

BR-T1432

BRAZIL

ENERGY TRANSITION PROGRAM (ETP)

TERMS OF REFERENCE

COMPONENT 1

Annex A.

A-1. ANALYSIS OF GATHERING INFORMATION FOR LONG-TERM ENERGY PROSPECTIVE MODELS.

A-2. DEVELOPMENT OF ENERGY TRANSITION SCENARIOS (This Terms of Reference are applicable for several different scenarios)

BR-T1432**BRAZIL****Job Title:** ANALYSIS OF GATHERING INFORMATION FOR LONG-TERM ENERGY PROSPECTIVE MODELS.

Energy Division of the Infrastructure and Energy Department (INE/ENE)

THE CONTEXT

Energy is present in all human activities and can be considered one of the main indicators when assessing the stage of development of a society, by signaling its levels of production, wealth and well-being. Historically, energy demand growth has been coupled with economic development. Even with gains in energy efficiency, economic growth normally requires the development, construction and maintenance of energy infrastructure to secure energy supply, both in terms of quantity and quality.

The global energy sector is experiencing transformations that will impact in different dimensions the way society produces and consumes energy. These transformations are being boosted by climate change, new consumption patterns and technological development. Different scenarios indicate that the transition to renewable sources is taking place at a faster rate than originally expected.

In addition, the power sector is being shaped by digitalization, decarbonization and distributed energy sources. Innovative technologies promote the utilization of renewable sources in an effective and competitive way while, at the same time, they change the role of consumers in the energy system. Consumers are expected to assume a central position in the supply and demand dynamics, as well as create new business model's opportunities.

Other segments, such as the transport sector, are also being influenced by innovative technologies and consumer behavior, changing significantly the energy demand profile. New mobility patterns are being driven by sharing and autonomous technologies, as well as the growing role of electric vehicles. This last one is marked by its disruptive potential and fast technological development.

Brazil is characterized by a high degree of availability and diversity of energy sources. In this sense, the country's energy transition points to a diversified energy mix, based on efficient and competitive energy sources. Therefore, it is relevant to analyze different scenarios regarding the Brazilian energy transition, in order to support decision makers in the direction of a competitive and sustainable energy future.

In this context of transformation, the complexity of energy planning is increasing exponentially, given the degree of uncertainties that currently exists in key variables, such as: technological change related to adoptions curves and costs, regulatory frameworks, carbon pricing, stakeholder engagement, and others. Each of these variables can have many future outcomes, creating

different possible futures. One of the methodologies to conduct energy planning with uncertainty in key variables is to construct different scenarios that enable discussion among stakeholders, aiming for a more informed and transparent decision-making process.

OBJECTIVES.

The objective of this consultancy is to gather information for the development of long-term energy prospective models for the energy transition of Brazil. The specific objectives are related to: i) to identify the particularities that characterize the context of energy transition in Brazil; ii) analyze the competitiveness of the various sources available; iii) evaluate the prospects for long-term evolution; and iv) perform data treatment to be focalized for energy transitions scenarios.

MAIN ACTIVITIES.

To achieve the objectives of this consultancy, the consultant firm will develop the following activities:

- A. Develop a Work Plan for the consultancy showing in details all activities to be developed.
- B. Analyze the diversity and availability of energy sources in Brazil, identifying a mix of sources to secure a sustainable and reliable energy supply.
- C. Determine all variables for the transformation of the energy sector of Brazil, taking into account the vision of different actors such as the public and private sectors, the academia, and public in general, under a context of the climate change and the penetration of innovative technologies in generation, transmission and distribution.
- D. Analyze the current stage of technological development in Brazil, as well as to understand the critical elements that influence the possible scenarios of evolution.
- E. Analyze all kind of externalities to be involved for the energy transition in Brazil, such as social, technology, environmental sectors.

These activities will be supervised by CEBRI and should be coordinated between CEBRI, EPE and the IDB team.

DELIVERABLES:

The contractual's main deliverables are

1. Workplan and the proposed agenda to develop all activities described in section above.
2. A Draft Report of the activities developed in B, C, D and E,
3. A Final Report including all activities developed in this consultancy.

PAYMENTS TIMELINE:

- **20%** upon approval of the workplan and activities' agenda.
- **40%** upon delivery and approval of the Draft Report.

- **40%** upon delivery and approval of the Final Report.

