

## **TERMS OF REFERENCE**

### **Infrastructure and Energy sector**

**Diagnostic of digital transformation, identify gaps concerning leading countries worldwide, and propose policy recommendations with a gender perspective**

**RG-T4098**

#### **Background and Justification:**

The Inter-American Development Bank (IDB) Vision 2025 states that one of the main opportunities for economic recovery in Latin America and the Caribbean (LAC) lies in digital transformation. Part of the digital transformation relies on getting insights from analyzing data from different sources to improve decision making and promote transparency. The Infrastructure and Energy Department of the IDB (INE/INE) is looking for a consultant professional with experience in the preparation and execution of projects and knowledge material, with a special focus on the Infrastructure and Energy sectors to support the operations of the IDB's Infrastructure and Energy Divisions.

#### **The Team's Mission:**

At the IDB, we are devoted to improving lives in LAC. Since 1959, we have been a leading source of long-term financing for economic, social, and institutional development in LAC. We do more than lending though. We partner with our 48-member countries to provide LAC with cutting-edge research about relevant development issues, policy advice to inform their decisions, and technical assistance to improve on the planning and execution of projects. For this, we need people who not only have the right skills, but also are passionate about improving lives.

INE/INE supports the development of infrastructure in the Bank's member countries. The IDB envisions the infrastructure as a mean towards a more inclusive region and to promote sustainable development. The IDB's Infrastructure and Energy Divisions experience includes activities such as planning, preparation and evaluation of projects, investments in new and existing infrastructure, development and recommendation of sector public policy and regulations, institutional strengthening programs, regional dialogue with countries and other multilateral organizations, climate action programs in the sector (mitigation and adaptation practices).

#### **What You will Do:**

You will contribute to the innovation agenda of the divisions by building a roadmap for the implementation of digital transformation for the energy, transportation, and water and sanitation sectors. This includes:

- Identifying relevant sources of information to conduct: (i) desktop analysis; (ii) interviews; and (iii) interviews and roundtables.
- Defining the scope of the roadmap, considering at least the following: (i) technological scope; (ii) geographic scope; (iii) temporal scope; (iv) gender equality; and (v) sectoral scope.
- Determining leading countries at global and regional level to undertake a benchmarking assessment among them.
- Identifying best practices implemented by leading countries in digital transformation in the sectors.

- Identifying strategic private partners key to the digital transformation of the sectors. Such partners will need to include a sample of at least industrial partners and technology partners.
- Conducting round tables, surveys, and interviews to gather relevant information for the analysis.
- Analyzing and extracting data from surveys and interviews.
- Developing proposals and guidelines based on the results of the benchmarking performed.
- Drafting a roadmap of digital transformation for the sectors.
- Assisting in the dissemination of the digital transformation roadmap.

#### **Skills You will Need:**

- **Citizenship:** You are a citizen of one of our 48-member countries.
- **Consanguinity:** You have no family members (up to fourth degree of consanguinity and second degree of affinity, including spouse) working at the IDB Group.
- **Education:** Master's degree in Public Policy, Technology, Business Administration or equivalent.
- **Experience:** At least 15 years of experience in advising organizations on innovation, digital transformation, technology change.
- **Languages:** Proficient in at least one of the official languages of the Bank (Spanish, English, Portuguese, and French), preferably with a working knowledge of a second one.

#### **Core and Technical Competencies:**

- Experience in providing strategic advice to organizations related to technological change, digital transformation, and innovation.
- Excellent writing and communication skills.
- Relevant sector experience.

#### **Opportunity Summary:**

- **Type of contract:** Products and External Services Consultant (PEC). Lump Sums.
- **Length of contract:** 12 months.
- **Starting date:** January 2023.
- **Location:** Consultant place of work.
- **Responsible person:** Alexander Riobo ([jairori@iadb.org](mailto:jairori@iadb.org)), Sr. Specialist at the IDB Transport Division.
- **Requirements:** You must be a citizen of one of the IDB's 48 member countries and have no family members currently working at the IDB Group.

