

Document of
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Report No: PAD1299

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
PROJECT APPRAISAL DOCUMENT ON A
PROPOSED LOAN
IN THE AMOUNT OF US\$ 50 MILLION
TO THE
STATE OF PARAIBA
WITH THE GUARANTEE OF THE FEDERATIVE REPUBLIC OF BRAZIL
FOR A
PARAIBA SUSTAINABLE RURAL DEVELOPMENT PROJECT

September 26, 2017

Agriculture Global Practice

Brazil Country Management Unit

Latin America and Caribbean Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective June 1, 2016)

Currency Unit = BRL
BRL3.28 = US\$1
US\$0.31 = BRL 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ARIS	Agro-Climatic Risk Information System (<i>Sistema Estadual de Informações sobre Riscos Agrohidroclimáticos-SEIRA</i>)
AESA	Executive Agency for Water Management of the State of Paraíba (<i>Agência Executiva de Gestão das Águas da Paraíba</i>)
BRL	Brazilian Reais
CA	Community Association
CAGEPA	Paraíba Water and Drainage Company (<i>Companhia de Água e Esgoto da Paraíba</i>)
CINEP	Paraíba Development Company (<i>Companhia de Desenvolvimento da Paraíba</i>)
CDD	Community Demand-Driven Development
CFAA	Country Financial Accountability Assessment
CGE-PB	Paraíba's State Attorney General Office (<i>Controladoria Geral do Estado da Paraíba</i>)
COOPERAR	Paraíba State COOPERAR Project (<i>Projeto COOPERAR do Estado da Paraíba</i>)
DA	Designated Account
EMATER/PB	Technical Assistance and Rural Extension Agency of Paraíba (<i>Empresa de Assistência Técnica e Extensão Rural da Paraíba</i>)
EMBRAPA	Brazilian Agricultural Research Corporation (<i>Empresa Brasileira de Pesquisa Agropecuária</i>)
EMEPA	Paraíba's Enterprise for Agricultural Research (<i>Empresa Estadual de Pesquisa Agropecuária da Paraíba</i>)
ESIA	Environmental and Social Impacts Assessment
ESMF	Environmental and Social Management Framework
Ex-ACT	Ex-Ante Carbon-balance Tool
FHH	Female Headed Household
FM	Financial Management
FUNAI	Brazilian National Indian Foundation (<i>Fundação Nacional do Índio</i>)
GHG	Greenhouse Gas
IBGE	Brazilian Institute of Geography and Statistics (<i>Instituto Brasileiro de</i>

	<i>Geografia e Estatística)</i>
IMVA	Municipal Agro-climatic Vulnerability Index (<i>Índice Municipal de Vulnerabilidade Agroclimática</i>)
INSA	National Institute for the Semiarid (<i>Instituto Nacional do Semiárido</i>)
IPEA	Institute for Applied Economic Research (<i>Instituto de Pesquisa Econômica Aplicada</i>)
IPHAN	National Institute for Historical and Cultural Heritage (<i>Instituto do Patrimônio Histórico e Artístico Nacional</i>)
IQPPF	Indigenous and Quilombola Peoples Planning Framework
IRPF	Involuntary Resettlement Policy Framework
M&E	Monitoring & Evaluation
MIS	Monitoring and Information System
NGO	Non-Governmental Organization
O&M	Operations & Maintenance
PAA	Food Acquisition Program (<i>Programa de Aquisição de Alimentos</i>)
PMU	Project Management Unit
PNAE	National School Meals Program (<i>Programa Nacional de Alimentação Escolar</i>)
PO	Producer Organization
PRONAF	National Program to Strengthen Family Agriculture (<i>Programa Nacional de Fortalecimento da Agricultura Familiar</i>)
SEAFDS	State Secretariat of Family Agriculture and Development of the Semiarid (<i>Secretaria da Agricultura Familiar e do Desenvolvimento do Semiárido</i>)
SEIRHMACT	Secretariat of Infrastructure, Water Resources, Environment and Science and Technology (<i>Secretaria de Estado da Infraestrutura, dos Recursos Hídricos, Meio Ambiente e Ciência e Tecnologia</i>)
SIAFI	Integrated Financial Administrative System (<i>Sistema Integrado de Administração Financeira</i>)
TOR	Terms of Reference
WS	Water Supply
WSS	Water Supply and Sanitation

Regional Vice President:	Jorge Familiar
Country Director:	Martin Raiser
Senior Global Practice Director:	Juergen Voegele
Practice Manager:	Preeti S. Ahuja
Task Team Leader:	David Tuchsneider and Barbara Farinelli

BRAZIL
PARAIBA SUSTAINABLE RURAL DEVELOPMENT

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PAD DATA SHEET

Brazil

Paraiba Sustainable Rural Development (P147158)

PROJECT APPRAISAL DOCUMENT

LATIN AMERICA AND CARIBBEAN

0000009241

Report No.: PAD1299

Basic Information			
Project ID P147158	EA Category B - Partial Assessment	Team Leader(s) David Tuchschnieder, Barbara Cristina Noronha Farinelli	
Financing Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 18-Sep-2017	Project Implementation End Date 15-Sep-2023		
Expected Effectiveness Date 26-Jan-2018	Expected Closing Date 15-Dec-2023		
Joint IFC No			
Practice Manager/Manager Preeti S. Ahuja	Senior Global Practice Director Juergen Voegele	Country Director Martin Raiser	Regional Vice President Jorge Familiar Calderon
Borrower: Government of the State of Paraiba			
Responsible Agency: Projeto COOPERAR (SEAFDS)			
Contact: Telephone No.: 83-3246-7858	Roberto da Costa Vital	Title: Gestor	Email: robertocvital@gmail.com
Project Financing Data(in USD Million)			
[X] Loan	[] IDA Grant	[] Guarantee	
[] Credit	[] Grant	[] Other	
Total Project Cost:	80.00	Total Bank Financing:	50.00
Financing Gap:	0.00		

Financing Source								Amount
Borrower								30.00
International Bank for Reconstruction and Development								50.00
Total								80.00
Expected Disbursements (in USD Million)								
Fiscal Year	2018	2019	2020	2021	2022	2023	2024	
Annual	2.00	7.00	9.00	11.00	11.00	8.00	2.00	
Cumulative	2.00	9.00	18.00	29.00	40.00	48.00	50.00	
Institutional Data								
Practice Area (Lead)								
Agriculture								
Contributing Practice Areas								
Climate Change, Water								
Proposed Development Objective(s)								
The objective of the Project is to improve access to water, reduce agro-climatic vulnerability and increase access to markets of Paraiba's rural inhabitants.								
Components								
Component Name				Cost (USD Millions)				
Institutional Strengthening				4.02				
Water Access and Agro-Climatic Vulnerability Reduction				44.36				
Productive Alliances				20.73				
Project Management, Monitoring and Evaluation				10.76				
Front End Fee				0.13				
Systematic Operations Risk- Rating Tool (SORT)								
Risk Category						Rating		
1. Political and Governance						Moderate		
2. Macroeconomic						Substantial		
3. Sector Strategies and Policies						Moderate		
4. Technical Design of Project or Program						Substantial		
5. Institutional Capacity for Implementation and Sustainability						High		
6. Fiduciary						Substantial		
7. Environment and Social						Moderate		
8. Stakeholders						Low		
OVERALL						High		

