

TC DOCUMENT

I. Basic project data

Country/Region:	Regional
TC Name:	Deep Decarbonization Pathways in Latin-American and Caribbean
TC Number:	RG-T3028
Team Leader/Members:	Adrien Vogt-Schilb (CSD/CCS), team leader; Jennifer Doherty-Bigara (CSD/CCS); Marcela Jaramillo (CSD/CCS), Benoit Lefevre (CSD/CCS); Gmelina Ramirez, (CCS/CME); Juan Roberto Paredes (INE/ENE); Bridget Lynn Hoffmann (RES/RES); Margie-Lys Jaime (LEG/SGO), Matteo Grazzi (IFD/CTI); Carlos Guiza (CSD/CCS) and Juan Gomez (CSD/CCS).
Taxonomy	Research & Dissemination
Date of TC Abstract:	04/15/2017
Beneficiaries:	Latin-American and Caribbean Countries
Executing Agency and contact name:	Inter-American Development Bank
Donor:	Sustainable Energy and Climate Change Multi-Donor Fund (MSC)
IDB Funding Requested:	US\$980,000
Local counterpart funding, if any:	US\$245,000
Disbursement period:	36 months (execution period: 36 months)
Required start date:	September 2017
Types of consultants:	Firms and individuals
Prepared by Unit:	CCS
Unit of Disbursement Responsibility:	CSD
Included in Country Strategy:	No
TC included in CPD:	No
Alignment to the Update to the Institutional Strategy 2010-2020:	Innovation and productivity; climate change and environmental sustainability

II. Objective and Justification

- 2.1 The international climate change agenda will require ambitious policy reforms. During the 21st conference of parties of the United Nations Convention on Climate Change, and through the resulting Paris Agreement, global leaders have pledged to make efforts to stabilize the increase in global temperature well below 2°C, and preferably below 1.5°C.¹ These are noteworthy targets: they require reaching zero net emissions of carbon dioxide (CO₂) before the end of the century.² This scientific consensus has been elevated to an international objective in the Paris Agreement, in which parties pledge “to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHG) in the second half of the current century”.

¹ United Nations, “Paris Agreement,” 2015.

² Intergovernmental Panel on Climate Change. “Summary for Policymakers,” in *Climate Change 2014, Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press (Cambridge, United Kingdom and New York, NY, USA., 2014).

- 2.2 To implement this long-term goal, countries around the world agreed to submit Nationally Determined Contributions (NDCs), which include detailed plans to reduce their GHG emissions. Initially, NDCs have been designed to reduce emissions through 2025, thereafter, every country must update and strengthen its NDC every five years. In addition, a regular stock taking process will take place, starting in 2018, to help understand how NDCs add up and increase ambition over time. Countries in Latin-America and the Caribbean (LAC) should design their NDCs –as well as the proposed policy packages to deliver them, taking into account two key factors: (i) the need for rapid and profound changes to put their economies on track towards zero emissions by the end of the century; and (ii) the importance of political economy considerations to make ambitious reforms successful.³
- 2.3 Key to the efficacy of the NDCs is their consistence with deep decarbonization by the end of the century.⁴ To track progress toward decarbonization, it is not enough to track the quantity of emissions reductions in the short term. It is essential to also monitor how reductions are delivered, and whether all the sectors of a country's economy are making progress towards net zero emissions. Even if short-term action leads to significant emission reductions at the country level, it is possible for a country to be off-track if it misses key sectors such as public transportation, which are harder to decarbonize because low-carbon alternatives are expensive and/or take long to develop and deploy.⁵ For instance, in a given country, improving the efficiency of private cars may appear to be sufficient to reduce emissions from transport by 2025. But by 2035, when more emission reductions will be required, large-scale public metro lines and transformation of powertrains in private vehicles may be needed. If a metro system takes decades to build, the investment and planning phases may need to start before 2025. In this example, the objective of large emission reductions in 2035 influences what governments need to do before 2025. If the government is only focused on vehicles' efficiency before 2025, even if emissions are reduced, without metro lines, the economy risks getting locked into carbon-intensive development pathways, from which it is then unnecessarily costly to diverge.
- 2.4 Among leading think tanks and academics, prospective modeling is one of the tools used to ensure development pathways reach short-term targets consistent with the achievement of the long-term decarbonization goal. To design and assess decarbonization pathways, countries can use models that explicitly track technologies (e.g. coal power plants, gas power plants) physical quantities (e.g. MWh produced, hectares of deforestation), and resulting GHG emissions. To design holistic plans and improve dialogue across sectors of the economy, they can use models capable of depicting interlinkages between sectors of the economy, for instance, between power generation, fossil fuel extraction and transportation. Furthermore, to plan development pathways consistent with local policy priorities (e.g., Gross Domestic Product growth,

