

Technical Cooperation (TC) Document

I. Basic Information for TC

▪ Country/Region:	REGIONAL
▪ TC Name:	InfraDigital - Promoting Digital Transformation for Infrastructure and Energy Sectors in LAC
▪ TC Number:	RG-T4098
▪ Team Leader/Members:	Riobo Patino, Jairo Alexander (INE/TSP) Team Leader; Caldo, Alejandra Anahi (INE/TSP) Alternate Team Leader; Irigoyen, Jose Luis (INE/ENE) Alternate Team Leader; Adriana Unzueta Saavedra (INE/INE); Basani, Marcello (INE/WSA); Calatayud, Maria Agustina (INE/TSP); De Azevedo, Eduardo Henrique (KIC/ICD); Emilia Molina (INE/TSP); Gonzalo Rodriguez Valverde (INE/TSP); Maria Pfeifer (INE/INE); Natalia Almeida (LEG/SGO); Urquijo Vanegas, Lee Harvey (ITE/IPS)
▪ Taxonomy:	Client Support
▪ Operation Supported by the TC:	.
▪ Date of TC Abstract authorization:	22 Mar 2022.
▪ Beneficiary:	Colombia, Paraguay and Uruguay
▪ Executing Agency and contact name:	Inter-American Development Bank
▪ Donors providing funding:	OC SDP Window 2 - Infrastructure(W2B)
▪ IDB Funding Requested:	US\$770,000.00
▪ Local counterpart funding, if any:	US\$0
▪ Disbursement period (which includes execution period):	36 months
▪ Required start date:	July 2022
▪ Types of consultants:	Individuals and firms
▪ Prepared by Unit:	INE-Infrastructure and Energy Sector
▪ Unit of Disbursement Responsibility:	INE/INE-Infrastructure and Energy Sector
▪ TC included in Country Strategy (y/n):	No
▪ TC included in CPD (y/n):	No
▪ Alignment to the Update to the Institutional Strategy 2020-2023:	Economic integration; Environmental sustainability; Gender equality; Institutional capacity and rule of law; Productivity and innovation; Social inclusion and equality

II. Objectives and Justification of the TC

- 2.1 **Objective.** This TC aims to promote digital transformation for infrastructure service providers, the public sector, and consumers, combined with the promotion of innovation in the ecosystem. The furtherance initiatives are: (i) the framework of digital roadmaps; (ii) open innovation processes; (iii) the incorporation of digital components in operations; and (iv) the development of prototypes, tools, technologies, and digital platforms.
- 2.2 **Justification.** Digital transformation for infrastructure and energy services in Latin America and the Caribbean (LAC) can improve the provision and increase the coverage of services, with the consequent impact on the citizens' life quality and the opening towards greater social and gender inclusion. Furthermore, investment in new technologies paves the way for a sustainable and resilient infrastructure that supports the following benefits: (i) increased productivity and efficiency of companies involved in the provision of services; (ii) automation of activities; (iii) creation of new services

and products; (iv) optimization and management of installed assets; (v) cost reduction of the value chain; (vi) improvement and transparency with the public sector; (vii) precision and efficiency in decision-making; and (viii) empowerment of users regarding services.

- 2.3 Besides the benefits experienced at the individual level, digital transformation for infrastructure and energy services in LAC can bring about a radical change in the productivity of the sector enhancing coordination among various players involved in the value chain -companies, the public sector, and consumers- with the consequent benefits in terms of the economy and quality of life of the citizens who use these services. At the aggregate level, recent IDB estimates suggest that a 15%¹ reduction in the cost of infrastructure services driven by an improved leverage of digital technologies could increase the GDP of LAC by 6% in 10 years.²
- 2.4 Among the major challenges in leveraging digital transformation are addressing the barriers that constrain the digitization of service providers, the public sector and consumers, as well as promoting innovation in the digital ecosystem.
- 2.5 **Service providers** in LAC face challenges in their digital transformation that are common internationally, while others are specific to the region. In the **energy sector** the main challenges are: (i) transformation of the legacy business model because of decentralization and liberalization of the sector; (ii) low-risk profile of the companies; and (iii) lack of talent. For the **transport sector**: (i) lack of knowledge and/or distrust of the benefits derived from digital transformation by the top management; (ii) high cost of technology and lack of technological suppliers and/or technological adaptation to regional characteristics; (iii) financial and human resources barriers; and (iv) lack of collaboration with the public sector and the Academy. As for the **water and sanitation sector**: (i) innovation management and digital transformation is not embedded in service operators; (ii) scarcity of innovative culture and human talent; (iii) cost of technology and the industry's limited ability to achieve economies of scale; (iv) reduced associativity among providers, public-private collaboration and the Academy; and (v) insufficient resources to innovate.
- 2.6 **Public sector**, which plays a key role in the promotion of digital transformation in infrastructure and energy, is constrained by two key challenges: (i) reduced capacity of governments to regulate and formulate public policies adapted to the new era; and (ii) low adoption of digital technologies to improve the performance of public service providers.
- 2.7 **Consumers** are a key stakeholder in the digital transformation, as they become utilization managers. In LAC, the role of the user is limited due to the gap in access to broadband services and the lack of data disaggregated by type of user which does not allow effective action to address gender gaps, among others, in access to services. For user inclusion to occur, digital literacy and universal connectivity are essential enablers.
- 2.8 Any digital transformation strategy must include the **ecosystem** that provides technological inputs to the sector's stakeholders. Among the main barriers to the development of the ecosystem in LAC are: (i) the low innovative drive on the part of