Compliance			
Policy			
Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]	
Does the project require any waivers of Bank policies?	Yes []	No [X]	
Have these been approved by Bank management?	Yes []	No []	
Is approval for any policy waiver sought from the Board?	Yes []	No [X]	
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []	
Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04	X		
Forests OP/BP 4.36	X		
Pest Management OP 4.09	X		
Physical Cultural Resources OP/BP 4.11	X		
Indigenous Peoples OP/BP 4.10	X		
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37	X		
Projects on International Waterways OP/BP 7.50			X
Projects in Disputed Areas OP/BP 7.60			X
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Project coordination unit (COOPERAR) (Schedule 2, Section I, A. 1)	X		CONTINUOUS
Description of Covenant			
The Borrower shall maintain, throughout the implementation of the Project, a Project coordination unit within SEAFDS (COOPERAR), headed by a Project coordinator, with structure, functions and responsibilities acceptable to the Bank, including, inter alia: (i) the responsibility of the overall management, planning, coordination, monitoring and evaluation of the Project, including the fiduciary activities and safeguards compliance; and (ii) the provision of technical cooperation and support to the CAs and POs during the carrying out of their respective activities under the Project.			
Name	Recurrent	Due Date	Frequency
Annual Operating Plan (Schedule 2, Section I, A. 2)	X		Yearly

Description of Covenant

The Borrower shall: (a) at least once a year during Project implementation by and not later than December 7 of each year, commencing on the first such date after the Effective Date, prepare and furnish to the Bank, a plan (the Annual Operating Plan), acceptable to the bank, for the Project's operation during the following twelve months; and (b) thereafter, carry out and/or cause to be carried out, the pertinent Annual Operating Plan in accordance with its terms and in a manner acceptable to the Bank.

Name	Recurrent	Due Date	Frequency
Technical Cooperation Agreements (Schedule 2, Section D, 1)	X		CONTINUOUS

Description of Covenant

Prior to the carrying out of any Project activity which requires the assistance of SEIRHMACT, AESA, CINEP, or any other selected public institution, the Borrower, through COOPERAR, shall enter into a cooperation agreement with each of said entities (the "Technical Cooperation Agreement"), under terms and conditions acceptable to the Bank, which shall include, inter alia, the obligation of SEIRHMACT, AESA, CINEP and any other selected public institution to: (a) assist the Borrower in the carrying out of said Project activity or activities; and (b) comply with the pertinent obligations under this Agreement, all as applicable to the corresponding Project activity.

Name	Recurrent	Due Date	Frequency
Subproject Agreements (Schedule 2, Section E)	X		CONTINUOUS

Description of Covenant

For the purposes of carrying out Parts 2 (b) and 3 (b) of the Project, the Borrower, through COOPERAR, shall: (a) after having selected any given Subproject in accordance with the guidelines and procedures set forth in the Operational Manual, enter into an agreement with the relevant PO or CA, as the case may be, ("Subproject Agreement"), under terms and conditions approved by the Bank and included in the Operational Manual, for the provision of the corresponding Matching Grant for the implementation of said Subproject; and (b) exercise its rights and carry out its obligations under each Subproject Agreement in such manner as to protect the interests of the Borrower and the Bank and to accomplish the purposes of the Loan. Except as the Bank shall otherwise agree, the Borrower shall not assign, amend, abrogate, waive, terminate or fail to enforce any Subproject Agreement or any provision thereof.

Name	Recurrent	Due Date	Frequency
Safeguards implementation (Schedule 2, Section F, 1)	X		CONTINUOUS

Description of Covenant

The Borrower shall cause the CAs, POs, AESA, SEIRHMACT and/or CINEP to implement the Project in accordance with the provisions of the Environmental and Social Management Framework (ESMF), the Involuntary Resettlement Policy Framework (IRPF), and the Indigenous and Quilombola Peoples Planning Framework (IQPPF). The Borrower shall not assign, amend, abrogate, or waive, or permit to be assigned, amended, abrogated or waived any of the Safeguards Documents or provision thereof, without the prior approval of the Bank.

Name	Recurrent	Due Date	Frequency
Resettlement action plans (Schedule 2, Section F, 2)	X		CONTINUOUS

Description of Covenant

If any Project activity (including any Subproject) requires Resettlement, the Borrower shall: (a) prior to carrying out any such Project activity (including any Subproject), prepare a resettlement action plan in accordance with the IRPF, and disclose said plan in accordance with the procedures set forth in the IRPF, and thereafter (b) implement, or cause to be implemented, all necessary measures under said plan, in accordance with its terms and in a manner acceptable to the Bank.

Name	Recurrent	Due Date	Frequency
Indigenous peoples development plans (Schedule 2, Section F, 3)	X		CONTINUOUS

Description of Covenant

If any Project activity (including any Subproject) involves the presence of Indigenous and/or Quilombola Peoples, the Borrower shall: (a) prior to carrying out any such Project activity (including any Subproject), prepare an indigenous peoples development plan in accordance with the IQPPF, and disclose said plan in accordance with the procedures set forth in the IQPPF, and thereafter (b) implement, or cause to be implemented, all necessary measures under said plan, in accordance with its terms and in a manner acceptable to the Bank.

Name	Recurrent	Due Date	Frequency
Ineligible activities (Schedule 2, Section F, 4)	X		CONTINUOUS

Description of Covenant

The following activities shall not be eligible to be carried out under and/or to be funded under the Project: (a) any activities that would lead to conversion or degradation of critical natural habitats or their supporting areas; (b) any activities that would lead to conversion or degradation of critical forest areas, related critical natural habitats, clearing of forests or forest ecosystems; and (c) the construction of any Dams that are 10 meters or more in height, all as further described in the Operation Manual.

Conditions

Source Of Fund	Name	Type
IBRD	The Loan has been validly registered by the Guarantor's Central Bank (IV, 4.01)	Effectiveness

Description of Condition

The Additional Legal Matters consist of the following, namely that the Loan has been validly registered by the Guarantor's Central Bank.

Source Of Fund	Name	Type
IBRD	Retroactive Expenditures (Schedule 2, Section IV, B. 1)	Disbursement

Description of Condition

Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made for payments prior to the date of this Agreement, except that withdrawals up to an aggregate amount not to exceed two million dollars (\$2,000,000) equivalent may be made for payments made within one year prior to signature, for Eligible Expenditures.

