

TC ABSTRACT

I. Basic Project Data

▪ Country/Region:	REGIONAL/IDB
▪ TC Name:	Bioeconomy: Exploring the Potential of Emerging Biotechnologies for Driving Sustainable Growth
▪ TC Number:	RG-T3439
▪ Team Leader/Members:	ANTA, RAFAEL (IFD/CTI) Team Leader; NAVARRO, JUAN CARLOS (IFD/CTI); RADAELLI, VANDERLEIA (IFD/CTI); ANGELELLI, PABLO JAVIER (IFD/CTI); LIMA, EIRIVELTHON SANTOS (CSD/RND); GRUNWALDT, ALFRED HANS (CSD/CCS); ALLENG, GERARD P. (CSD/CCS); ZAMBRANO-BARRAGAN, PATRICIO XAVIER (CSD/HUD); KELLY CASTILLO, EMILY LETICIA (IFD/CTI); LOPES TEIXEIRA, TOMAS (MIF/MIF)
▪ Taxonomy:	Research and Dissemination
▪ Number and name of operation supported by the TC:	N/A
▪ Date of TC Abstract:	26 Feb 2019
▪ Beneficiary:	Latin America and Caribbean countries
▪ Executing Agency:	INTER-AMERICAN DEVELOPMENT BANK
▪ IDB funding requested:	\$ 300,000.00
▪ Local counterpart funding:	\$ 0.00
▪ Disbursement period:	30 months
▪ Types of consultants:	Individuals; Firms
▪ Prepared by Unit:	Competitiveness, Technology & Innovation
▪ Unit of Disbursement Responsibility:	Institutions for Development
▪ 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 ; Environmental sustainability

II. Objective and Justification

- 2.1 The objectives of this technical cooperation are to (a) understand the opportunities and implications of emerging biotechnologies, (b) assess the potential of Latin America and the Caribbean for the bioeconomy, and (c) design new policy instruments and regulations to help stimulate the growth of the bioeconomy towards its potential. The results of this project will help (i) guide the dialogue of the Bank with institutions for the development of the bioeconomy, and (ii) contribute to design future development programs with governments.
- 2.2 Technological change in life sciences over the last 15 years has been radical. Breakthrough discoveries in the fields of molecular biology and genetics , and their convergence with computer, data and materials sciences, have contributed to the development of emerging biotechnologies that are transforming our capacity to edit the genome of living organisms, and to create “molecular machines” and biological materials with exponential implications in terms of new applications that spread across many sectors. These include: human and animal health, marine resources, agriculture, food and beverage processing, natural resources, environment, and industrial processing , all of which have the potential to contribute to more sustainable production systems.

- 2.3 Emerging technologies for DNA sequencing , genetic engineering, and synthetic biology (referred to hereafter as “emerging biotechnologies”) are the foundations of the “bioeconomy”, a concept that is expanding rapidly from niche interest to political mainstream. In the absence of a universally agreed definition, bioeconomy is understood as the economic activity based on the advanced use of renewable biological resources and their conversion to value-added products and services. By the end of 2018, at least 50 countries had developed national bioeconomy strategies or defined policies steering towards a bioeconomy. While many strategies set goals for solving large societal problems, most of them lack policy detail.
- 2.4 The concept of bioeconomy implies that we have to live within the boundaries of what the planet can provide, and also preserve it for future generations. Emerging biotechnologies are critical for solving some of the most complex societal challenges that affect the LAC region. Emerging biotechnologies not only offer opportunities to improve existing solutions, making them more cost-effective and sustainable, but allow for new solutions that were unimaginable a few years ago.
- 2.5 None of LAC countries is a high performer in any indicator about science & technology, innovation and entrepreneurship in digital, bio or nano technologies, and a major concern is the preparedness of LAC economies to adapt to rapid technological change. The footprint of Bank’s efforts contributing to the bioeconomy so far are minimal, given the complexity of policies, magnitude of investments, and long term effort needed. However, in contrast with the digital revolution, one to which LAC countries came late (Navarro, 2010) and now are trying to catch up, several LAC economies have developed sophisticated capabilities in life sciences over decades, and created a few world class biotechnology applications, mostly in crops, and plant, animal and human health. Argentina, Brazil, Chile, Colombia and Mexico are the leaders in the region. These capabilities offer a solid platform to move towards the bioeconomy.

III. Description of Activities and Outputs

- 3.1 This technical cooperation will include research studies, workshops and training activities.
- 3.2 **Component I: Understanding Emerging Biotechnologies.** The objective of this component is to explore and understand the opportunities offered by emerging biotechnologies in terms of innovative applications for addressing societal and environmental needs (what’s possible and safe now). It will also analyze the life cycle of such applications, from the idea to the market (what it takes), and trends in the biotechnology industry (what will be possible soon). This component will finance consulting activities.
- 3.3 **Component II: Assessing Bioeconomy Potential.** The objective of this component is to assess the economic potential of a sustainable bioeconomy in the region. This assessment will estimate the potential of DNA sequencing, genome editing and synthetic biology, considering the biodiversity of the region (land and ocean), in contrast with its science and technology capacities, at two levels: development and commercialization of new biotechnologies and adoption of biotechnologies developed by others/
- 3.4 **Component III: Designing Policy Instruments.** The objective of this component is to review the different elements of the policy environment for a sustainable bioeconomy and design new instruments to help stimulate the growth of the bioeconomy towards its potential. Using a policy framework for the bioeconomy (to be developed by a cutting edge project), this component will review, identify gaps and design policy instruments and define related institutional capacities.

- 3.5 **Component IV: Defining Investments.** Based on the results of the previous components, this component will identify investment needs in institutional capacity, R&D infrastructure, human capital and programs for improving commercialization of bioinventions and supporting entrepreneurs in the biotechnology space. This component will finance consulting services, training and activities to connect biotechnology practitioners from selected countries into global networks of genetic engineering and synthetic biology.
- 3.6 **Component V: Knowledge Dissemination.** The objective of this component is to disseminate the results that will come out of the activities of this project, targeting policy makers in several sectors, the science and technology community, private sector and entrepreneurs. The project will hire a communications consultant.

IV. Budget

Indicative Budget

Activity/Component	IDB/Fund Funding	Counterpart Funding	Total Funding
Understanding Emerging Biotechnologies	\$ 40,000.00	\$ 0.00	\$ 40,000.00
Assessing Bioeconomy Potential	\$ 70,000.00	\$ 0.00	\$ 70,000.00
Designing Policy Instruments	\$ 70,000.00	\$ 0.00	\$ 70,000.00
Defining Investments	\$ 100,000.00	\$ 0.00	\$ 100,000.00
Knowledge Dissemination	\$ 20,000.00	\$ 0.00	\$ 20,000.00

V. Executing Agency and Execution Structure

- 5.1 The execution will be carried out by the Bank, through the Competitiveness, Technology and Innovation Division (IFD/CTI). The Bank will hire individual consultants and/or firms in accordance with the Bank's procurement policies and procedures.
- 5.2 This project is designed to help the Bank research the potential of the bioeconomy for the LAC region and produce the knowledge that can guide its future interactions with borrowing countries and respond to their demand to promote the bioeconomy.

VI. Project Risks and Issues

- 6.1 The team doesn't anticipate major risks that could jeopardize the execution of this TC or the achievement of the project objectives.

VII. Environmental and Social Classification

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