³ Adrien Vogt-Schilb and Stephane Hallegatte, "Climate Policies and Nationally Determined Contributions: Reconciling the Needed Ambition with the Political Economy," IADB Working Paper (Forthcoming), 2017.

⁴ Chris Bataille et al., "The Need for National Deep Decarbonization Pathways for Effective Climate Policy" *Climate Policy* 16, no. sup1 (June 20, 2016): S7–26, doi:10.1080/14693062.2016.1173005; Jeffrey Sachs et al., "[Pathways to Deep Decarbonization](#): Interim 2014 Report" (New York and Paris: Deep Decarbonization Pathways Project (United Nations' Sustainable Development Solutions Network and Institute for Sustainable Development and International Relations, 2014).

⁵ Pablo del Rio Gonzalez, "Policy Implications of Potential Conflicts between Short-Term and Long-Term Efficiency in CO₂ Emissions Abatement," *Ecological Economics* 65, no. 2 (april 2008): 292–303, doi:doi:10.1016/j.ecolecon.2007.06.013; Adrien Vogt-Schilb, Stéphane Hallegatte, and Christophe de Gouvello, "Marginal Abatement Cost Curves and the Quality of Emission Reductions: A Case Study on Brazil," *Climate Policy* 15, no. 6 (November 2, 2015): 703–23, doi:10.1080/14693062.2014.953908.

employment, fiscal consolidation), countries can use models that provide insights regarding how decarbonization interacts with macroeconomic outcomes.

- 2.5 Key to the social and political acceptability of the NDCs is their alignment with local development priorities and their management of distributional impacts. Indeed, even when they improve global welfare, all ambitious policy reforms come with losers and winners. In implementing reforms, governments have to balance the required ambition of the change with its social and political acceptability.⁶ Emission reduction policies have substantial potential to create losers: poor and middle-class households facing higher energy and food prices due to energy subsidy removal or carbon pricing; energy-intensive and trade-exposed companies losing competitiveness due to environmental regulations; powerful lobbyists and thousands of workers opposing the phase down of fossil fuel-based energy. To further increase their social and political acceptability, emission-reduction policies can be designed to be aligned with domestic development agendas, for instance when a public transport system reduces GHG emissions while also improving traffic congestion and the health of local population,⁷ or if a shift to carbon taxes is used to reduce evasion and informality.⁸
- 2.6 A wide range of modeling exercises can inform and support decision makers on the efficacy and potential political feasibility of NDCs and climate policies.⁹ Current efforts by the Climate Change Division (CCS) of the IDB are aimed at helping countries design effective and politically-acceptable emission reduction strategies, including: (i) modeling work to assess the distributional and labor impacts of carbon prices and the removal of fossil fuel subsidies –as well as how to correct them using social protection (ATN/MC-15636-RG); (ii) making policymakers familiar with available models to create emissions reductions plans (ATN/FM-14833-RG); and (iii) researching reduction pathways that minimize abrupt disruptions to the most carbon-intensive sectors (RG-K1447), which results will be used under this operation.
- 2.7 These particular works stem from CCS' initiatives, and many efforts in this direction in the region share a common characteristic: they often rely on modeling teams outside LAC, as modeling capacity in the region is limited. International cooperation –either bilateral or with multilateral development banks, has focused on either strengthening the capacity of policymakers to understand the few available models in the region, or requesting researchers in the USA or Europe to run models calibrated with data from LAC countries (e.g. Clima-LAMP¹⁰). One limitation of this approach is that it reduces local buy-in for these models, their results, and policy implications. Another consequence is that existing analyses of the global stock take regarding where NDCs