Team Composition				
Bank Staff				
Name	Role	Title	Specialization	Unit
David Tuchsneider	Team Leader (ADM Responsible)	Senior Rural Development Specialist	Agriculture and Rural Development	GFA03
Barbara Cristina Noronha Farinelli	Team Leader	Agric. Economist	Agriculture and Rural Development	GFA04
Luciano Wuerzius	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement	GGO04
Michele Martins	Procurement Specialist	Program Assistant	Procurement Team	LCC5C
Miguel-Santiago da Silva Oliveira	Financial Management Specialist	Sr Financial Management Specialist		GGO22
Agnes Velloso	Environmental Safeguards Specialist	Consultant	Environmental safeguards	GEN04
Ana Elisa Bucher	Team Member	Senior Climate Change Specialist	Agriculture and climate change	GCCRA
Antonio Manuel Rodriguez Serrano	Team Member	Sr Water & Sanitation Spec.	Water and sanitation	GWA03
Catarina Isabel Portelo	Counsel	Senior Counsel	Legal	LEGLE
Diego Arias Carballo	Team Member	Lead Agriculture Economist	Agricultural Risk	GFA07
Gabriela Grinsteins	Counsel	Counsel	Legal	LEGLE
Gustavo de Montalvao G. Abath	Team Member	Program Assistant	Team assistant	GFA04
Isabella Micali Drossos	Team Member	Senior Counsel	Legal	LEGLE
Jason Jacques Paiement	Social Safeguards Specialist	Social Development Specialist	Social safeguards	CESI2
Juan Jose Miranda Montero	Team Member	Environmental Economist	Impact Evaluation	GENGE
Maria de Fatima de Sousa Amazonas	Team Member	Senior Rural Development Specialist	Rural Development	GFA04
Tatiana Cristina O. de Abreu Souza	Team Member	Finance Officer	Lending and disbursements	WFALA
Waleska Magalhaes Pedrosa	Team Member	Paralegal	Legal assistant	LCC5C

Wanessa De Matos Firmino Silva	Team Member	Program Assistant	Team assistant	LCC5C
Yago Aranda Larrey	Team Member	Consultant	Investment/buyer attraction	GTCIC

Extended Team

Name	Title	Office Phone	Location
Mario Castejon	Agr. Economist / FAO		Panama
Rui Marques	Sr Water and Sanitation Specialist		Lisbon
Stephanie Kuttner	Sr. Gender Consultant		Brasilia

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Brazil	Paraiba	Paraiba	X		

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required ? Consultants will be required

I. STRATEGIC CONTEXT

A. Country Context

1. **Brazil experienced a decade of economic and social progress from 2003-2013, in which over 26 million people were lifted out of poverty and inequality was reduced significantly** (the Gini Coefficient fell 6 percent to 0.54 in 2013). The income of the bottom 40 percent of the population grew on average 6.1 percent per year (in real terms) between 2002 and 2012, compared to 3.5 percent per year for the total population.

2. **There are now risks of these social gains being reversed in coming years.** GDP growth declined from an average of 4.5 percent per year in 2006-10 to 2.4 percent in 2011-14, followed by contractions of 3.8 percent and 3.6 percent in 2015 and 2016, respectively. The slowdown has been exacerbated since 2015 by the impact of the Lava Jato corruption investigation, a difficult political environment, and an increasingly unfavorable external environment, which have driven investment and confidence to record low levels. As a result, the reduction in poverty and inequality shows signs of stagnation. To address the current macro imbalances and revitalize growth, the government has announced a policy mix of fiscal consolidation, monetary tightening, removal of administered prices and increased tolerance for a depreciated exchange rate. The access of subnational governments to new federal loan guarantees has also been tightened.

3. **Brazil also faces a severe water shortfall in the Northeast, Southeast and Mid-West regions.** Water availability is critical beyond direct users in the water, energy, and agricultural sectors. The current situation affects the water-energy-food allocation planning and the productivity and competitiveness of several sectors.

4. **Brazil still faces major challenges in tackling poverty, vulnerability and social exclusion, and this is nowhere more striking than in the Northeast region generally and its rural areas in particular.** Throughout Brazil, the incidence of poverty remains more deeply entrenched in rural areas (53%) than in large metropolitan cities (20%) and smaller urban centers (26%). In terms of broad geographic distribution, some 52 percent of all Brazil's poor reside in the Northeast region and the majority of these are inhabitants of rural areas, villages and small towns, where economic activity revolves largely around agriculture and associated services.

B. Sectoral and Institutional Context

5. **The State of Paraiba, located in the Northeast region of Brazil, occupies an area of 56,469.47 km², of which more than 70 percent is located in the “drought polygon”--drylands** characterized by poor soils, low and irregular precipitation and recurrent droughts. Limitations on the use of available water resources include watershed vulnerability to drought events (quantitative aspects) and restrictions related to water quality (hard water and high salinity levels).

6. **Paraiba's overall poverty and extreme poverty rates reach 28.2 and 8.1 percent, respectively, 1.1 and 1.8 times the rates for Brazil as a whole.**¹ Poverty rates are more than double in rural than in urban areas, with women more than twice as likely to be poor than men (see Table 1). As in the rest of Brazil, the prevalence of malnutrition and food insecurity has

¹ Sources: IPEA (<http://www.ipeadata.gov.br/>) and World Bank estimates based on PNAD data. Paraiba's per capita GNP in 2011 was R\$ 8,740, about 30% lower than Brazil's.

substantially decreased in the last four decades in Paraiba. According to IBGE's 2002/3 Nutrition, Paraiba's height-for-age and weight-for-height indices for males are below national and northeast estimates, while the indices for women and rural areas are higher than national and regional averages.

	Area	Men	Women	Male HH	Female HH
<i>Poverty*</i>	Urban	6.80	21.00	2.80	14.30
	Rural	15.50	39.90	12.20	27.40
<i>Extreme Poverty**</i>	Urban	3.00	6.30	0.90	3.80
	Rural	6.60	10.40	4.30	6.50

*Less than R\$140/month. **Less than R\$70/month. Source: Harmonized version from Integrated Public Use Microdata Series (IPUMS) & Brazilian 2010 Census.

7. **Primary agriculture's share of output has declined in the last decades but its importance for employment is still substantial.** Cropping and livestock raising represent 5.7 percent of the state's economy, and are mainly based on sugarcane (mostly grown by large coastal farms), fruits, cassava (manioc), maize, beans and cattle production. Agriculture remains an important source of employment and income for the largest part of the rural population. In effect, about 0.9 of the 3.7 million inhabitants of Paraiba live in rural areas (IBGE, Census 2010) of whom it is estimated that between 74 and 92 percent are directly involved in agriculture. Small-scale, family farms predominate. According to the Agricultural Census of 2006, there were 167,272 farms in Paraiba, of which 92 percent had less than 50 hectares.

8. **Chronic water scarcity limits access to improved water supplies and intensifies the high incidence of waterborne diseases.** In 2013, only 25 percent of the rural households in Paraiba had access to adequate sanitation and only 54 percent had access to piped water. This contrast with the statewide average of 71 percent access to adequate sanitation and 89 percent access to piped water, reflecting the great disparities between urban and rural areas.² Evidence for the Brazilian semiarid suggests that droughts are robustly correlated with higher infant mortality, lower birth weight, and shorter gestation periods³.

9. **Agro-climatic variability and drought compound agricultural risks.** Irregular precipitation (heavy rainfall, followed by extensive drought) recurs on average every 5 years, and severe drought every 10 years. As a result, agricultural sector volatility is four times greater than total GDP volatility.⁴ Only 6.8 percent of the farms in the state have access to irrigation, the key mitigating agronomic input under these conditions, and 1.4 percent of the farms occupy 48.4 percent of the irrigated area. Exposure to weather events affects all agricultural producers in the state. Its economic impact is greater on large farms producing sugar cane and fruit in the coastal

² Standardized PNAD-IBGE by CEDLAS 2001-2013.

