TC ABSTRACT

I. Basic Project Data

▪ Country/Region:	REGIONAL/IDB
▪ TC Name:	Decarbonization Pathways for Heavy Industry in the LAC Region
▪ TC Number:	RG-T3918
▪ Team Leader/Members:	GISCHLER BLANCO, CHRISTIAAN (INE/INE) Team Leader; GARCIA FERNANDEZ, JAVIER (INE/INE); JUAREZ OLVERA, MARIEL (CSD/CCS); BRUSATIN CADAVID, NICOLA (INE/INE); ECHEVARRIA BARBERO, CARLOS JOSE (INE/ENE); URTEAGA DUFOUR, JOSE ANTONIO (INE/ENE); NETTO DE A. C. SCHNEIDER, MARIA E. (IFD/CMF); BONZI TEIXEIRA, AUGUSTO CESAR (INE/ENE); BRALY-CARTILLIER, ISABELLE FREDERIQUE (IFD/CMF); MAIA RIBEIRO, KARISA (INE/TSP); ALMEIDA OLEAS, NATALIA (LEG/SGO); RAMIREZ RAMIREZ, GMELINA JULIANA (CSD/CCS); BRAKARZ, BARBARA (CSD/CCS); RIOBO PATINO, JAIRO ALEXANDER (INE/TSP); LEAL ROSILLO, ROBERTO (VPS/ESG); LOPEZ SOLANA, FATIMA ALEJANDRA (CSD/CCS)
▪ Taxonomy:	Client Support
▪ Number and name of operation supported by the TC:	N/A
▪ Date of TC Abstract:	29 Jun 2021
▪ Beneficiary:	Governments of Mexico, Brazil and Trinidad & Tobago
▪ Executing Agency:	INTER-AMERICAN DEVELOPMENT BANK
▪ IDB funding requested:	US$200,000.00
▪ Local counterpart funding:	US$0.00
▪ Disbursement period:	36 months
▪ Types of consultants:	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): ▪ TC included in CPD (y/n):	No No
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Productivity and innovation; Environmental sustainability

II. Objective and Justification

2.1 The objective of this TC is to identify pathways for the decarbonization of the heavy industry in Trinidad and Tobago, Mexico, and Brazil. This includes: (i) identification of available and foreseeable technologies in the industrial sectors of beneficiary countries, (ii) guidelines for policy and regulation-making for heavy industry decarbonization, (iii) creation of baselines of emissions, energy matrices, and water consumption parameters from heavy industry in beneficiary countries, and (iv) activities for capacity building and knowledge dissemination. It is expected that these studies could serve as reference for further analysis in other countries of the region.

2.2 Industry activities are related to approximately a third of total global emissions. To avoid average global warming of 1.5C compared with pre-industrial levels, it will be necessary to reach net-zero CO2 emissions by 2050. Out of the almost 50 GtCO2e global annual emissions in 2018, industry contributed to 33% of them. Out of this amount, approximately half of it are produced by three key heavy industries only: Iron

& Steel, Chemical and Cement. This situation is expected to worsen in the future, since these industries are expected to grow driven by increased urbanization rates and demand for manufactured goods. Besides, these industries are key in the deployment of renewable energy facilities. By 2050, global cement production is expected to increase by 12%, steel production by 30%, and plastics by 150%.

2.3 In the Latin America and the Caribbean (LAC) region, 17.5% of annual total emissions were produced by industrial activities. This is a growth of 66% since 1990. They are mostly originated from manufacturing and construction activities (47%, mostly iron and steel making), and industrial processes (28%, mostly cement and other non-industrial sources). The five countries with the largest emissions from these sectors are Mexico, Brazil, Venezuela, Argentina, Colombia and Chile (Adding together 85% of all the region's industrial emissions), while Trinidad & Tobago holds the largest industrial emissions per capita in the region (4.3 tCO2/capita). The main industrial areas of LAC are the Northeast Atlantic coast of Mexico and the Southeastern coast of Brazil, and Trinidad and Tobago in the Caribbean region. Brazil is the produces roughly half o the steel in the region (9th in the global ranking) producing 32.2 million tons annually, followed by Mexico (18.5 million tons). Brazil also leads the regional production of cement (53.8 million tons), followed again by Mexico (41.8 million).

