

TC ABSTRACT

I. Basic Project Data

▪ Country/Region:	REGIONAL/IDB
▪ TC Name:	Promotion of the Green Hydrogen Market in LAC Countries
▪ TC Number:	RG-T3777
▪ Team Leader/Members:	GISCHLER BLANCO, CHRISTIAAN (INE/INE) Team Leader; AIELLO, ROBERTO GABRIEL (INE/ENE) Alternate Team Leader; SUCRE PANTIN, CARLOS GUSTAVO (INE/INE) Alternate Team Leader; CARVAJAL BLANCO, PAOLA (INE/INE); BONIFAZ URQUIZU, JEANETTE (INE/INE); BRUSATIN CADAVID, NICOLA (INE/INE); CORREA POSEIRO, CECILIA (INE/ENE); SIROIT, GASTON (INE/INE); SOLOGUREN BLANCO, JAIME (INE/ENE); JIMENEZ DE ARECHAGA, MARIA DEL PILAR (LEG/SGO); GAVIANO, ANDREA (VPS/ESG)
▪ Taxonomy:	Client Support
▪ Number and name of operation supported by the TC:	N/A
▪ Date of TC Abstract:	11 Aug 2020
▪ Beneficiary:	Governments of Uruguay and Trinidad & Tobago
▪ Executing Agency:	INTER-AMERICAN DEVELOPMENT BANK
▪ IDB funding requested:	US\$363,817.00
▪ Local counterpart funding:	US\$0.00
▪ Disbursement period:	48 months
▪ Types of consultants:	Individuals; Firms
▪ Prepared by Unit:	INE - Infrastructure and Energy Sector
▪ Unit of Disbursement Responsibility:	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 2010-2020:	Productivity and innovation

II. Objective and Justification

- 2.1 The objective of this Technical Cooperation (TC) is to support the development of a green hydrogen market as a future innovative and competitive energy source which will contribute to decrease greenhouse gas (GHG) emissions and accelerate the decarbonization process.
- 2.2 Justification. The production of hydrogen is categorized into three: gray, blue, and green hydrogen. The grey refers to H₂ produced from fossil fuels, mainly natural gas and it accounts for 75% of global supply. Blue hydrogen refers to a production process that uses fossil fuels but where all emissions are captured and sequestered, through carbon capture and storage methods. Green hydrogen is obtained using renewable energy as a source power and an electrolyzer to separate the water molecule into hydrogen (H₂) and oxygen (O₂) molecules. Various countries in the LAC region have expressed interest in producing green hydrogen and assess its feasibility to reduce emissions in the transportation, petrochemical and industrial sector. This TC will give priority to the countries that already have defined pilot projects to evaluate the performance and potential of green hydrogen production to decarbonize the local economies or export to international markets. Uruguay has been identified as one of the leading countries with great

potential for green hydrogen (GH₂) production due to its potential for renewable energy production and excess of clean power generation capacity. Local energy companies are developing a pilot project (in conceptual phase) to produce green hydrogen using 97% of renewable energy and to power up ten passenger buses or freight trucks. Moreover, the government of Uruguay is in the process of signing a Memorandum of Understanding (MoU) with the Rotterdam Port Authority to evaluate the potential green hydrogen production and exports from Uruguay to European countries. Another country with great potential in the LAC region is Trinidad and Tobago (T&T). T&T economy is primarily driven by the hydrocarbon sector and it is the largest grey hydrogen producer and exporter in the LAC region, with the energy sector accounting for approximately 40% of the country's GDP, and the petrochemicals sector contributing over 20% of total exports. The Honourable Minister of Finance in the 2019/2020 National Budget Presentation indicated that the State was desirous of exploring different applications of green hydrogen within the local economy and of encouraging collaborations with the private sector, academia, and international organizations.