³ R. Rocha, and R.R. Soares (2015), Water scarcity and birth outcomes in the Brazilian semiarid, *Journal of Development Economics* (112): 72–91.

⁴ World Bank, Federative Republic of Brazil. Paraiba Agriculture Risk Assessment (Volume I & II), Report No. AUS12890, GFADR-LAC, April 30, 2015.

areas (*Mata Paraibana*) but the impact on the livelihoods of smallholders⁵ and family farmers, who tend to be located in the drier and more fragile semi-arid regions (*Sertão* and *Borborema*)⁶, is greater due to their higher sensitivity to weather events and lower adaptive capacity.

10. Variations in livelihood strategies call for differentiated approaches to agricultural development and poverty reduction. Given the unequal distribution of land, water constraints and agro-climatic risks, increasing farm production alone does not provide a pathway out of poverty for most family farmers in the Northeast. Agricultural production still constitutes the main source of income for most of Paraiba's farmers but it merely provides for self-subsistence for more than half of them. In Paraiba, 86.3 percent of the farms occupy less than one fiscal unit, an approximation to the minimum land area deemed necessary for economic viability.⁷ For these farmers, coping strategies often lead to vicious cycles of unsustainable intensification or expansion into marginal areas, further resource degradation and increased susceptibility to climate stress.⁸ Out-migration is also a key coping strategy, allowing for reduced pressure on resources and income diversification.⁹ As their commercial opportunities are limited, support for these farmers would ideally focus on reducing vulnerability to shocks.

11. As in the rest of Latin America, an estimated 20 percent of smallholders have the potential to engage successfully in commercially demanding value chains.¹⁰ In Paraiba these producers will most likely be found amongst farms located outside the semi-arid region or with access to irrigation or the 11,472 establishments in all regions with 1-4 fiscal units. These farmers confront other constraints, including high production costs, and poor access to infrastructure, services and credit. Consequently, they have difficulties supplying to higher-value, dynamic value chains, generally managed by large-scale off-takers and agro-processing firms. Support for these farmers would ideally focus on collective action to reduce costs and facilitate access to markets.

12. Paraiba does not have an explicit policy or an effective planning framework for water management. Hydrological, meteorological and drought impact information for the Northeast generally is uneven and often inaccessible,¹¹ hindering early warning and planning

⁵ The terms smallholder, smallholder producer and family farmer are used indistinctly in this document. Under Brazilian Federal Law 11,326 of 2006, "family farms" must comply with four characteristics: (i) size under four fiscal units (see footnote 7); (ii) derive most household income from agriculture; (iii) use primarily household labor; and (iv) manage on-farm activities themselves. Smallholder producers who employ non-household labor would also be eligible for participation in the Project.

⁶ For example, the spatial variation coefficient of cassava yields ranges from 14-45% (D. Arias et al.).

⁷ A fiscal unit (*modulo fiscal*) is a measure created by a 1979 law that takes into account production systems and average incomes in order to approximate the minimum size required for "economic viability". The average in Paraiba is 50 has, ranging from 5-110 has. This is a static measure; viability may be increased by particular endowments and technologies.

⁸ Few areas in the semi-arid region of the Northeast seem to escape these trends. D. Sietz, Regionalization of global insights into dryland vulnerability: Better reflecting smallholders' vulnerability in Northeast Brazil. *Global Environmental Change* 25 (2014) 173-185.

⁹ Paraiba is the fifth major administrative unit of emigration in Brazil, with a net rate of -0.92 per thousand.

¹⁰ M.H. Collion, *Rural Productive Partnerships: An Inclusive Agribusiness Model for Overcoming Small-holder Market Barriers*, World Bank, 2012. This finding is echoed by studies in Africa and Asia which indicate that 50-70% of farmers are unable to move out of subsistence (S. Ferris et al., *Linking Smallholder Farmers to Markets and the Implications for Extension and Advisory Services*, MEAS Discussion Paper 4, 2014).

¹¹ World Bank, *Monitor de Secas do Nordeste, em busca de um novo paradigma para a gestão de secas*, Report No. 106302, Brasília, 2015.

efforts. The State Plan for Water Resources has not been updated since 2006. Infrastructure investments have aimed mostly at improving urban water supply. Different state agencies and federal programs carry out investments for rural areas. Paraíba's water utility,¹² responsible for providing drinking water and sanitation services in the state, has traditionally focused on urban areas, leaving an important gap in supporting local government and community institutions managing water services in rural areas. The government of Paraíba intends to bridge this gap by creating a new management system for rural water and sanitation.

13. Support for smallholders comes mainly through *Garantia Safra*, a federal compensation mechanism that triggers payouts to enrolled farmers when their municipality registers severe crop losses due to weather events. Between 2002 and 2012 the number of Paraíba's farmers enrolled in the program almost tripled and, in seven of those years, more than 60 percent of them received compensation payments. Paraíba's agricultural extension service¹³ provides verification services for *Garantia Safra*, leaving little capacity for providing productive training and technical assistance to the state's smallholders.

14. The Federal Government's *Brasil Sem Miséria* strategy creates important opportunities for market inclusion of smallholder farmers through three programs: (a) the National Program to Strengthen Family Agriculture (PRONAF), which provides subsidized loans for small farmers in a range of modalities; (b) the Food Acquisition Program (PAA), which finances purchases by government institutions of smallholder farmer products, reaching almost 200,000 farmers in all of Brazil in 2012; and (c) the National School Meals Program (PNAE), which requires that at least 30 percent of funding for meal provision be sourced from family farmers. By providing secure markets, these programs reduce risks involved in innovation and productive investment, and constitute an important source of demand for smallholders. However, their reach is limited due to budget and capacity constraints, and to the high cost of regulatory compliance (for example, phyto-sanitary certifications). In addition, neither PRONAF nor other formal lines of credit are available for farmer associations and cooperatives, thus reducing the scope of collective action as a means to overcome scale constraints.¹⁴

15. Rural household vulnerability has been significantly reduced by Brazil's conditional cash transfer program for the poor (*Bolsa Família*), which reaches close to 45 percent of the state population. These transfers are directed to a woman in the household, and are credited with much of the reduction in malnutrition. Unintended effects of *Bolsa Família* include a reduction of sensitivity to climate events, as well as rates of out-migration.¹⁵ By smoothing out consumption, cash transfers diminish livestock and seed stock drawdowns during droughts, permitting quicker recovery; conversely, pressure on resources may increase due to population growth. *Bolsa Família* thus provides a window of opportunity to improve resilience through interventions that reduce the vulnerability of production systems.

16. Availability and security of water resources is expected to worsen with climate change. Projected higher temperatures and more frequent droughts could increase risks to the population, agricultural production and access to food (see Annex 6). Adaptation measures are

¹² *Companhia de Água e Esgoto da Paraíba – CAGEPA.*

¹³ *Empresa de Assistência Técnica e Extensão Rural da Paraíba - EMATER/PB.*

¹⁴ For example, out of approximately 5,000 cooperatives that hold a bank account with Banco do Brasil, only 50% obtained access to credit. Banco do Brasil, Agribusiness Management Team, personal information.