QUALIFICATIONS:

The consulting firm should have up to 15 years' experience for the development of energy prospective models, development of energy policy, energy planning and data analysis. The team members of the consulting firms should be defined by experts in following disciplines; Economy, Mechanical Engineering, Chemical Engineering, Electric Engineering, Econometrics, Energy Planning and Administration, among others. All members of the consulting firm should be able to have an effective communication in English; knowledge of Portuguese would be valuable.

OPPORTUNITY SUMMARY:

- **Type of contract and modality:** International PEC
- **Length of contract:** four (4) months
- **Starting date:** 1Q-2020
- **Location:** Consulting firm's address.
- **Responsible person:** CEBRI Project coordinator
- **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.

We encourage women, afro-descendants, people of indigenous origins, and persons with disabilities to apply.

About us: At the IDB, we're committed to improving lives. Since 1959, we've been a leading source of long-term financing for economic, social, and institutional development in Latin America and the Caribbean. We do more than lending though. We partner with our 48-member countries to provide Latin America and the Caribbean 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.

Our team in Human Resources carefully reviews all applications.

BR-T1432

BRAZIL

Job Title: DEVELOPMENT OF ENERGY TRANSITION SCENARIOS (PART 1).

Energy Division of the Infrastructure and Energy Department (INE/ENE)

THE CONTEXT

Energy is present in all human activities and can be considered one of the main indicators when assessing the stage of development of a society, by signaling its levels of production, wealth and well-being. Historically, energy demand growth has been coupled with economic development. Even with gains in energy efficiency, economic growth normally requires the development, construction and maintenance of energy infrastructure to secure energy supply, both in terms of quantity and quality.

The global energy sector is experiencing transformations that will impact in different dimensions the way society produces and consumes energy. These transformations are being boosted by climate change, new consumption patterns and technological development. Different scenarios indicate that the transition to renewable sources is taking place at a faster rate than originally expected.

In addition, the power sector is being shaped by digitalization, decarbonization and distributed energy sources. Innovative technologies promote the utilization of renewable sources in an effective and competitive way while, at the same time, they change the role of consumers in the energy system. Consumers are expected to assume a central position in the supply and demand dynamics, as well as create new business model's opportunities.

Other segments, such as the transport sector, are also being influenced by innovative technologies and consumer behavior, changing significantly the energy demand profile. New mobility patterns are being driven by sharing and autonomous technologies, as well as the growing role of electric vehicles. This last one is marked by its disruptive potential and fast technological development.

Brazil is characterized by a high degree of availability and diversity of energy sources. In this sense, the country's energy transition points to a diversified energy mix, based on efficient and competitive energy sources. Therefore, it is relevant to analyze different scenarios regarding the Brazilian energy transition, in order to support decision makers in the direction of a competitive and sustainable energy future.

In this context of transformation, the complexity of energy planning is increasing exponentially, given the degree of uncertainties that currently exists in key variables, such as: technological change related to adoptions curves and costs, regulatory frameworks, carbon pricing, stakeholder engagement, and others. Each of these variables can have many future outcomes, creating different possible futures. One of the methodologies to conduct energy planning with uncertainty

in key variables is to construct different scenarios that enable discussion among stakeholders, aiming for a more informed and transparent decision-making process.

OBJECTIVES.

The objective of this consultancy is to develop energy transition scenarios of Brazil. The specific objectives are to: i) develop the prospective models that could drive the energy transition in Brazil for the medium and long term; ii) identify all risks and disruptions involved for the energy transition; iii) provide innovative recommendations from a technical, economy and policy point of view to achieve the transition of the energy matrix in Brazil; and iv) elaborate a roadmap for the implementation of an energy transition prospective.

MAIN ACTIVITIES.

To achieve the objectives of this consultancy, the consultant firm will develop the following activities:

- a. Develop a Work Plan for the consultancy showing in details all activities to be developed.
- b. With a comprehensive data treatment and analysis, the consulting firm should develop a sensitive analysis of the energy transition scenarios of Brazil.
- c. Development of prospective models that could identify in different scenarios the transition of the energy matrix in the medium and long terms, including all possible disruptions and risks, as well as innovative recommendations from a technical, economy and policy point of view to achieve the transition of the energy matrix in Brazil
- d. Elaborate a comprehensive roadmap for the implementation of the energy transition for the medium and long term in Brazil.