⁶ OECD, *Investing in Climate, Investing in Growth* (Paris: OECD Publishing, 2017; Marianne Fay et al., *Decarbonizing Development: Three Steps to a Zero-Carbon Future* (World Bank, 2015); Michael J. Trebilcock, *Dealing with Losers: The Political Economy of Policy Transitions* (Oxford University Press, 2014).

⁷ World Bank, "[Climate-Smart Development: Adding up the Benefits of Actions That Help Build Prosperity, End Poverty and Combat Climate Change](#)" (The World Bank, June 1, 2014).

⁸ Antonio Bento, Mark Jacobsen, and Antung Liu, "Environmental Policy in the Presence of an Informal Sector," 2013.

⁹ Vogt-Schilb and Hallegatte, "Climate Policies and Nationally Determined Contributions: Reconciling the Needed Ambition with the Political Economy."

¹⁰ See for instance Jason Veysey et al., "Pathways to Mexico's Climate Change Mitigation Targets: A Multi-Model Analysis," *Energy Economics* 56 (May 2016): 587–99, doi:10.1016/j.eneco.2015.04.011., Academic teams, think tanks and policymakers in the region consulted informally about the outcome of this project have expressed interest in a project aiming at developing domestic modelling capacities.

put the planet relative to the 2°C/1.5°C target, are almost exclusively carried out by developed countries,¹¹ which may introduce biases.

- 2.8 An exception is the recent Deep Decarbonization Pathways Project led by the Institute for Sustainable Development and International Relations (IDDRI) and the Sustainable Development Solutions Network (SDSN). The project helped think tanks or academics in different countries¹² develop new models tailored to each country's context, to research long-term emission reduction pathways with sector granularity. In turn, these models helped inform the national and global policy debate around NDCs and climate policies.¹³ The project also encouraged the emergence of a global community of practice of researchers.
- 2.9 To improve the capacity of the LAC region to rely on independent, domestic evaluations to assess their NDCs, emission reduction plans, and climate policies, this operation aims at increasing the pool of available models and modelers in the region, pursuing these objectives: (i) train academic teams and/or think tanks in the use of complex models, relying on the knowledge of more advanced teams from other IDB member countries; (ii) present the models to local government counterparts, prove their value to inform policy decisions and start a dialogue to answer questions of relevance in the national context, and disseminate the results domestically; (iii) support a public debate about NDC planning to spark the generation of emissions reductions pathways at the national level; (iv) develop a regional community of practice capable of discussing modeling approaches and assessments of climate policies, share experiences and continue to develop expertise (the teams will meet during regional workshops and compare their approaches and lessons learned); and (v) improve the transparency of international stocktaking on NDCs and promote general awareness about the value of prospective models to produce decarbonization pathways and inform the policy debate around NDCs. The results of all the activities will be communicated and disseminated broadly.
- 2.10 The operation is consistent with the Update to the Institutional Strategy (UIS) 2010-2020 (GN-2788-5) and is aligned with the development challenges of productivity and innovation, and institutional capacity and the rule of law, as it will strengthen the capacity of governmental agencies to prepare and apply the findings of their own climate change models. The operation is also aligned with the cross-cutting theme of climate change and environmental sustainability, as it will allow decision-makers to forecast with certain degree of accuracy the results of the actions taken to steer economic growth towards a low emissions pathway. Additionally, the operation is aligned with the Corporate Results Framework (CRF) 2016-2019 (GN-2727-4) by training government agencies on climate change modeling, which will ultimately will improve their NDCs.¹⁴ The operation is aligned with SECCII (MSC) objectives, as those trainings and capacity building will reduce institutional barriers to the deployment