¹⁵ E.De Nys, N. Engle and A. Rocha Magalhães, *Drought in Brazil: Proactive Management and Policy*, CRC Press, 2016.

required to reduce current vulnerability and increase the resilience of rural households, communities and agricultural production systems to future scenarios.

17. **The Bank has had a long-standing partnership with the Northeast Region and the State of Paraíba, with regular dialogue on State sector strategies and through specific operations.** Support to the State of Paraíba has been provided under investment projects focused on poverty reduction, water infrastructure and local governance strengthening, through the Paraíba Rural Poverty Alleviation Project (1997-2006, P042565) and the Paraíba Second Rural Poverty Reduction Project - COOPERAR II (2008-2014, P104752). The latter carried out 326 basic infrastructure projects (mostly in water supply), and 161 productive subprojects (such as fruit processing, fish farming, goat and sheep husbandry and handicrafts), benefiting about 27,000 families. Building on the results and lessons from these operations, this proposed Project marks a shift in approach from open, community demand-driven rural poverty-reduction approaches, towards differentiated support for both building community resilience through improved access to water and farm vulnerability reduction, as well as incorporating market-driven approaches to poverty reduction and shared prosperity.

C. Higher Level Objectives to which the Project Contributes

18. The proposed project is fully in line with the World Bank Group's FY18-FY23 Country Partnership Framework (CPF) for Brazil (Report #113259-BR) discussed by the Executive Directors on July 13, 2017. In the agricultural and natural resource management sectors, the proposed project would support a key challenge outlined in the CPF under Focus Area 3: Inclusive and sustainable development – Promote socio economic development of small rural producers and vulnerable groups. This includes the implementation of investments that: (i) contribute to improved land use and natural resources management by small family farmers, indigenous peoples, and traditional communities; and (ii) foster a shift to climate-smart agriculture, modern production technologies, and sustainable landscape management, and thereby increase resilience to climate change. The project has a dual focus: on extreme poverty through its access to water and vulnerability reduction activities, and on shared prosperity through its support for productive alliances.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

19. The objective of the Project is to improve access to water, reduce agro-climatic vulnerability and increase access to markets of Paraíba's rural inhabitants.

B. Project Beneficiaries

20. The target population consists of about 165,000 people (44,600 households), whose livelihoods depend primarily on small-scale agricultural production, transformation and related services. Potential beneficiaries would be targeted through different instruments depending on their characteristics, as summarized in the following table:

Table 2. Targeting of beneficiaries

Type of Investment	Beneficiary characteristics	Location*	Households
Water supply	People with deficient access to water (quantity and quality)	Rural areas and associated small towns in prioritized municipalities**	18,700
Agro-climatic vulnerability reduction	Smallholder farmers with insufficient land and/or water	Rural areas in prioritized municipalities**	17,400
Productive alliances	Competitive smallholder farmers	All of Paraiba	8,500

* Indigenous and Quilombola communities are eligible for all lines of intervention regardless of location in the state.

** Selected on the basis of a Municipal Index of Agro-Climatic Vulnerability (see Annex 2 for details).

C. PDO Level Results Indicators

21. The achievements of the PDO will be measured through the following indicators¹⁶:
- (a) People in rural areas provided with access to improved water sources under the Project;
 - (b) Producers who have adopted an improved agricultural technology promoted by the Project;¹⁷
 - (c) Increase in average gross value of sales of producers under Productive Alliances;
 - (d) Agro-Climatic Risk Information System in operation.

III. PROJECT DESCRIPTION

A. Project Components

22. The Project has four components (see Annex 2 for full description), as follows:
23. **Component 1. Institutional Strengthening** (Total US\$ 4.02 million, of which IBRD 65%):
- (a) Carrying out a communication campaign to: (i) inform stakeholders about the scope and rules of the Project; (ii) publish and disseminate the Project; and (iii) promote investments and attract buyers in rural value chains under the Project.
 - (b) Strengthening the institutional capacity of Community Associations¹⁸ (CAs) and Municipal Councils to: (i) improve their governance and managerial skills for operations and maintenance of community infrastructure; (ii) provide hygiene, environmental and nutritional training to CA members; and (iii) provide training to farmers to facilitate adoption of good agricultural and environmental practices, including the use of climate information for decision making.

¹⁶ Indicators will be disaggregated by sex and ethnicity where possible.

¹⁷ This Corporate Results Indicator refers here to technologies that reduce agro-climatic risk only (Component 2).

¹⁸ CAs include civil associations formed by members of a community, or any private association established in Paraiba in accordance to law, including communities of Indigenous and Quilombola Peoples.

(c) Strengthening the institutional capacity of Producer Organizations¹⁹ (PO) to: (i) comply with organizational and business regulations; and (ii) improve organizational, managerial, business and risk-management skills.

(d) (i) Provision of training to technical service providers which may provide technical support to CAs, POs, COOPERAR²⁰ and any other selected public institution, under the Project; and (ii) establish a technical service provider database.

(e) Strengthening the institutional capacity of the Secretariat of Infrastructure, Water Resources, Environment and Science and Technology (SEIRHMACT) and other selected public institutions to implement a management model for improving rural water and sanitation services, including, *inter alia*, the provision of support to: (i) define and establish sub-sector institutional arrangements; (ii) improve coordination between sub-sector institutions and programs; (iii) establish an information system for registering and monitoring the status of rural water and sanitation systems; (iv) pilot the implementation of technical assistance mechanisms and management models for rural water systems; (v) the federation of CAs; and (vi) provide training and technical assistance to improve the capacities of CAs to manage, operate and maintain rural water systems.

(f) Strengthening of the Paraiba Development Company's (CINEP) and other selected partners' capacity for targeting and reaching out to potential investors and buyers, and facilitating their decision to enter into Productive Alliances.

24. Component 2. Water Access and Agro-Climatic Vulnerability Reduction (Total US\$ 44.36 million, of which IBRD 58%):

(a) Provision of support for: (i) identifying water supply investments, including, *inter alia*, construction and rehabilitation of piped and non-piped water systems, desalinization facilities and household rainwater harvesting systems, and Agro-Climatic Vulnerability Reduction Subprojects; (ii) carrying out pre-investment studies for water supply investments identified under sub-paragraph (a) (i) herein, and for Agro-Climatic Vulnerability Reduction Subprojects; and (iii) carrying out the water supply investments mentioned under (i) herein.

(b) Provisions of Matching Grants to the CAs for carrying out the Agro-Climatic Vulnerability Reduction Subprojects.

(c) Provision of support to the Executive Agency for Water Management of Paraiba (AESA) for the establishment of an Agro-Climatic Risk Information System (ARIS).

25. Component 3 - Productive alliances (Total US\$ 20.73 million, of which IBRD 70%):

(a) Provision of support for: (i) identifying and implementing Productive Alliances; and (ii) carrying out pre-investment studies for Productive Alliances, including the formulation of business plans associated to Productive Alliance Subprojects.

(b) Provision of Matching Grants to the POs for carrying out Productive Alliance Subprojects.