**Our culture:** Our people are committed and passionate about improving lives in Latin-America and the Caribbean, and they get to do what they love in a diverse, collaborative and stimulating work environment. We are the first Latin American and Caribbean development institution to be awarded the EDGE certification, recognizing our strong commitment to gender equality. As an employee you can be part of internal resource groups that connect our diverse community around common interests. Because we are committed to providing equal opportunities in employment, we embrace all diversity and encourage women, LGBTQ+, persons with disabilities, afro-descendants, and indigenous people to apply.

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### Infrastructure and Energy sector

**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**

**RG-T4098**

#### **1. Background and Justification:**

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#### **2. Objectives:**

Execute open innovation 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 support the analysis of the innovative solutions and co-design potential pilots, considering costs, implementation times, functionality, and impact on social inclusion and gender equality of the proposals.

#### **3. Scope of Services:**

The selected firm will contribute to the innovation agenda of the Divisions by implementing an open innovation process to contribute for the digital transformation for the energy, transportation, and water and sanitation sectors. This includes:

- Identifying of potential partners to conduct: (i) desktop analysis; (ii) questionnaires or interviews; (iii) problem identification workshops; and (iv) interviews and roundtables.
- Identifying a range of possible solutions for the prioritize challenges.
- Defining a process to evaluate and due diligence viable technologies to present in Open Innovation events.
- Supporting the organization of Open Innovation events to showcase solutions to potential clients, leading to the identification of possible matches between clients and solutions.
- Supporting the design of Open Innovation pilots, including facilitation meetings between INE's client and innovators to define the scope and evaluation methods for pilots.
- Suggesting pilots to be accompanied in their adaptation and implementation processes by INE.

#### **4. Deliverables:**

- **Product 1.** Deliver a work plan and technical proposed methodology.
- **Product 2.** List of prioritized challenges and validated with INE's client to be part of Open Innovation Process.
- **Product 3.** List of validated solutions for each prioritized challenge.

- **Product 4.** Report of Open Innovation events to showcase innovation solutions for INE's client.
- **Product 5.** Report of potential pilots to be accompanied in their adaptation and implementation processes by INE.

## 5. Qualifications

At least one team member with each of the following qualifications is required to participate as part of the team:

- More than 10 years of experience in entrepreneur support.
- More than 5 years of experience in supporting public sector to implement innovation.
- Expertise scouting innovative solutions in the infrastructure sector.
- Expertise in the design of pilots to validate solutions with potential clients.

## 6. Acceptance Criteria

- The responsible supervision team will forward comments within two working days of receipt of the reports.
- The firm will produce a review memorandum detailing all comments received and the manner in which they are considered. When the comments result in changes to the reports, the firm shall submit the respective revised report (version 2) together with the review memorandum.
- Version 2 reports will be accepted or rejected within 2 working days of submission by the responsible supervision team. Rejection will only be based on the manner in which they were addressed. No additional comments will be made, or changes submitted. The firm will review the memorandum and submit a new version of the reports if necessary. If the new version is not considered satisfactory the firm will resubmit the corrected reports until they are received to satisfaction or use the dispute resolution provisions of the contract.

## 7. Other requirements

- The parties shall keep all reports confidential, with no distribution outside the designated persons participating in the project.
- The firm shall not be authorized to make public statements unless directly instructed to do so by the responsible person.
- Electronic copies of reports, including all versions and review memoranda, will be stored in the cloud (platform to be agreed), limited to the designated persons participating in the project.

## 8. Supervision

The IDB team leader will be Alexander Riobo ([jairori@iadb.org](mailto:jairori@iadb.org)), Sr. Specialist at the IDB Transport Division.

## 9. Schedule of Payments

Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.

<b>Payment Schedule</b>
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Deliverables	%
Product 1	10
Product 2	15
Product 3	15
Product 4	25
Product 5	35
<b>Total</b>	<b>100</b>

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**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**

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#### **What You will Do:**

You will contribute to the innovation agenda of the divisions by:

- Reviewing the project pipeline of the energy, transportation and water and sanitation divisions approved in the last 3 years and identifying and defining their digital components.
- Identifying best practices implemented by the public and private sector as well as new digital solutions available in the market.
- Producing a comprehensive portfolio of existing digital solutions and new products on the market that could be implemented by the energy, transportation and water and sanitation divisions in the beneficiary countries.
- Reviewing related documents to ensure accuracy, integrity, quality of the final product and the correct application of relevant guidelines.
- Supporting the preparation and participation in missions, Terms of Reference of the missions, preparation of the memo and sending of communications.