¹¹ Gokul C. Iyer et al., "The Contribution of Paris to Limit Global Warming to 2 °C," *Environmental Research Letters* 10, no. 12 (2015): 125002, doi:10.1088/1748-9326/10/12/125002; Keywan Riahi et al., "Locked into Copenhagen Pledges —Implications of Short-Term Emission Targets for the Cost and Feasibility of Long-Term Climate Goals," *Technological Forecasting and Social Change* 90, Part A (January 2015): 8–23, doi:10.1016/j.techfore.2013.09.016; Joeri Rogelj et al., "Paris Agreement Climate Proposals Need a Boost to Keep Warming Well below 2 °C," *Nature* 534, no. 7609 (June 30, 2016): 631–39, doi:10.1038/nature18307.

¹² Australia, Brazil, China, Germany, India, Italy, Japan, Mexico, Russia, United Kingdom and United States.

¹³ Bataille et al., "The Need for National Deep Decarbonization Pathways for Effective Climate Policy"; Steve Pye and Chris Bataille, "Improving Deep Decarbonization Modelling Capacity for Developed and Developing Country Contexts," *Climate Policy* 16, no. sup1 (2016): S27–46.

¹⁴ Country Development Results Indicator N° 25 of the CRF: Government agencies benefited by projects that strengthen technological and managerial tools to improve public service delivery.

of low-carbon strategies, including in the form of renewable and energy efficiency investments. In the long term, the project will also contribute to reduce GHG emissions (kg of CO₂e per \$1 GDP (PPP)).¹⁵ The project is in line with: (i) the objectives of NDC Invest and grows the pool of potential local contractors, (ii) CCS's forthcoming knowledge plan priority N° 2, which aims at improving the understanding of effective and politically-feasible emissions reduction pathways in the region; (iii) the current Innovation, Science and Technology Sector Framework Document (SFD), which identifies a shortage of highly skilled human capital and low scientific performance as one of the main challenges in LAC; and (iv) the Competitiveness and Innovation Division's interventions aimed at improving research capacity in the region, as stated in Dimensions of Success 3 and 4 of the SFD.

III. Description of activities and outputs

- 3.1 **Component 1. Technical training, data gathering, and development of models** (US\$260,000). The project will involve 3 to 4 teams. Each team consists of a receiving academic team or think tank in LAC (the trainee), coupled with an academic team or think tank from an IDB member country (the trainer) that possesses advanced skills and experience using modeling tools and its findings to inform policymaking. Trainee teams have typically been involved in previous modeling projects to inform climate policies (e.g. MAPS, DDPP, Clima-LAMP), have the capacity to assess some aspects of emission reduction strategies and routinely engage with one the government (often the energy or environment ministries), but struggle with other aspects relevant to local policymaking (for instance macroeconomic impacts of emission reduction pathways).
- 3.2 To be selected, trainee/trainer teams will submit a work plan including: (i) research questions and stakeholder engagement plan (see ¶3.3); (ii) a work program in terms of relationships to be modeled, data gathering and outputs to be tracked; and (iii) a budget and human resources plan. The stakeholder engagement plan includes the identification of counterparts from technical ministries willing to provide in kind support. The modeling work program includes the identification of trainer teams with relevant expertise demonstrated by a robust track record. Once selected, the teams will design and calibrate the model, and gather the data. They will deliver interim and final reports with data sources, methods, and the results of the model building exercise.
- 3.3 **Component 2. Improving the policy relevance of climate change modeling** (US\$240,000). The objective of this component is to present these models to national stakeholders (e.g., ministries of finance, planning, public works, energy), prove their value, get feedback and start a dialogue between national modelers and national stakeholders. To do that, the trainee teams, with help from the trainer teams, will use their new modeling capacity to answer a research question of relevance to the local context, and disseminate the results domestically. Deliverables include: (i) identification of research questions aimed improving in country stakeholders' engagement and promoting local ownership of the models to be developed; (ii) development of a specific stakeholder engagement plan; (iii) model simulations, results and policy implication; and (iv) dissemination among local stakeholders.
- 3.4 **Component 3. Production and analysis of decarbonization pathways** (US\$230,000). To support a public debate on NDC planning, each trainee team, with the assistance of a trainer team, will work on the development of their own decarbonization pathway and compare it with existing short-term NDCs and long-term

¹⁵ Regional Context Indicator N° 2 of the CRF.

national goals (if the country has one). They will deliver interim and final reports presenting the decarbonization pathways and disseminate results to policymakers.