2.4 Most of these heavy industrial activities are difficult to decarbonize, requiring a comprehensive plan combining renewable power supply, efficient technologies, cleaner fuels, and carbon capture and storage technologies. While the efficiency in energy consumption is driven by economic incentives and much of the processes have achieved high levels of efficiency, the use of alternative clean fuels and technologies will require further support. This will require close collaboration between the public and the private sector to create an enabling regulatory environment, financial incentives, and research and exchange of information.

2.5 Heavy industry decarbonization is aligned with the Nationally Determined Contributions (NDC) and clean fuel strategies being developed by most countries in LAC. Trinidad and Tobago's NDC aims at achieving a reduction in overall emissions from the industrial, power generation, and transportation sectors by 15% by 2030 from BAU. Brazil commits to reduce greenhouse gas emissions by 37% below 2005 levels in 2025, and by 43% below 2005 levels in 2030. Mexico established an unconditional commitment to reduce its GHG emissions by 22% and 51% of its black carbon emissions by 2030, compared to BAU scenario. Countries in the region are also taking steps towards the development of clean fuel strategies, particularly for green hydrogen.

III. Description of Activities and Outputs

3.1 **Component I: Component I: Design of a technology decarbonization pathway for heavy industry.** This component will finance studies to (i) characterize the heavy industry sector in beneficiary countries, (ii) create baselines for the current GHG emissions related to heavy industries, and (iii) design of a decarbonization pathway or strategy for heavy industry, including identifying the most feasible and cost-effective technology options to be promoted in the beneficiary countries' heavy industry.

3.2 **Component II: Component II: Identification of opportunities for the development of demonstrative projects for heavy industry decarbonization.** This component will identify the most suitable industry clusters among selected countries and will produce necessary information to identify feasible future demonstrative projects for heavy industry decarbonization combining renewable power supply and clean fuel production. The information will consider technical, economic, and regulatory aspects in order to make the analysis. These assessments will facilitate efforts in seeking future financial resources for their implementation.

3.3 **Component III: Component III: Guide for policy and regulation-making for heavy industry decarbonization.** This component will finance the analysis of key regulatory barriers for the development of an industrial decarbonization program regarding the adoption of new technologies, new energy sources and availability of financial resources in the beneficiary countries

3.4 **Component IV: Component IV: Capacity building and knowledge dissemination.** This component will finance the organization of a communication strategy, regional workshops and dissemination activities.

IV. Budget

Indicative Budget

Activity/Component	IDB/Fund Funding	Counterpart Funding	Total Funding
Component I: Design of a technology decarbonization pathway for heavy industry	US$75,000.00	US$0.00	US$75,000.00
Component II: Identification of opportunities for the development of demonstrative projects for heavy industry decarbonization	US$50,000.00	US$0.00	US$50,000.00
Component III: Guide for policy and regulation-making for heavy industry decarbonization	US$50,000.00	US$0.00	US$50,000.00
Component IV: Capacity building and knowledge dissemination	US$25,000.00	US$0.00	US$25,000.00
Total	**US$200,000.00**	**US$0.00**	**US$200,000.00**

V. Executing Agency and Execution Structure

5.1 The Bank, through the Special Group for Mining, Geothermal Energy, and Hydrocarbons (INE/MGH) will act as the executing agency. The work of this TC will be closely coordinated with the key counterparts of the countries, namely: Secretariat of Environment and Natural Resources of Mexico (SEMARNAT), Ministry of Energy and Mines in Brazil (MME), and National Energy Company (NEC) in Trinidad and Tobago.

5.2 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.

5.3 The Bank will be the executor of this TC due to its ability to leverage its extensive network of internal and external subject-matter experts and well-established relationships with the stakeholders involved, facilitating the success of the regional scope of this TC.

VI. Project Risks and Issues

6.1 The only foreseeable risk associated with this TC is related with the uncertainty caused by the Covid-19 pandemic that can still disturb the work of counterparts and consultants and delay the production of the expected deliverables.

VII. Environmental and Social Classification

7.1 The ESG classification for this operation is "C".