¹⁹ POs include producer-based cooperatives, civil associations or any group of smallholders organized into a legally established private association.

²⁰ COOPERAR is the Project Coordination Unit, established within the State Secretariat of Family Agriculture and Development of the Semiarid (SEAFDS)

26. Component 4 - Project management, monitoring and evaluation (Total US\$ 10.76 million, of which IBRD 65%):

Provision of support to the Borrower for carrying out: (a) Project coordination and management; (b) monitoring, results evaluation and impact assessment of Project activities; (c) Project fiduciary administration, internal controls and audits; (d) Project safeguards management; (e) independent financial and technical evaluations of Productive Alliances' business plans; (f) a citizen's engagement mechanism; and (vii) Project-related studies.

B. Project Financing

27. The proposed investment project financing operation will be partly financed by a variable spread flexible loan, with a 5.5 year grace period and 18 year final maturity, in the amount of US\$ 50.0 million. Additional contributions will be provided by the State of Paraiba (US\$ 22.88 million) and beneficiaries (US\$ 7.12 million).

Table 2. Project Cost and Financing (US\$ million)

Project Components	Project cost	State of Paraiba	Beneficiaries	IBRD	% IBRD Financing
1. Institutional strengthening	4.02	1.41	0.00	2.61	65
2. Vulnerability reduction	44.36	17.04	1.52	25.80	58
3. Productive alliances	20.73	0.62	5.60	14.51	70
4. Management, monitoring and evaluation	10.76	3.81	0.00	6.95	65
Total Costs					
Total Project Costs	79.87	22.88	7.12	49.87	63
Front-End Fees	0.13			0.13	
Total Financing Required	80.00	22.88	7.12	50.00	

C. Lessons Learned and Reflected in the Project Design

28. The proposed Project builds on the experiences and lessons learnt from previous rural development programs in the State of Paraiba (including the recently-closed Paraiba Second Rural Poverty Reduction Project – COOPERAR II), in other Brazilian States, and in other Latin American countries. The key lessons that shape the proposed project are summarized below:

29. *Quality of water supply investments.* Under COOPERAR II, the design of water subprojects was carried out by community associations (CAs) with the help of institutions participating in municipal councils. Experience shows significant shortcomings in the feasibility analysis and engineering design of these subprojects, with potentially negative consequences over the efficacy of the investments. In the proposed Project, pre-investment studies and engineering designs will be carried out by specialized consultants hired by COOPERAR itself.

30. *Sustainability of water supply investments.* Rural water supply requires an institutional framework to help sustain the financed infrastructure over the long term. The operation and

maintenance of dispersed water supply systems in rural areas are challenging, particularly if communities are to manage them in a financially sustainable way. As a general principle, the framework for water payment and management of systems needs upstream attention. Institutional development in the Project--creation of water user associations, development of management models, definition of tariffs, O&M orientation--will be conducted simultaneously to construction of works. The institutional strengthening component will thus help to strengthen the state-wide institutional framework that supports these services in Paraíba.

31. *Use of climate information for decision support systems:* The availability of early warning and monitoring systems can enhance climate-smart planning and sustainable resource management by extension services, farmers and communities. Building on existing efforts at the state and federal levels, the Project will support the development of a state-wide agro-climatic information system that includes climate/weather, land, crop, and hydrological information. Such integrated systems have also proven useful for planning of response actions under disaster risk conditions and monitoring of low-onset impacts such as drought.

32. *Differentiated lines of support for agricultural producers.* The expectation under previous interventions that all smallholders who receive “productive” support can increase sales and incomes has proven at best uneven. A large proportion of smallholders have too little land and insufficient water to successfully integrate into more demanding value chains and they tend to be highly vulnerable to climate variability. In the Project, a competitive line of financing will be available for producer groups who have the endowment and risk profile required to compete in demanding markets; while for smallholders in communities, financing will be available to increase resilience and reduce risk.

33. *Productive alliances.* Experience in the Brazilian Northeast and internationally shows that improving smallholders’ market access should be driven by the identification of market opportunities, and not by the satisfaction of community ‘needs’ and ‘demands’ that often have unclear commercial prospects, and thus questionable financial sustainability. Alliance funding leads to improving production systems in order to deliver what markets demand, as opposed to an approach that aims at expanding production or improving productivity alone. The Project would require the market guidance and direct participation of potential purchasers as a key eligibility criterion for financing productive subprojects.

34. *Independent technical and financial evaluation of alliances.* Capacity for ex-ante evaluation of business proposals is not easily found in public institutions. In addition, the provision of productive support is prone to elite capture or cronyism. These risks can be mitigated by hiring an external entity, under terms of reference and qualifications acceptable to the Bank, to provide an independent assessment of each alliance proposal prior to approving financing in order to mitigate these risks.

35. *Business training and assistance to beneficiaries.* Building capacities for business management among project beneficiaries--particularly those such as women and youth, who often have less experience and understanding of institutions and markets, is a key element for organizational consolidation and growth. The Project will address this need at three levels by: (i) providing general training and awareness raising to potential beneficiaries and service providers; (ii) helping interested producers organizations to put together business initiatives, negotiate with business partners, and gradually learn by doing; and (iii) providing continued and customized

assistance and training to participating organizations throughout implementation. Customization will take into account gender, age and ethnicity of beneficiaries.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

36. The project will be implemented by *Projeto* COOPERAR, the Project Management Unit established for the Paraiba Second Rural Poverty Reduction Project (P104752), recently remapped to the newly-created State Secretariat of Family Agriculture and Development of the Semiarid (SEAFDS). SEAFDS will be responsible for providing strategic guidance on relevant State policies, as well as for coordinating with other state secretariats and institutions to facilitate Project implementation. It will approve the Project's annual budget and progress reports.

37. COOPERAR will be responsible and accountable for overall project management, planning, coordination, monitoring and evaluation of the Project, including fiduciary activities and safeguards compliance. Project implementation at the local level will be coordinated by regional units with the support and guidance of a central unit.

38. COOPERAR will support CAs, which will identify and operate water supply investments and vulnerability reduction subprojects. POs will implement productive alliances in collaboration with private and public purchasers. Capacity varies greatly among these organizations so the project would deploy a well-targeted, gender-differentiated communications campaign and a variety of training and technical assistance activities designed to build capacity and reduce information asymmetries.

39. Municipal Sustainable Rural Development Councils will support CAs and POs in the identification of investments and subprojects, and help to stimulate synergies among public and private investments at local level. Day-to-day implementation would focus on the empowerment and self-management of participating organizations. Information related to the project would be disseminated through workshops, publications, and websites.

40. SEIRHMACT will lead the process of definition, piloting and implementation of a State Management System for Rural Water and Sanitation in Paraiba (Sub-component 1e).

41. AESA will be responsible for the establishment of the ARIS, in partnership with agricultural research and extension and meteorological institutions (Sub-component 2c).

42. CINEP will be responsible for leading and coordinating investment/buyer attraction and promotion plans and activities carried out to facilitate the creation of the productive alliances (Sub-components 1f and Component 3).

43. Prior to executing any Project activities, SEIRHMACT, AESA and CINEP will sign Technical Cooperation Agreements with COOPERAR, under terms and conditions acceptable to the Bank.