- 3.5 **Component 4. Model comparison and regional networking** (US\$190,000). The project will fund workshops that will gather all participating trainer and trainee teams and regional stakeholders to exchange lessons learned through a peer-review process and build a network of practitioners in the region. A consulting firm will assist the trainees and trainers in comparing approaches and results in a common framework. The firm will also synthesize lessons learned for stakeholder engagement and policymaking, and produce a report.
- 3.6 **Component 5. Communication and dissemination** (US\$40,000). The IDB will communicate lessons learned to a regional and global audience of policymakers, policy analysts, academia, and the public through academic papers, reports, workshops (both workshops organized under this project and other workshops to which CCS staff routinely attend), press releases, policy briefs and blog posts.
- 3.7 A portion of the funding (US\$20,000) will be used to hire a firm to facilitate the administration of the project. Specifically, the firm will subcontract all the other partners so that IDB only has to manage one administrative counterpart. The project team consulted with the Procurement Department to confirmed the feasibility of this plan.

Indicative Budget (US\$)

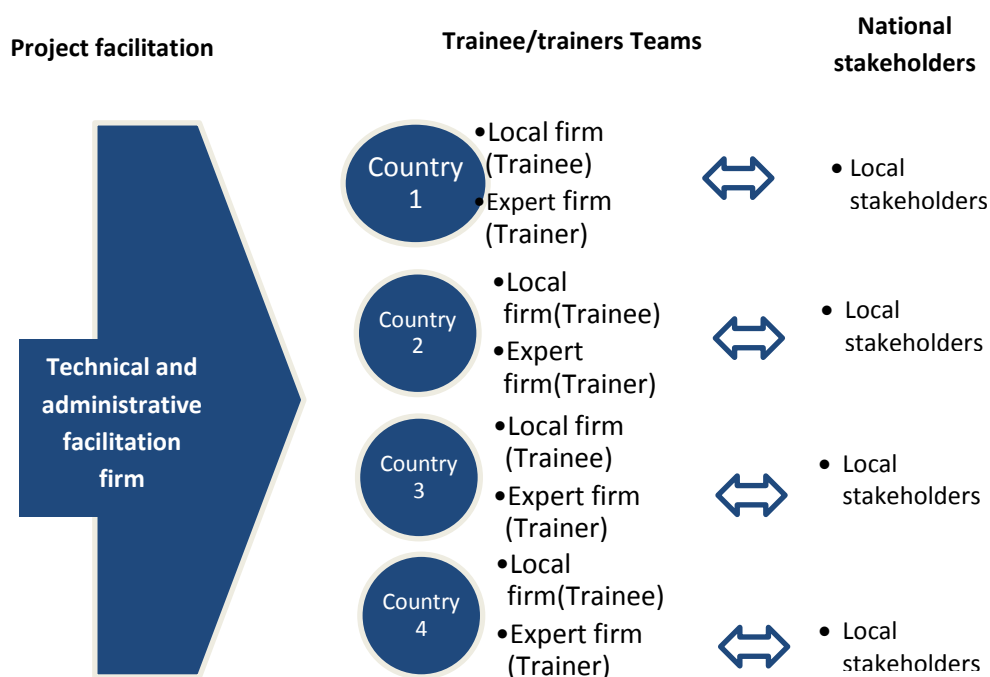
Component	IDB/Fund	Counterpart	Total
Component 1. Technical trainings & development of models	260,000	85,000	345,000
Data gathering			100,000
Travel trainer/trainee countries			30,000
Model building			215,000
Component 2. Improving the relevance of climate modeling	240,000	80,000	320,000
National engagement			40,000
Modeling			250,000
Academic papers and dissemination			30,000
Component 3. Comparison of decarbonization pathways	230,000	30,000	260,000
Modeling			240,000
Academic papers and dissemination			20,000
Component 4. Model comparison and regional networking	190,000	40,000	230,000
Model inter-comparison			80,000
Regional workshops			150,000
Component 5. Communication and dissemination	40,000	10,000	50,000
Administrative facilitation	20,000		20,000
Total	980,000	245,000	1,225,000