¹ Digital transformation strategy for the infrastructure and energy sector 2021-2025 ([BID, 2022](#)).

² Cavallo, E. et al. (2020), op. cit.

sectors leaders and regulation; (ii) the lack of capital resources for the entrepreneur (investment and financing); and (iii) the shortage of digital human talent.

- 2.9 Understanding the importance and associated risks and the objective of this Technical Cooperation (TC), to strengthen the digital and innovation transformation for infrastructure-related sectors, it covers the following components: (i) building digital transformation roadmaps for the energy, transportation, water, and sanitation sectors; (ii) executing an open call within the open innovation process; (iii) incorporating digital components in infrastructure and energy operations; and (iv) supporting the development of infrastructure-related innovation and technology tools.
- 2.10 The expected results and benefits for the countries include: (i) roadmaps for the implementation of digital transformation of public sector agencies and infrastructure and energy service providers; (ii) identification of entrepreneurs and startups who provide solutions to specific sectorial problems within the scope of the Infrastructure and Energy Sector (INE) of the Bank; (iii) a catalogue of innovative solutions that can be included in INE's operations; and (iv) digital solutions that provide solutions to specific sectorial problems.
- 2.11 **Strategic alignment.** This TC is strategically aligned with the Second Update to the Institutional Strategy 2020-2023 (AB-3190-2) in the development challenge of Productivity and Innovation, by helping to improve the innovation capacity of public sector agencies and service providers. It is also aligned with the cross-cutting areas of: (i) Climate Change (CC) and Environmental Sustainability, by promoting innovation and digital technologies that enable projects that reduce pressure on the environment and strength resilience to CC impacts; (ii) Gender Equality and Diversity, by capturing data disaggregated by type of user to ensure that policy recommendations are sensitive to the needs of these groups; and (iii) Institutional Capacity and Rule of Law, by strengthening of planning capacities in the sector through the availability of more data and more robust models for decision making. In turn, it improves transparency by promoting digital platforms as an information center. It also generates roadmaps as the primary source of direction for planning technological investments and development projects in the region. Likewise, the TC will contribute to the following indicators of the IDB Group Corporate Results Framework 2020-2023 (GN-2727-12): (i) Social Progress Index; (ii) Global Gender Gap Index; (iii) CO₂ emissions from fuel combustion; and (iv) Government Effectiveness, by analyzing and enhancing measures for public services accessibility with a social inclusion and gender perspective. In addition, it is aligned with the Bank's Strategy (EBP) with Colombia 2019-2022 ([GN-2972](#)), in the strategic objectives of: (i) raising the quality of infrastructure and urban development, by promoting better transport policies based on evidence; and (ii) continue to reduce poverty, by enhancing access to opportunities through improved infrastructure and energy sector services. This TC is also aligned with the Bank's Strategy (EBP) with Paraguay 2019-2023 ([GN-2958](#)), in the strategic objectives of: (i) public management and institutions, by enhancing transparency through the use of new digital platforms; and (ii) productive and resilient infrastructure, by improving the efficiency of infrastructure and energy sectors. Finally, this TC is aligned with the Bank's Strategy (EBP) with Uruguay 2021-2025 ([GN-3056](#)) in the priority areas of: (i) public resources management, by generating and deepen sector knowledge; and (ii) sustainable productive development, by increased productivity and efficiency of companies involved in the provision of services through the use of new digital platforms.

