

TC ABSTRACT

I. Basic Project Data

▪ Country/Region:	BRAZIL/CSC - Southern Cone
▪ TC Name:	Agricultural Risk Management and Crop Insurance in Brazil: Climate Risk Monitoring Small-Scale Farmers
▪ TC Number:	BR-T1404
▪ Team Leader/Members:	DAMIANI MARTI, OCTAVIO JORGE (CSD/RND) Team Leader; VALDES CONROY, HECTOR (CSD/RND) Alternate Team Leader; GOMES, HIGOR SEIBERLICH (CSC/CDR); TACHLIAN-DEGRAS, EDWIN JULIEN EDOUARD (VPC/FMP); CARPIZO RIVA PALACIO, CARLOS IGNACIO (VPC/FMP); AVILA, KRYSIA A (LEG/SGO); VALLE PORRUA, YOLANDA (CSD/CSD); SALAZAR, DAVID AGUSTIN (VPC/FMP)
▪ Taxonomy:	Client Support
▪ Number and name of operation supported by the TC:	N/A
▪ Date of TC Abstract:	24 Jul 2018
▪ Beneficiary:	Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA)
▪ Executing Agency:	EMPRESA BRASILEIRA DE PESQUISA AGROPECUARIA
▪ IDB funding requested:	\$ 220,000.00
▪ Local counterpart funding:	\$ 800,000.00 (In Kind)
▪ Disbursement period:	24 months
▪ Types of consultants:	Individuals
▪ Prepared by Unit:	Env, Rural Dev & Disaster Risk
▪ Unit of Disbursement Responsibility:	Country Office Brazil
▪ 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:	Social inclusion and equality ; Institutional capacity and rule of law; Climate change

II. Objective and Justification

- 2.1 To improve the targeting and efficiency of the Programa Garantia-Safra (Crop Guarantee Program), a federal agricultural insurance program that provides compensation payments to family small-scale farmers who experience crop losses due to severe weather events, such as droughts and excessive rainfall, by improving its risk management and monitoring capacities.
- 2.2 Farmers in Brazil lose close to US\$3 billion per year (1% of the Agriculture GDP) due to climate events. For this reason, the Federal Government has created several policies and government programs to deal with agricultural risk management. The Crop Guarantee Program or Programa Garantia-Safra (GS) is an insurance program for family, small-scale producers cultivating between 0.6 and 5 hectares of corn, beans, rice, manioc or cotton, and with a family income up to 1.5 times the national minimum wage. It benefits farmers in Brazil's Northeast, a poor and semiarid region that suffers systematic crop losses due to drought and, sometimes, excessive rainfall. Farmers are entitled to receive a payment equivalent to US\$227 when the municipality where they live experiences losses of 50% or more of the expected yield of eligible crops.
- 2.3 From 2005 to 2015, between 346,000 and 1 million small farmers were enrolled every year in the GS program, mainly in the semiarid areas of the states in the Brazil's Northeast region . Although the GS and other insurance support policies in Brasil use

agricultural zoning rules based on a methodology designed by the Brazilian Agricultural Research Corporation (EMBRAPA), the GS program expenditures are too high (between US\$27 million and US\$368 million per year), they often benefit areas of low agro-climatic risks, and the proportion of farmers that receive payments out of the total enrolled is too high (an average of 72%). This is due to the program's limited capacity to manage and monitor risks—more specifically, to quantify and map agroclimatic risks, as well as to identify the areas where crop losses occur. Many areas served by the GS present low agroclimatic risk and should not present high frequencies of loss. Therefore, a system to monitor agro-climatic losses would help to highlight possible discrepancies, improving the targeting and increasing the efficiency of the GS program.

- 2.4 The TC is consistent with the Update of the Institutional Strategy 2010-2010 -UIS (AB-3008) and is expected to contribute with the Corporate Results Framework 2016-2019 - CRF (GN-2727-6) through the development challenges of: Productivity and Innovation; Climate Change and Environmental Sustainability, and Institutions. The operation is also aligned with the Country Strategy with Brazil 2016-2018 (GN-2850), in the area of dialogue with the Government of Brazil about agricultural policies and sustainable development policies. This is particularly relevant in the context of the national elections that will take place in October/November of 2018 and new authorities that will take over in January 2019.