These activities will be supervised by CEBRI and should be coordinated between CEBRI, EPE and the IDB team.

DELIVERABLES:

The contractual's main deliverables are

1. Workplan and the proposed agenda to develop all activities described in section above.
2. A Draft Report of the all main activities mentioned in previous section.
3. A Final Report including all activities developed in this consultancy.
4. Delivering of one executive and one full version Power Point presentations including the main results and conclusions of the energy transition in Brazil.

PAYMENTS TIMELINE:

- **20%** upon approval of the workplan and activities' agenda.
- **40%** upon delivery and approval of the Draft Report.
- **40%** upon delivery and approval of the Final Report and Power Point presentations.

QUALIFICATIONS:

The consulting firm should have up to 15 years' experience for the development of energy prospective models, development of energy policy, energy planning and data analysis. The team members of the consulting firms should be defined by experts in following disciplines; Economy, Mechanical Engineering, Chemical Engineering, Electric Engineering, Econometrics, Energy Planning and Administration, among others. All members of the consulting firm should be able to have an effective communication in English; knowledge of Portuguese would be valuable.

OPPORTUNITY SUMMARY:

- **Type of contract and modality:** International PEC
- **Length of contract:** seven (7) months
- **Starting date:** 3Q-2020
- **Location:** Consulting firm's address.
- **Responsible person:** CEBRI Project coordinator
- **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.

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BRAZIL

BR-T1432

ENERGY TRANSITION PROGRAM (ETP) – Brazil

TERMS OF REFERENCE

Job Title: Energy Transition Program Coordinator.

Energy Division of the Infrastructure and Energy Department (INE/ENE)

THE CONTEXT.

Energy is present in all human activities and can be considered one of the main indicators when assessing the stage of development of a society, by signaling its levels of production, wealth and well-being. Historically, energy demand growth has been coupled with economic development. Even with gains in energy efficiency, economic growth normally requires the development, construction and maintenance of energy infrastructure to secure energy supply, both in terms of quantity and quality.

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In this context, the IDB has approved a Technical Cooperation (TC), referred as Energy Transition Program, to support the development of long-term scenarios for the energy transition in Brazil. The specific objectives of the ETP are to: (i) create a stakeholder forum to disseminate and discuss long-term energy transition scenarios in Brazil, through: (a) assumptions validation; (b) reduction of uncertainties; and (c) promotion of consensus on macrotrends; and (ii) develop long-term energy scenarios based on an independent and neutral stakeholder forum.

OBJECTIVES.

The objective of this consultancy is to coordinate the activities of as Energy Transition Program (ETP).

MAIN ACTIVITIES.

To achieve the objectives of this consultancy, the consultant firm will develop the following activities:

- (i) Prepare the work plan for the ETP;
- (ii) Develop a procurement plan, and supervise its execution;
- (iii) Coordinate all the hiring process, and inform the Bank of the advance in the execution;
- (iv) Prepare all the reports that need to be sumited to the Bank and other donors, including the monitoring of the result matrix;
- (v) Act as focal point between CEBRI and other institutions related to the program

These activities will be supervised by the Centro Brasileiro de Relações Internacionais (CEBRI), and should be coordinated between CEBRI, EPE and the IDB team.

DELIVERABLES:

The contractual's main deliverables are:

- i. A workplan and the proposed agenda to develop all activies described in section above.
- ii. A monthly report describing the advance in the Program execution, the main problem encountered, the solutions proposed.
- iii. All the reports that need to be presented by CEBRI to the IDB and other donors.
- iv. A final Report including all activities developed in this consultancy.

PAYMENTS TIMELINE:

- Payments will be processed upon the approval of each monthly report, which should include the number of days dedicated.

QUALIFICATIONS:

The consulting firm should have up to 15 years' experience for the development of energy prospective models, development of energy policy, energy planning and data analysis. The team members of the consulting firms should be defined by experts in following disciplines: Economy, Mechanical Engineering, Chemical Engineering, Electric Engineering, Econometrics, Energy Planning and Administration, among others. All members of the consulting firm should be able to have an effective communication in English; knowledge of Portuguese would be valuable.

OPPORTUNITY SUMMARY:

- **Type of contract and modality:** International PEC
- **Length of contract:** twenty-four (24) months
- **Starting date:** 3Q-2020
- **Location:** Rio de Janeiro, Brasil
- **Responsible person:** CEBRI Project coordinator
- **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.

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