treasury	<input type="checkbox"/> Internal audit	<input type="checkbox"/> Shopping	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> Accounting	<input type="checkbox"/> External control	<input type="checkbox"/> Individual consultants	

2. Fiduciary execution mechanism

<input checked="" type="checkbox"/>	Special features of fiduciary execution	The executing agency for the program is Escuela Superior Politécnica del Litoral (ESPOL), a tertiary education institution with academic, administrative, financial, and legal autonomy. As a central government entity, it uses the country financial management system and the Treasury Single Account. For procurement using fiscal resources, ESPOL is also bound by the National Public Procurement System Act.
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3. Fiduciary capacity

Fiduciary capacity of the executing agency	The risk workshop identified the following issues: (i) potential fiscal allocation constraints in the national budget due to the limits set by the Ministry of Economy and Finance—if payments are not made in a timely manner, payments to suppliers and contractors may be delayed, affecting program objectives; and (ii) the volume and type of procurement contracts planned under the program are significant and complex—ESPOL's lack of familiarity with executing IDB-financed projects (the last loan for which ESPOL was an executing agency dates back to 1983) could lead to errors in the application of policies and procedures during execution, creating delays in the planned timeline.
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4. Fiduciary risks and risk response

Risk classification	Risk	Risk level	Risk response
Economic and financial context	Delays in securing budget appropriations for the operation could prevent the execution of planned activities in each component, undermining the attainment of development objectives.	Medium-high	<ul style="list-style-type: none"> (i) Immediately incorporate the project into the budget request once it has been approved by the IDB Board of Executive Directors; (ii) Develop precise financial plans so as to avoid rejection of the budget request or the cancellation of appropriations due to a failure to execute; and (iii) Inform the Ministry of Economy and Finance in advance of the budget requirements for the project.
Internal processes	If the management team is not strengthened to ensure the proper application of IDB fiduciary policies, and if suitable delegations and flowcharts for project fiduciary activities are not developed, then procurement contracts could be delayed, affecting the overall timeline for project execution.	Medium-low	<ul style="list-style-type: none"> (i) The Bank's fiduciary team will provide support and training to ESPOL; (ii) The program will provide ad hoc support for preparing and implementing bidding processes using the model contract of the International Federation of Consulting Engineers; and (iii) As part of the program Operating Regulations, process flow charts will be prepared that properly reflect the levels of delegation and celerity required to meet program targets in a timely and suitable manner.

5. Policies and guidelines applicable to the operation: Documents GN-2349-15 and GN-2350-15.

6. Exceptions to policies and guidelines: None.

II. CONSIDERATIONS FOR THE SPECIAL PROVISIONS OF THE LOAN CONTRACT

Exchange rate: For purposes of Article 4.10 of the General Conditions, the Parties agree that the applicable exchange rate will be the one indicated in subparagraph (b)(ii) of said Article. Accordingly, the agreed exchange rate will be that prevailing on the effective date on which the borrower, executing agency, or any other individual or legal entity to whom the authority to incur expenses has been delegated, makes the respective payments to a contractor, supplier, or beneficiary.

Type of audit: Within 120 days after the end of its fiscal year and within 120 days of the last disbursement of the loan, ESPOL will submit special purpose annual financial statements for the project, duly audited by an independent audit firm acceptable to the Bank. The auditors will also

issue a report on their findings with regard to internal control (management letter). The audit firm will be hired at least 120 days prior to the end of each fiscal year or the date of final disbursement.

III. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION

<input checked="" type="checkbox"/>	Bidding documents	The procurement of works, goods, and nonconsulting services subject to international competitive bidding (ICB) under the Bank's procurement policies (document GN-2349-15) will be carried out using either the standard bidding documents issued by the Bank or those documents agreed between the executing agency and the Bank for the contract concerned. The selection and contracting of consulting services will be carried out in accordance with the Policies for the Selection and Contracting of Consultants (document GN-2350-15) and will use either the Bank's Standard Request for Proposals document or the request for proposals agreed between the executing agency and the Bank for the contract concerned. The review of technical specifications and terms of reference for contracts during preparation of the processes is the responsibility of the project sector specialist. This technical review may be carried out ex ante and is independent of the method of procurement review.								
<input checked="" type="checkbox"/>	Recurring expenses	Recurring expenses financed under the loan and required to initiate the project, as approved by the Project Team Leader, will be carried out in accordance with the executing agency's administrative procedures. The latter will be reviewed and accepted by the Bank as long as they are consistent with principles of competition, efficiency, and competition (see the guidelines for the treatment of recurring expenses and the expenditure eligibility policy (document GN-2331-5 and its updates)).								
<input checked="" type="checkbox"/>	Procurement supervision	<p>Supervision will be conducted on an ex post basis, with the exception of those cases in which ex ante supervision is justified, as stipulated in the procurement plan. Where procurement processes are executed through the country system, supervision will be performed through the country supervision system. The supervision method will be determined for each selection process: (i) ex ante, (ii) ex post, or (iii) country system. Ex post reviews will be conducted every calendar year in accordance with the project supervision plan, subject to changes during execution. Ex post review reports may include one physical inspection visit to inspect procurement processes subject to ex post review; these will be selected randomly and cover at least 10% of contracts. Ex post review thresholds are as follows:</p> <table><tr><th>Executing agency</th><th>Works</th><th>Goods and services</th><th>Consulting Services</th></tr><tr><td>ESPOL</td><td>3,000,000</td><td>250,000</td><td>200,000</td></tr></table>	Executing agency	Works	Goods and services	Consulting Services	ESPOL	3,000,000	250,000	200,000
Executing agency	Works	Goods and services	Consulting Services							
ESPOL	3,000,000	250,000	200,000							
<input checked="" type="checkbox"/>	Records and files	ESPOL will maintain order and integrity in the filing system, organizing files chronologically, independently, by process, and by source of financing.								

Main procurement items

Item description	Selection method	Estimated date	Estimated amount US\$ thousands
Goods			
Equipment for research-related information technology processes in Distrito 100	ICB	30/09/2024	1,859.34
Procurement of equipment for the agroindustry building and complementary areas, the eco-toxicology laboratory, the soil laboratory, and spaces and areas that complement the agroindustry building (5 processes)	ICB	30/06/2025	2,865.39
Works			
At the ESPOL campus, sustainable construction of the agroindustry building, urban planning, complementary areas and equipping of laboratories, etc., with EDGE certification	ICB	30/09/2024	11,850.08
Construction and renovation of the Distrito 100 building, with EDGE certification	ICB	30/03/2024	12,436.79
Nonconsulting services			
Development, implementation, and operation of an e-learning platform	National competitive bidding (NCB)	30/12/2023	80.0
Design, development, implementation, and maintenance of the management platform for innovation challenges and projects	NCB	30/12/2023	140.3
Design and development of a digital culture awareness-building plan relating to the digital technology operation for micro, small, and medium-sized enterprises	NCB	30/03/2025	170.0
Firms			
Consulting services for implementing technology transfer processes with a team of professionals	Quality- and Cost-Based Selection (QCBS)	30/12/2023	167.5

Item description	Selection method	Estimated date	Estimated amount US\$ thousands
Planning, monitoring, and inspection of architectural management and engineering works	QCBS	30/09/2024	118.5
Program external audit	Least-cost selection	30/12/2023	200.0
External evaluation of R&D projects	QCBS	30/06/2023	49.95
Survey of technology transfer needs to support the identification, definition, registration, monitoring, and management of the research, development, and innovation project portfolio	QCBS	30/03/2024	50.0
Development of a management platform for operating and maintaining the intellectual property portfolio	QCBS	30/12/2024	90.0
Survey and monitoring of technology transfer needs through the platform	QCBS	30/12/2024	80.48
Legal and consulting services covering technology oversight, technology appraisal, and improvements to institutional processes	QCBS	30/03/2024	69.9
Inclusion of the team of professionals responsible for design and implementation of the corporate innovation manager training program	QCBS	30/09/2023	133.86
Design and development of the corporate innovation massive open online courses for 2023 and 2024 (2 contracts)	QCBS	30/03/2024	120.0
Implementation of business events for the design, coordination, and execution of the activities required by the sector and the startups	QCBS	30/03/2024	105.18
Individual consultants			
Monitoring and inspection of oversight on the ESPOL campus where research and innovation activities will be implemented with EDGE certification	Comparison of qualifications (CQ) (open invitation)	30/09/2024	355.5
Coordination of R&D projects financed that contribute to climate change resilience, adaptation, and/or mitigation	CQ (open invitation)	30/09/2023	133.86