- Providing technical, logistical and administrative support in the organization of seminars, conferences and meetings.
- Assisting with the management and execution of the divisions' portfolios.
- Conducting literature reviews in areas related to the sectors and related areas, through the search, analysis and selection of articles published in scientific journals, reports of the public and private sectors, publications of international organizations and other sources of knowledge production in the sector.
- Elaborating inputs and materials for knowledge activities and supporting their dissemination.

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- **Education:** Bachelor's degree in the areas of civil engineering, finance, economics, etc.
- **Experience:** At least 3 years of relevant experience.
- **Languages:** Proficient in at least one of the official languages of the Bank (Spanish, English, Portuguese, and French), preferably with a working knowledge of a second one.

#### **Core and Technical Competencies:**

- Advanced knowledge in data generation and collection techniques, database construction, analysis of results and preparation of technical documents, ability to work in multidisciplinary teams.

#### **Opportunity Summary:**

- **Type of contract:** Products and External Services Consultant (PEC). Lump Sums.
- **Length of contract:** 6 months.
- **Starting date:** September 2022.
- **Location:** Consultant place of work.
- **Responsible person:** Alexander Riobo ([jairori@iadb.org](mailto:jairori@iadb.org)), Sr. Specialist at the IDB Transport Division.
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## TERMS OF REFERENCE

### Infrastructure and Energy sector

#### Data scientist for the development of prototypes of Big Data, ML, AI, the IoT, and IT

RG-T4098

#### **Background and Justification:**

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#### **What You will Do:**

You will contribute to the innovation agenda of the divisions by:

- Contributing to the Digital Transformation agenda of the Infrastructure and Energy Department by promoting new technologies such as Artificial Intelligence (AI), Machine Learning (ML), Big Data, among others.
- Participating in the design and execution of prototypes, pilots, and project activities and components that include application and use of new and exponential technologies.
- Identifying opportunities for the use of new technologies that contribute to reduce the development gap in the Energy, Water and Transportation sectors in LAC and contribute to the generation of ideas and in the realization of appropriate questions for the solution of sectoral problems through the use of algorithms and models based on AI.
- Extracting massive amounts of data in heterogeneous and unstructured formats from multiple internal and external sources, perform the cleaning and adjustment of such data and discard irrelevant information, thus supporting the construction of databases and information

repositories, the management of large amounts of data (Big Data) and its analysis through Machine Learning algorithms.

- Defining implementation plans for sophisticated data analysis tools, both statistical and Machine and Deep Learning and develop predictive and prescriptive modeling applications according to divisional needs.
- Participating in the development of public policy proposals and regulation of new technologies in infrastructure.
- Creating applications and developments to maintain the confidentiality of certain data.
- Proposing neural network models for detection, classification and prediction of different variables, according to the needs of the divisions.
- Supporting in the structuring, storage and processing of data, creation of applications in the Bank's infrastructure and applications for external clients.
- Assisting in the elaboration of publications for the IDB.
- Elaborating inputs for the follow-up activities of the Infrastructure and Energy Management.
- Developing and model machine learning algorithms to create and/or adapt new solutions that help the digital transformation in LAC.

#### **Skills You will Need:**

- **Citizenship:** You are a citizen of one of our 48-member countries.
- **Consanguinity:** You have no family members (up to fourth degree of consanguinity and second degree of affinity, including spouse) working at the IDB Group.
- **Education:** Electrical, systems, electronic or related engineering, with a Master's degree in Computer Science, Data Science, Innovation Management, Technology Management, Technology Strategy, MBA, or related areas.
- **Experience:** 5 years of experience in technology projects, preferably in infrastructure sectors.
- **Languages:** Proficient in at least one of the official languages of the Bank (Spanish, English, Portuguese, and French), preferably with a working knowledge of a second one.

#### **Core and Technical Competencies:**

- Experience developing projects with digital technologies, such as connectivity, Machine Learning, Big Data, Cloud Computing.
- Understanding of Machine Learning related algorithms (deep learning, time series and classical algorithms).
- Knowledge in Python programming language.
- Knowledge in visualization tools such as Tableau, Power BI, etc.