III. Description of Activities and Outputs

- 3.1 The operation will consist of the following components:
- 3.2 **Component I. Development of climate database and indexes**, which will generate climatic indexes and evaluate their correlation with crop growth at the municipal level. The following activities will be financed: (i) organization and expansion of historical meteorological database covering all Brazil; (ii) organization of database containing previous crop failure events covered by GS; and (iii) selection and evaluation of agro-meteorological and remote-sensing indexes related to crop yield and crop failure events. These activities will result in the following outputs: (i) an expanded meteorological database covering all Brazil; (ii) a database of past crop failures covered by the GS program; (iii) an evaluation of agro-meteorological and remote sensing indexes; and (iv) a set of climate indexes developed for crops and regions in the area covered by the GS program.
- 3.3 **Component II. Evaluation of climate risks and actuarial analysis for the Harvest Guarantee Program**, which will define the thresholds in the climate indexes above which there are crop losses, analyze the pricing methodology of the GS Program, and generate recommendations to improve the program. On that basis, an actuarial model will be built to estimate maximum losses for different levels of threshold exceedance. The following activities will be financed: (i) evaluation of the agro-meteorological risk for crops and regions covered by GS; (ii) actuarial analysis; and (iii) evaluation of agro-meteorological risks considering alternative agricultural practices. These activities will result in the following outputs: (i) an actuarial model to estimate probable maximum loss for different exceedance levels; (ii) recommendations for improving GS financial coverage; (iii) risk evaluation of alternative agricultural practices; (iv) a detailed user manual for the developed actuarial model; and (v) a training workshop for managers of the GS program. In turn, these products will improve GS's risk management capacity.
- 3.4 **Component III. Monitoring system**, which will develop a publicly accessible monitoring system to evaluate agro-climatic conditions during the growing season for crops and regions covered by GS. The following activities will be financed: (i) establishment of scientific workflow routines for continuous evaluation of agro-meteorological and remote sensing indexes; and (ii) development of the climate risk monitoring web portal. These outputs produced will be an agro-climatic monitoring web portal which, in turn, will result in an improved risk monitoring capacity by GS.

3.8 Component IV: Coordination, monitoring and evaluation, and auditing.
Coordination, monitoring and evaluation, reporting and auditing

IV. Budget

Indicative Budget

Activity/Component	IDB/Fund Funding	Counterpart Funding	Total Funding
Development of climate database and indexes	\$ 50,000.00	\$ 360,000.00	\$ 410,000.00
Evaluation of climate risks and actuarial analysis for the Garantia Safra Program	\$ 62,000.00	\$ 270,000.00	\$ 332,000.00
Monitoring system	\$ 83,000.00	\$ 163,000.00	\$ 246,000.00
Coordination, monitoring and evaluation, and auditing	\$ 25,000.00	\$ 7,000.00	\$ 32,000.00

V. Executing Agency and Execution Structure

5.1 The executing agency will be the Brazilian Agricultural Research Corporation (EMBRAPA), through its Research and Development Support Foundation (Fundação de Apoio à Pesquisa e Desenvolvimento - FAPED). Technical activities will be the responsibility of EMBRAPA under the leadership of its Agriculture Informatics Center (CNPTIA) located in Campinas (São Paulo), with support from other EMBRAPA units located in Brazil's Northeast. FAPED will be responsible for the management of funds, procurement of goods and services, and monitoring and evaluation activities. The Special Secretariat of Family Agriculture and Agrarian Development (SEAD) of the Federal Government, which is responsible for the Garantia-Safra program, will provide information regarding small-scale agriculture production in Brazil, crop losses and failure events as well as data about the Garantia-Safra program. In addition, managers of the program are expected to participate in project meetings and workshops, help design the most applicable monitoring tools to their operational procedures, and adopt them in their management practices.

5.2 EMBRAPA is a state-owned research corporation affiliated with the Ministry of Agriculture of Brazil's Federal Government that has played a key role in the development of Brazil's agricultural sector by generating technologies that increased productivity and in solved production constraints. It is also a world reference in tropical agriculture, internationally recognized as a leading research agency for tropical agriculture, with partnerships with some of the most prominent institutions and research networks in the world. EMBRAPA has been a historical partner of the Bank, having implemented four projects financed by IDB loans for a total of US\$249.4 million: (i) the Agricultural Technology Research and Extension Project (BR-0063), approved on 18 November 1976 (US\$66.4 million); (ii) the Agricultural and Livestock Research Program (BR-0225), approved on 6 December 1984 (US\$70 million); (iii) the Agricultural Modernization Program – Promoagro (BR-0062), approved on 15 January 1992 (US\$80 million); and (iv) the Technological Innovation and New Management Approaches in Agricultural Research – Agrofuturo (BR-L1001), approved on 1 December 2004 (US\$33 million).

5.3 FAPED is one of EMBRAPA's foundations specialized in the management of funds, procurement of goods and services, and monitoring and evaluation activities that are financed by national and international partners.

VI. Project Risks and Issues

- 6.1 The main risk faced by the project relates with changes in federal government authorities that could affect the collaboration between EMBRAPA and the Special Secretariat of Family Agriculture and Agrarian Development (SEAD), which is responsible for the Garantia-Safra program. SEAD's Sub-secretariat of Family Agriculture (SAF) will provide information regarding small-scale agriculture production in Brazil, crop losses and failure events as well as data about the Garantia-Safra program. In addition, managers of the program are expected to participate in project meetings and workshops, help design the most applicable monitoring tools to their operational procedures, and adopt them in their management practices. The risk is considered low, and the main mitigation measures will consist of dialogue with new authorities about the technical features of the project, as well as their potential impacts on cost reduction of the Harvest Guarantee Program.

VII. Environmental and Social Classification

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