- 2.12 This TC is also aligned with the Ordinary Capital Strategic Development (GN-2819-14) in the priority area 2: Sustainable and Resilient Infrastructure, in particular with the objectives of: (i) improve the quality of infrastructure projects in LAC, incorporating digital components that enhance their operations; (ii) promote greater investment in the region's infrastructure sector and enhance the performance, quality, and sustainability of infrastructure services, by promoting the digital transformation of infrastructure service providers, the public sector, and consumers; (iii) improve the design and monitoring of public policies and the transmission of lessons learned in the infrastructure sector, by promoting better sector policies based on evidence; and (iv) generate and deepen sector knowledge on good infrastructure practices, by strengthening of planning capacities in the sector through the availability of more data and more robust models for decision making.
- 2.13 Finally, the TC is aligned with the Bank's [Vision 2025. Reinvest in the Americas: A Decade of Opportunity](#), especially with the priorities of Digital Economy, Gender, CC, Support for SMEs, and Regional Integration by incorporating and promoting new and innovative technologies, digital transformation with a gender perspective in the public sector and among service providers, and a more thriving innovation ecosystem. By using digital technologies, infrastructure and energy sectors raise their performance by increasing efficiency, associated with task automation and cost reduction, thus generating greater global competitiveness and regional integration.

III. Description of Components and Budget

- 3.1 **Component I. Build a roadmap for the implementation of digital transformation for the energy, transportation, and water and sanitation sectors (US\$130,000.00).** It will finance diagnostics of digital transformation in the region, identify the gaps in LAC vs leading countries, and propose policy recommendations based on best practices to build an institutional and policy architecture that facilitates early adoption and leapfrogging of technologies applied to the infrastructure and energy sectors with a gender perspective. This work will result in a knowledge product that will strengthen the digital and innovation transformation for infrastructure-related sectors (e.g., inform policy dialogue, identify sector reforms needed to foster digital transformation, strengthen public-private collaboration on key digital transformation areas).
- 3.2 **Component II. Carry out an open innovation process (US\$110,000.00).** It will finance an open call to the entrepreneurial community to present innovative solutions to some of the region's main challenges of infrastructure and energy services. In addition, it will analyze the degree of innovation, costs, implementation times, functionality, and impact on social inclusion and gender equality of the proposals. Winning solutions will be accompanied in their adaptation and implementation processes.
- 3.3 **Component III. Incorporate digital components and activities in the infrastructure and energy sectors operations (US\$150,000.00).** It will finance the consultancy services and Information Technologies Services needed to provide a continuous repository of innovative solutions that can be implemented in investment operations for the beneficiary countries. In addition, it will create a collaborative tool to track the pipeline and manage the data needed to feed digital components and activities for energy, water and sanitation, and transportation operations in such countries.

- 3.4 **Component IV. Support the development of digital innovation and technology tools (US\$380,000.00).** It will finance the development of prototypes of Big Data, Machine Learning (ML), Artificial Intelligence (AI), the Internet of Things (IoT), and Information Technologies (IT) that provide solutions to sectorial problems in the beneficiary countries. In addition, it will finance the development, implementation, training, and dissemination of open-source digital applications that can be replicated in other countries. It will consist of knowledge products, webinars, workshops and audiovisual material that will be developed based on a dissemination strategy aimed at promoting digital transformation in the sectors in the region. This will provide productivity gains and contribute to environmental sustainability.
- 3.5 This operation will be financed with funds from the Bank's Ordinary Capital Strategic Development Program (OC SDP); specifically, from the OC SDP Window 2 - Infrastructure (W2B) (GN-2819-14). The purpose of this TC is consistent with the objectives and activities pursued by this Program, as one of its objectives considers the improvement in the performance, quality and sustainability of infrastructure services, generating new and innovative solutions and models, systematizing them and disseminating this new knowledge across the region.

Table 1. Indicative Budget (US\$)

Component	Description	IDB/W2B Funding	Total Funding
Component I. Build a roadmap for the implementation of digital transformation for the energy, transportation, and water and sanitation sectors	Diagnostic of digital transformation, identify gaps concerning leading countries worldwide, and propose policy recommendations with a gender perspective	130,000.00	130,000.00
Component II. Execute an open innovation within the open innovation process	Open innovation to the entrepreneurial community to present innovative solutions to some of the region's main challenges of infrastructure and energy services with social inclusion and gender equality perspectives, among others	110,000.00	110,000.00
Component III. Incorporate digital components and activities in the INE sectors operations	Consultancy services and Information Technologies Services needed to provide a continuous repository of innovative solutions that can be included in INE's operations in the beneficiary countries	150,000.00	150,000.00
Component IV. Support the development of digital innovation and technology tools	Data scientist for the development of prototypes of Big Data, ML, AI, the IoT, and IT	150,000.00	150,000.00
	Software developer for the development of prototypes of Big Data, ML, AI, the IoT, and IT	90,000.00	90,000.00