#### **Opportunity Summary:**

- **Type of contract:** Products and External Services Consultant (PEC). Lump Sums.
- **Length of contract:** 12 months.
- **Starting date:** April 2023.

- **Location:** Consultant place of work.
- **Responsible person:** Alexander Riobo ([jairori@iadb.org](mailto:jairori@iadb.org)), Sr. Specialist at the IDB Transport Division.
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### Infrastructure and Energy sector

#### Data scientist for the development of prototypes of Big Data, ML, AI, the IoT, and IT

RG-T4098

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#### **What You will Do:**

You will contribute to the innovation agenda of the divisions by:

contributing to analyze data from different sources, by developing software to implement digital tools for the INE Sector and by producing reports. This includes:

- Contributing to the Digital Transformation agenda of the Infrastructure and Energy Department by promoting new technologies such as Artificial Intelligence (AI), Machine Learning, Big Data, among others.
- Participating in the design and execution of prototypes, pilots, and project activities and components that include application and use of new and exponential technologies.
- Identifying opportunities for the use of new technologies that contribute to reduce the development gap in the Energy, Water and Transportation sectors in LAC and contribute to the generation of ideas and in the realization of appropriate questions for the solution of sectoral problems through the use of algorithms and models based on AI.
- Extracting massive amounts of data in heterogeneous and unstructured formats from multiple internal and external sources, perform the cleaning and adjustment of such data and discard

irrelevant information, thus supporting the construction of databases and information repositories, the management of large amounts of data (BIG DATA) and its analysis through Machine Learning algorithms.

- Defining implementation plans for sophisticated data analysis tools, both statistical and Machine and Deep Learning and develop predictive and prescriptive modeling applications according to divisional needs.
- Participating in the development of public policy proposals and regulation of new technologies in infrastructure.
- Creating applications and developments to maintain the confidentiality of certain data.
- Proposing neural network models for detection, classification and prediction of different variables, according to the needs of the divisions.
- Supporting in the structuring, storage and processing of data, creation of applications in the Bank's infrastructure and applications for external clients.
- Assisting in the elaboration of publications for the IDB.
- Elaborating inputs for the follow-up activities of the Infrastructure and Energy Management.
- Developing and model machine learning algorithms to create and/or adapt new solutions that help the digital transformation in LAC.

#### **Skills You will Need:**

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- **Experience:** 5 years of experience in technology projects, preferably in infrastructure sectors.
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#### **Core and Technical Competencies:**

- Experience developing projects with digital technologies, such as connectivity, Machine Learning, Big Data, Cloud Computing.
- Understanding of Machine Learning related algorithms (deep learning, time series and classical algorithms).
- Knowledge in Python programming language.
- Knowledge in visualization tools such as Tableau, Power BI, etc.

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#### Software developer for the development of prototypes of Big Data, ML, AI, the IoT, and IT

RG-T4098

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#### **What You will Do:**

You will contribute to the innovation agenda of the divisions by contributing to analyze data from various sources, by developing software to implement digital tools for the INE Sector and by producing reports. This includes:

- Maintaining the architecture for the existing digital tools of the Bank and eventually developing an interactive front end for them and deploying it into the Infradinamica platform.
- Identifying IT systems of the Bank that produce data related to project execution in the Infrastructure and Energy Sector.
- Developing software routines that automate data gathering throughout APIs, forms and web scrapping, among others.
- Defining the data structures for storing data gathered and processed in concordance with Bank's and ITE guidelines.
- Developing visualizations for the analysis mentioned above.



- Supporting the process of migrating digital applications developed by INE's teams to the Bank's cloud infrastructure, according to the ITE Department requirements and the requirements of the clients into the Infradinamica platform.
- Ensuring a flexible and practical approach for managing massive data sets and unstructured data.
- Deploying the technology in LAC countries/cities.

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- **Consanguinity:** You have no family members (up to fourth degree of consanguinity and second degree of affinity, including spouse) working at the IDB Group.
- **Education:** Bachelor's Degree in areas related to Software Development, Data Science, Computer Science, or a related field in an accredited university.
- **Experience:** 3 years and Relevant experience in the Software Development projects, preferably including Deep Learning models in cloud infrastructure.
- **Languages:** Proficient in at least one of the official languages of the Bank (Spanish, English, Portuguese, and French), preferably with a working knowledge of a second one.