B. Results Monitoring and Evaluation

44. COOPERAR will monitor and evaluate project progress and results at the technical, financial, social and environmental levels. The M&E system will monitor the performance of the

Project with respect to the baseline situation by tracking inputs, outputs and progress towards PDO and intermediate results indicators. Continuous evaluation will permit: designing and implementing operational adjustments during implementation; promoting accountability for resource use against objectives; providing and receiving stakeholder feedback; and generating inputs for dissemination of results and lessons.

45. Evaluation. COOPERAR will carry out a Mid-term Review about two years after Effectiveness. Results will allow for technical or design adjustments, if warranted. COOPERAR will also conduct a final evaluation. The evaluation strategy takes into account differences in the state of knowledge as well as data generation capabilities in three lines of action. For access to water, the results evaluation will focus on outputs and behavioral change (use and adoption), since solid evidence already highlights the positive impacts of these types of interventions. For agro-climatic vulnerability reduction, given the difficulty in establishing outcome indicators that do not depend on the occurrence of weather events, results will be measured at the level of adoption of technologies and practices, and evaluation will follow an approach focused on learning from experience. Here the Project will collect information for relevant inputs and results, before and after investments, in order to measure effectiveness and efficiency while controlling for other factors that might change over time. In both cases, the analysis will take into account socio-economic variables, including gender and ethnicity.

46. Impact evaluation. With the support of external consultants, COOPERAR will carry out a rigorous impact evaluation of the Productive Alliances component, using quasi-experimental methods. The key variables to be assessed will be agricultural household net income, total sales volume and level of employment by productive alliances. The evaluation will help to single out the influence of external factors (e.g. international market prices) that are not attributable to the Project itself. Although it will not be possible to stratify by gender or ethnicity *ex ante*, the analysis will be disaggregated by gender and ethnicity wherever possible.

C. Sustainability

47. Sustainability of water supply systems will be improved by rigorous *ex ante* evaluation of water sources and technical alternatives, as well as institutional strengthening of CAs for management, operations and maintenance (O&M). Long-term sustainability will be improved by contributing to strengthening the state-wide institutional framework that supports rural water and sanitation services, specifically by supporting SEIRHMACT to implement new sub-sector institutional arrangements, enable technical assistance mechanisms and promote sustainable management models for rural water and sanitation services.

48. Interventions aimed at reducing agro-climatic vulnerability are designed to increase the resilience of production units in the face of climate variability and drought. These interventions are expected to reduce the impact of occurrences and increase the adaptive capacity of producers. Long-term sustainability will depend on the availability of adequate technical assistance, particularly in the face of unexpected events.

49. Sustainability of productive alliances will be improved through rigorous design and independent assessment of technical, financial and institutional viability. Alliances which reconcile the main interests of producers (higher income) and buyers (volume and product quality) are likely to be sustainable. In addition, the capacity of POs to grow and respond to

changes in market conditions will be improved by managerial strengthening, including differentiated support for women leaders.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

50. The overall project risk is considered High, because of the high risk related to institutional capacity for implementation and sustainability. Technical design, fiduciary and overall macroeconomic risks are also rated substantial. COOPERAR's strengths lie in its capacity to engage with rural communities and familiarity with Bank operations; however, the Project requires a shift to operating differentiated lines of intervention, a design feature which implies changes in COOPERAR's culture, staffing and procedures. To mitigate institutional, technical design and fiduciary risks, COOPERAR has incorporated qualified technical and fiduciary staff, will provide significant institutional capacity building and will improve project management systems.

51. Overall macroeconomic risks relate to the impact of the ongoing recession in Brazil on fiscal revenues of the state of Paraíba. Tight fiscal constraints may lead to delays in implementation of investments, as budget resources may be sequestered for mandatory current payments. This risk is partially mitigated by the ongoing fiscal adjustment of the government of Paraíba and the expected gradual recovery of Brazil after 2017, even though both the state and the country remain vulnerable to negative external shocks. Paraíba's state debt is low and it is classified as a low risk borrower by the Brazilian Treasury, despite a high level of current spending as a share of total revenue. The pace of implementation of the productive alliances subcomponent will also be affected by the level of aggregate demand although the economic analysis reveals strong robustness to increases in costs or reductions in revenues.

52. The key risk arising from Sector Strategies and Policies is related to uncertainty over the governance arrangements for water in Paraíba. This risk is rated Moderate overall and is expected to be mitigated, first, by strengthening the capacity of CAs to manage water systems and, second, by supporting the creation of a state management system for rural water and sanitation.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

53. Under both the demand-driven (component 2) and competitive selection (component 3) approaches applied by the Project, the precise nature, mix and scope of the investments to be financed cannot be defined ex ante. These will be identified during project implementation, so any attempt to predict the evolution of the demand for Project services and to predetermine the viability of the Project as a whole on an ex ante basis would be subjective. Nonetheless, in order to weigh in on the likely economic and financial feasibility of project investments, the main types of subprojects likely to be financed were assessed as follows.

54. **Productive Alliance Subprojects.** A Financial Rate of Return (F-IRR) of 32% and an Economic Internal Rate of Return (E-IRR) of 43% were estimated for an aggregate of types of alliances likely to be financed by the project (goat milk, honey, fish, fruit pulp and vegetables). At the individual level, all five types of productive alliances proved to be sound investments, both from a financial perspective as standalone business ventures and from an economic point of view as net economic contributors to society. The high magnitudes of the E-IRR are a consequence of significant distortions existing in the input and output markets as well as restrictive taxes, which obviously disappear when the economic analysis is carried out. Simulations using these models concluded that the Productive Alliances component (including its corresponding relative share of Component 4) would be financially and economically viable, with a FIRR of 37% and an EIRR of 53%, respectively. A sensitivity analysis with respect to increases in costs or reduction in revenues showed significant robustness in the economic and financial viability of the component. Inclusion into the analysis of costs and benefits accrued by buyers would increase the IRRs but the information required to do so is not easily accessible. The relatively high composite internal rate of return is expected due to the existing extremely low “without project scenario”. The low stream of revenues without the project accurately reflects the dire outlook of productive ventures that lack significant prospects to increase revenues, which in turn is derived from low adoption of new technology and restricted access to remunerated markets. In this scenario, the revenues “with project” show a drastic increase in likely revenues due to integrated activities contributing to the removal of most of the existing restrictions.

55. **Agro-Climatic Vulnerability Reduction Subprojects.** A random sample of vulnerability reduction investments (including small-scale irrigation and improved access roads) were evaluated at the closing of the Paraiba Second Rural Poverty Reduction Project (COOPERAR II). The ex post cost-benefit analysis of these investments was revisited and served as reference to the likely economic feasibility of these types of subprojects. Individually all vulnerability reduction investments were deemed viable from an economic perspective, with an aggregate E-IRR of 120%. The relatively high and perhaps seemingly optimistic EIRR was explained by the spillover effect of benefits to communities surrounding those that originally demanded the works. A cost benefit analysis for an underground dam identified as another likely vulnerability-reduction subproject type also proved economically viable with an E-IRR of 11%.