Component	Description	IDB/W2B Funding	Total Funding
	Development, implementation, training, and dissemination of open-source digital applications	140,000.00	140,000.00
Total		770,000.00	770,000.00

IV. Executing Agency and Execution Structure

- 4.1 In accordance with the request of the beneficiary countries (See Annex I), the Bank will be the executing agency. In alignment with appendix 2 of the Procedures for the Processing of Technical Cooperation Operations and Related Matters" (OP-619-4), this request is justified by the Bank's experience in preparing and developing operational and technical instruments proposed for this type of regional operations and with the goal of improving independence during the TC execution process.
- 4.2 IDB activities will be led by the Infrastructure and Energy Department (INE/INE). The foregoing will consist of: (i) conducting the financial administration of the TC; (ii) coordinating the preparation of terms of reference, by organizing the selection process, and contracting the consulting services required following IDB standards, policies, and procedures; (iii) preparing annual reports on the progress of the TC as well as the final report assessing the outcomes and products achieved with this TC; and (iv) preparing and updating the procurement plan. During the execution of the TC, and considering the available resources, it will be explored the possibility of increasing the number of beneficiary countries based on the request from the corresponding official Bank country liaison.
- 4.3 The IDB's execution is justified by its experience in: (i) institutional strengthening in the infrastructure and energy sectors; (ii) digital transformation and innovation technologies; and (iii) exchange of international experiences and best practices. Therefore, the Bank will be responsible for the procurement of consulting and non-consulting services in accordance with applicable policies and procedures. The INE/INE team in Washington, D.C., will be in charge of supervision.
- 4.4 **Supervision and monitoring.** INE/INE will be responsible for the supervision of the TC. The Team Leader (TL) will be responsible for the supervision of the TC with the support of the alternate team leader and members of the project team. INE/INE specialists from the IDB country offices in Colombia, Paraguay and Uruguay are also part of the team, which will facilitate the supervision of project execution and avoid specific costs related to execution, as well as ensure continuous contact with local counterparts. As specified above, the TL will be in charge of preparing the annual donor reporting exercise in Convergence and the final report on the execution and achievement of the objectives of the TC.
- 4.5 **Procurement and financial management.** The activities to be carried out under this operation have been included in the Procurement Plan (Annex IV) and will be executed following the Bank's established procurement methods, namely: (i) hiring individual consultants, as established in AM-650 standards; (ii) contracting of consulting firms for services of an intellectual nature according to GN-2765-4 and its associated operational guides (OP-1155-4); and (iii) contracting of logistics and other services other than consulting, in accordance with policy GN-2303-28. This TC does not

present fiduciary management risks as it will be executed by the IDB. For this reason, no financial audit is required.

- 4.6 All knowledge products derived from this TC will be the Bank's intellectual property.

V. Major Issues

- 5.1 No major risks are anticipated for the development of the TC. A couple of modest risks have been anticipated and identified as a risk the eventual low involvement of relevant stakeholders in the design and implementation of digital roadmaps and pilots. This risk is mitigated by close policy dialogue and collaboration between INE/INE and relevant public stakeholders in the region. Another risk is the eventual low participation of entrepreneurs in the open call. This risk is mitigated by close interaction with the digital ecosystem, leveraged on experience of the Knowledge, Innovation and Communication Sector (KIC) of the IDB. Finally, the development of digital tools involving new technologies presents a risk by its innovative nature. This risk will be mitigated by a thorough review of previous experiences and the use of agile methodologies.
- 5.2 Another risk is the electoral processes expected in the beneficiary countries, which could result in delays or changes in the priorities of some of the studies and the projects that derive from them. To mitigate this risk, the studies will be structured based on the approved and prioritized institutional plans. In addition, constant dissemination processes will be carried out and work will be done.
- 5.3 Additionally, due to the nature of this TC, no environmental or social risks associated with its implementation have been identified.

VI. Exceptions to Bank Policy

- 6.1 No exceptions to Bank policies have been identified.

VII. Environmental and Social Strategy

- 7.1 This TC will not finance feasibility or pre-feasibility studies of investment projects with associated environmental and social studies; therefore, it is excluded from the scope of the Bank's Environmental and Social Policy Framework (MPAS for its acronym in Spanish).

Required Annexes:

[Request from the Client - RG-T4098](#)

[Results Matrix - RG-T4098](#)

[Terms of Reference - RG-T4098](#)

[Procurement Plan - RG-T4098](#)