#### **Core and Technical Competencies:**

- Strong understanding of Software Development.
- Programming knowledge of Python or R.
- Experience with Cloud Infrastructure, Data Storage and Management infrastructure on which to run analytics tools as well as a place to store and query data.
- Knowledge on how to use cloud services from major providers (AWS or Azure).

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#### Development, implementation, training, and dissemination of open-source digital applications

RG-T4098

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The Inter-American Development Bank (IDB) Vision 2025 states that one of the main opportunities for economic recovery in Latin America and the Caribbean (LAC) lies in digital transformation. Part of the digital transformation relies on getting insights from analyzing data from different sources to improve decision making and promote transparency. The Infrastructure and Energy Department of the IDB (INE/INE) is looking for a consultant with experience in data analytics related to the infrastructure and energy sector, as well as development of computer-based tools using statistical methodologies and Machine Learning to support the operations of the IDB's Infrastructure and Energy Divisions.

#### **The Team's Mission:**

At the IDB, we are devoted to improving lives in LAC. Since 1959, we have been a leading source of long-term financing for economic, social, and institutional development in LAC. We do more than lending though. We partner with our 48-member countries to provide LAC with cutting-edge research about relevant development issues, policy advice to inform their decisions, and technical assistance to improve on the planning and execution of projects. For this, we need people who not only have the right skills, but also are passionate about improving lives.

INE/INE supports the development of infrastructure in the Bank's member countries. The IDB envisions the infrastructure as a mean towards a more inclusive region and to promote sustainable development. The IDB's Infrastructure and Energy Divisions experience includes activities such as planning, preparation and evaluation of projects, investments in new and existing infrastructure, development and recommendation of sector public policy and regulations, institutional strengthening programs, regional dialogue with countries and other multilateral organizations, climate action programs in the sector (mitigation and adaptation practices).

#### **What You will Do:**

The general objective of this consultancy is the support of digital transformation for infrastructure and energy services in LAC through knowledge dissemination activities such as knowledge products, the organization of dissemination workshops, production of audiovisual content and design and edition of publications among others. Specifically, this consultancy will include at least:

- Review of the products delivered by the bank's team related to this consultancy and other related inputs.
- Preparing reports, presentations, and documents that support the Bank's efforts to promote Digital transformation in the infrastructure services.
- Development of dissemination strategies.
- Design of intermediate and final versions of knowledge products.
- Coordination of meetings.
- Management of media events such as webinars or similar. At least 1 will be onsite.

- Organize workshops for the dissemination of the products developed.
- Generation of audiovisual material for dissemination in digital media.

#### **Skills You will Need:**

- **Citizenship:** You are a citizen of one of our 48-member countries.
- **Consanguinity:** You have no family members (up to fourth degree of consanguinity and second degree of affinity, including spouse) working at the IDB Group.
- **Education:** Degree in Design, Publicity, Social Communications or other related area.
- **Experience:** 5 years of experience in the design of publications and/or institutional communication strategies.
- **Languages:** Proficient in at least one of the official languages of the Bank (Spanish, English, Portuguese, and French), preferably with a working knowledge of a second one.

#### **Opportunity Summary:**

- **Type of contract:** Products and External Services Consultant (PEC). Lump Sums.
- **Length of contract:** 24 months.
- **Starting date:** April 2023.
- **Location:** Consultant place of work.
- **Responsible person:** Alexander Riobo ([jairori@iadb.org](mailto:jairori@iadb.org)), Sr. Specialist at the IDB Transport Division.
- **Requirements:** You must be a citizen of one of the IDB's 48 member countries and have no family members currently working at the IDB Group.

**Our culture:** Our people are committed and enthusiastic about improving lives in Latin-America and the Caribbean, and they get to do what they love in a diverse, collaborative and stimulating work environment. We are the first Latin American and Caribbean development institution to be awarded the EDGE certification, recognizing our strong commitment to gender equality. As an employee you can be part of internal resource groups that connect our diverse community around common interests. Because we are committed to providing equal opportunities in employment, we embrace all diversity and encourage women, LGBTQ+, persons with disabilities, afro-descendants, and indigenous people to apply.

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**Our team in Human Resources carefully reviews all applications.**