- 3.8 The counterpart will be provided in kind in the form of data, government official's time (workshop organization, participation in workshops, review of research question, interim and/or final results, feedback), and facilities (e.g. for workshops).

IV. Executing agency and execution structure

- 4.1 This operation will be executed by the IDB through the Climate Change Division given the regional coverage of the activities to be performed and limited technical capacity in the region available to coordinate this project. The project will leverage synergies and complementarities with IDB operations and research, and in-house expertise in using prospective models and decarbonization pathways to inform NDC planning and implementation. CCS will coordinate with other IDB divisions, and establish partnerships with academia, think tanks and governments.

- 4.2 To facilitate the technical and administrative coordination of the project, one firm with previous experience in model inter-comparison projects will be selected. It will subcontract the trainee/trainer teams, gather their inputs, perform a first round of quality control, and in turn deliver them to the IDB and receive the corresponding payment for them, all under the supervision and responsibility of CCS. The project team has consulted with the Procurement Department and confirmed the feasibility of this plan through corporate procurement procedures. Based on unique previous experience with the Deep Decarbonization Pathways Project, the team is seeking to contract IDDRI to provide technical and administration coordination.



- 4.3 The Bank will contract individual consultants, consulting firms and non-consulting services in accordance with Bank's current procurement policies and procedures.

V. Project Risks and issues

- 5.1 One risk is on the identification local teams that have both the capacity to engage with policymakers and undertake technical work. To mitigate this risk, CCS staff has been actively researching suitable teams since February 2017.

VI. Exceptions to Bank Policy

- 6.1 No exceptions to Bank's policies are foreseen.

VII. Environmental and Social Strategy

- 7.1 Per the Environment and Safeguards Compliance Policy of the IDB (OP-703), the project has been classified as category "C" (see the [Safeguard Screening Form](#) and the [Safeguard Policy Filter](#)).

VIII. Required Annexes

- Annex I: [Results Matrix](#)
 Annex II: [Terms of Reference](#)
 Annex III: [Procurement Plan](#)

DEEP DECARBONIZATION PATHWAYS IN LATIN AMERICA AND THE CARIBBEAN

RG-T3028

CERTIFICATION

I hereby certify that this operation was approved for financing under **Sustainable Energy and Climate Change Multi-Donor Fund (MSC)** through a communication dated June 7, 2017 and signed by Felipe Caicedo (ORP/GCM). Also, I certify that resources from said fund are available for up to **US\$980,000** in order to finance the activities described and budgeted in this document. This certification reserves resource for the referenced project for a period of four (4) calendar months counted from the date of eligibility from the funding source. If the project is not approved by the IDB within that period, the reserve of resources will be cancelled, except in the case a new certification is granted. The commitment and disbursement of these resources shall be made only by the Bank in US dollars. The same currency shall be used to stipulate the remuneration and payments to consultants, except in the case of local consultants working in their own borrowing member country who shall have their remuneration defined and paid in the currency of such country. No resources of the Fund shall be made available to cover amounts greater than the amount certified herein above for the implementation of this operation. Amounts greater than the certified amount may arise from commitments on contracts denominated in a currency other than the Fund currency, resulting in currency exchange rate differences, represent a risk that will not be absorbed by the Fund.

CERTIFIED BY:

Original Signed

Sonia M. Rivera

Division Chief

Grants and Co-Financing Management Unit

ORP/GCM

08/02/2017

Date

APPROVED BY:

Original Signed

Juan Pablo Bonilla

Sector Manager

Climate Change and Sustainable Development

Sector

CSD/CSD

08/04/2017

Date