Green Hydrogen does not emit GHG during production or consumption processes. It could be used as a feedstock, a fuel, or an energy carrier and storage. With the help of Fuel Cell, green hydrogen combined with oxygen (from the air) can once produce water and liberate electricity, therefore becoming also a source of green power. The World Economic Forum (WEF), International Renewable Energy Agency (IRENA), International Energy Agency (IEA) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the governments of Japan (which has declared its intention to consume up to 300,000 tons per year by 2030), Australia and Germany have concluded that the use of hydrogen as an energy carrier is key to the rapid, sustained and cost-effective reduction of GHG emissions. The development of green hydrogen production at a large scale could support both, emission reduction in hard-to-electrify industries and the development of a new export product leveraging local advantages

III. Description of Activities and Outputs

- 3.1 **Component I: Development of pre-feasibility studies for green hydrogen production and/or commercialization projects.** This component will support green hydrogen pilot project developments in T&T and UR to speed up their decarbonization strategies. This component will finance technical and economic pre-feasibility studies associated with green hydrogen production, consumption and commercialization. The following activities will be included: (i) National and international market assessment (ii) Business model analysis (iii) Infrastructure synergies assessment, and (v) legal, environmental and/or social analysis
- 3.2 **Component II: Component II: Training and dissemination.** This component will develop strategies to disseminate the work carried out and ensure knowledge sharing. Regional policy makers will benefit of learning and sharing experiences about technical, financial, regulatory issues. Similarly, private companies will learn about business opportunities. In that sense, it is expected to finance (i) Communication campaign to disseminate key results including at least two events and one publication; and (ii) Virtual training program for government officials

IV. Budget

Indicative Budget

Activity/Component	IDB/Fund Funding	Counterpart Funding	Total Funding
Development of pre-feasibility studies for green hydrogen production and/or commercialization	US\$333,817.00	US\$0.00	US\$333,817.00

projects			
Component II: Training and dissemination	US\$30,000.00	US\$0.00	US\$30,000.00
Total	US\$363,817.00	US\$0.00	US\$363,817.00

V. Executing Agency and Execution Structure

- 5.1 The Bank, through the Special Group for Mining, Geothermal Energy, and Hydrocarbons (INE/MGH) and the Energy Division (INE/ENE) of the Infrastructure and Energy Department (INE/INE). will act as the executing agency due to its ability to leverage its extensive network of internal and external subject-matter experts and well-established relationships with the stakeholders involved. The Bank will contract individual consultants, consulting firms, and non-consulting services in accordance with Bank's current procurement policies and procedures
- 5.2 The IDB will lead implementation, programmatic oversight of the different activities, and coordinate results reporting with other organizations operating at the national level.
- 5.3 The Bank will contract individual consultants, consulting firms, and non-consulting services in accordance with the Bank's current procurement policies and procedures for Bank-executed operations: Recruitment of individual consultants AM-650; Contracting of consulting firms for services of an intellectual nature GN-2765-1 and its operational guidelines OP-1155-4; and Procurement of logistics services and purchase of goods GN-2303-20.

VI. Project Risks and Issues

- 6.1 The main risk for the implementation of this TC lies with the technical complexity of the hydrogen technology and the coordination with all the stakeholders associated with each project (policymakers, technology developers, energy companies, etc.). The IDB team will draw from well-established and recognized international best practices, methodologies, and experienced consultants to help avoid this risk and address potential issues with green hydrogen technology data. The team will also set different layers of peer reviewing throughout the process to ensure quality and relevance
- 6.2 Another risk for the implementation of the technical cooperation is delays in the implementation of activities involving local authorities or site visits. The pandemic has impacted the speed of response from authorities and public companies to different projects because of the teleworking conditions. Similarly, travel restrictions could impact of local data gathering for international consulting studies. To mitigate this, the project team will implement all activities in close coordination with IDB country offices and key country stakeholders, including representatives from government, industry, and civil society. In addition, consulting services will foresee the use of remote communication tools to ensure the scope of work completion.

VII. Environmental and Social Classification

- 7.1 The ESG classification for this operation is "undefined".