Item description	Selection method	Estimated date	Estimated amount US\$ thousands
Extension coordinator for formulating and implementing the ESPOL's extension model	CQ (open invitation)	30/03/2023	133.86
Regulations issued governing design and development of the ESPOL's extension model	CQ (open invitation)	30/12/2023	340.33
Specialized extension worker to implement ESPOL's extension model	CQ (open invitation)	30/09/2024	120.0
Supervision of the sustainable renovation of the Distrito 100 building with EDGE certification	CQ (open invitation)	30/03/2024	186.55
Advisory services to preserve historical value during sustainable renovation of the Distrito 100 building with EDGE certification	CQ (open invitation)	30/03/2024	186.55
Planning, monitoring, and inspection of architectural management and engineering works during renovation of the Distrito 100 building with EDGE certification	CQ (open invitation)	30/03/2024	124.37
Incubation program coordinator	CQ (open invitation)	30/12/2023	124.63
Acceleration coordinator	CQ (open invitation)	30/03/2024	96.94
Networking and access to finance coordinator	CQ (open invitation)	30/03/2024	94.63
Coordinator for the MSME digital transformation center	CQ (open invitation)	30/09/2023	133.86
Intermediate and final program evaluations	CQ (open invitation)	30/03/2026	150.00

See [procurement plan](#) for the main contracts

IV. AGREEMENTS AND REQUIREMENTS FOR FINANCIAL MANAGEMENT

☒	Programming and budget	<p>The Planning and Public Finance Code establishes the rules governing budget programming, formulation, approval, execution, control, evaluation, and settlement.</p> <p>Executing agencies are responsible for the processes needed to incorporate the corresponding budget items into their budgets. Ecuador's National Customs Service (SENAE) and Internal Revenue Service (SRI) will incorporate the budget into a pre-existing investment program that has already been prioritized.</p>
☒	Treasury and disbursement management	<p>Disbursements will be made using the online disbursement system.</p> <p>Disbursements will be deposited in an exclusive account at the Central Bank of Ecuador and then be transferred on the same day to the Treasury Single Account, from which project-related payments will be made.</p> <p>Advances will be made for a period of up to 180 days based on actual liquidity needs, in accordance with the financial plan and itemized cash flow of each executing agency.</p> <p>For each advance of funds, at least 80% of previously advanced funds will be accounted for.</p>
☒	Accounting, information systems, and reporting	<p>ESPOL will be responsible for project financial management.</p> <p>Accounting will follow government accounting standards, which are converging with International Public Sector Accounting Standards. The U.S. dollar is the legal currency in Ecuador for both transactions and reporting.</p> <p>The executing agency uses the e-SIGEF financial administration system, which integrates the following processes: budgeting (for executing expenditure), accounting (for recording transactions on an accruals basis), and treasury (for issuing payments to suppliers and contractors).</p> <p>The e-SIGEF is used to generate reports and is the foundation for preparing cash flow statements and cumulative investment statements on a cash basis, using information in the e-SIGEF and auxiliary reports in Excel.</p>
☒	Internal control and audit	<p>Ecuador's constitution identifies the Office of the Comptroller General as the lead agency for the system of public sector controls. As part of this sector, the executing agency has its own internal audit unit.</p>
☒	External control and financial reports	<p>ESPOL, with the Bank's agreement, will select and contract the services of a Bank-eligible audit firm to conduct the audit of the special-purpose financial statements in accordance with the Financial Management Guidelines for IDB-Financed Projects, the Instructions for Financial Reporting and External Audit Management, and the terms of reference previously agreed with the Bank. The cost of external audit services may be financed using the loan proceeds.</p>

<input checked="" type="checkbox"/>	Financial supervision of the operation	As the executing agency has no recent experience with financial management, the operation will require constant monitoring at the beginning. Accordingly, regular on-site office visits are planned, subject to adjustments during execution. Financial supervision will be carried out by means of virtual/or in-person work meetings, and in response to ad hoc issues that require the Bank's support, as well as reviews of the audited financial statements.
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DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/23

Ecuador. Loan ____/OC-EC to Escuela Superior Politécnica del Litoral (ESPOL)
Strengthening of the Innovation Ecosystem in Coastal Ecuador

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with Escuela Superior Politécnica del Litoral (ESPOL), as borrower, and with the Republic of Ecuador, as guarantor, for the purpose of granting the former a financing to cooperate in the execution of the program “Strengthening of the Innovation Ecosystem in Coastal Ecuador” Such financing will be for the amount of up to US\$40.000,000 from the resources of the Bank’s Ordinary Capital, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on ____ 2023)