56. **Water Supply (WS) investments.** Economic Benefits of WS investments have been thoroughly studied and documented, and are well understood. There is an ample cadre of health economics literature supporting the soundness of investing on expanding the coverage of these services. For instance, a World Health Organization study²¹ estimated that the returns on water supply and sanitation investments from 17 world regions, including Brazil, ranged from US\$5.00 to US\$28.00 for each US\$1.00 invested, the main contributing benefit being the saving of time associated with better access to water supply and sanitation services. More recent work in the semi-arid region of Northeast Brazil estimated that the statistical value of life at which investments on WSS would break even were significantly lower than common estimations found throughout the literature, regardless of the interest rates used. As further reference, an aggregate EIRR of 30% was estimated for water supply subprojects financed and analysed ex-post for the ICR of COOPERAR II.

²¹ World Health Organization, Global costs and benefits of drinking-water supply and sanitation interventions to reach the MDG target and universal coverage, WHO/HSE/WSH/12.1, WHO, 2012.

57. **Rationale for public sector financing.** Water supply and vulnerability-reduction services in rural areas are typically provided by public agents given their basic nature, significant externalities and generally insufficient level of financial returns they generate to cover investment, operation, maintenance, and replacement costs, and to offer sufficient financial incentives in the way of profit margins to attract private sector financing. Water supply investments tend to be significant in scale and their rate of financial recovery is usually slow given the need to keep tariffs to users low enough to maximize coverage.

58. Smallholder agriculture in Paraíba shows low levels of land and labor productivity, and limited added value. This is specially the case in the semi-arid region, in a context marked by under-provision of effective rural extension services and financing, and where integration to dynamic markets has been hampered by weak organizational and business development capacities, information asymmetries and diseconomies of scale. Public sector transfers to co-finance private ventures of organized small-scale rural producers is justified on the basis of mitigating market failures that have prevented this segment of the population from successfully integrating into dynamic and more profitable markets.

59. **World Bank's Added Value.** Through its long-standing engagement in a series of projects under the Northeast Rural Poverty Reduction Program (1993-2014), including to the State of Paraíba, as well as operations dealing with the similar issues in Latin America and globally, the World Bank is in a unique position to provide best-practice guidance, among others, on the design of cost-effective water supply systems, capacity strengthening for POs, increased incomes and poverty reduction through business development and market integration. Particularly relevant to this operation are the Bank's recent experiences implementing Productive Alliance projects and the development and use of agro-climatic information systems in several countries in Latin America and elsewhere. The Bank will provide technical and strategic knowledge transfer along project implementation and evaluation.

B. Technical

60. *Water Supply investments.* The Project will promote the development of water systems that are tailored to local context and accepted by the communities. When possible, the project will favor piped (network) water schemes since they ensure a greater reduction of vulnerability, but non-conventional water schemes (such as rainwater harvesting, or desalinization) may also be financed. CAs will receive capacity building support to establish the organizational arrangements and cost-recovery mechanisms required for O&M.

61. *Agro-Climatic Vulnerability Reduction Subprojects.* Project preparation initially sought to choose a set of proven technologies that could be scaled up with minimal ex ante evaluation and standardized interventions at the farm and community levels. That is, technologies (i) that have been successfully adopted by a significant number of small-scale farmers in the Brazilian semi-arid, under the range of agro-ecological conditions present; (ii) whose response to drought represented an improvement over existing practices; and (iii) that provided adequate returns on investment. As this was not possible, it was decided to follow a no-regrets approach, based on supporting a set of technologies and practices that have proven effective at improving resilience in semi-arid conditions generally, including improved collection and use of water, agro-forestry practices, and heat-resistant cultivars.

62. *Productive Alliances*. Alliances will be chosen through competitive processes. Scoring of productive alliance business plans will include financial indicators, the number of beneficiaries, the quality and level of commitment of buyers, adequacy of technical choices and resilience to climate variability. Subprojects under alliances will aim to ensure that producers reach the market specifications agreed with buyers, and will include tailored organizational and business support. Groups incorporating women, youth and Quilombola producers will receive, if required, additional support to be able to compete on equal terms. An independent agency will carry out the technical and financial evaluation of business plans. Producer associations will receive technical assistance support throughout the subproject cycle.

C. Financial Management

63. COOPERAR's FM systems are based largely on those established under previous Bank-financed projects, whose performance was moderately satisfactory; however, reports from the State's Comptroller (*Controladoria Geral do Estado-PB*) have highlighted the need to enhance the internal controls within the agency. This has been done through an institutional action plan during Project preparation. The need to enhance FM arrangements extends to the PO and CA levels. External audit reports of previous projects have highlighted the importance of improving controls and reporting of subprojects. There is an inherent risk of insufficient appropriately skilled resources and processes to adequately design and implement FM at the subproject level. Therefore, FM technical assistance activities are integrated within Component 1 of the Project to support the development of specific FM processes at the subproject level to mitigate these risks.

64. The conclusion on the assessment of COOPERAR is that the financial management arrangements as set out for this project are Moderately Satisfactory. FM control risk was assessed as Substantial because of the challenge of ensuring that (i) COOPERAR has capable FM arrangements in place, (ii) there are adequate internal controls and country systems, and (iii) POs and CAs receive training in financial management and the funds transferred are adequately accounted for. Fiduciary Risks have been identified and mitigating actions are reflected in the Project design.

D. Procurement

65. Following the procurement assessment, the risk rating has been defined as Substantial because the major pillars for smooth procurement implementation are considered insufficient, and it is likely that their strengthening would be finalized by the second year of project implementation. This period may cause unnecessary delays, but it is necessary as part of the learning curve.

66. Agreed mitigation measures aim to strengthen the agency's capacity to implement procurement by establishing the minimum staffing required for procurement management, providing detailed information on procurement processing and decision making, establishing sample bidding/evaluation/contract documents and record keeping requirements, training on Bank's procurement rules, securing external expertise from a consultant, and providing increased implementation support in the early stages of project implementation. The implementation of the mitigation measures is expected to substantially strengthen the agency's capacity and, thus, to reduce the risks. As such, any unmitigated residual risk could only be identified if, for whatever reason, the agency is unable to implement the proposed measures.

E. Social (including Safeguards)

67. A comprehensive environmental and social analysis was prepared by the State of Paraíba in accordance with Bank safeguard policies and federal and state legal requirements. Based on the findings of this analysis, the State prepared an Environmental and Social Impacts Assessment (ESIA), including an Environmental and Social Management Framework (ESMF). The findings of the ESIA were revised following a series of regional public consultations with interested stakeholders. Disclosure of the final ESMF was done in country on COOPERAR's website and on the Bank's external website on March 28, 2016.²²

68. The ESIA included an analysis of the experience and the capacity of the implementing agencies to address key social issues expected to influence Project outcomes. These include the transparency and fairness in the identification and selection of beneficiaries and subprojects, potential adverse impacts on livelihoods, relations with indigenous peoples and traditional communities such as *Quilombolas*, gender equality, land expropriation and resettlement.

69. The social risks associated with the project range from low to moderate. The main concerns are likely to arise from Component 2 – Water Access and Agro-climatic Vulnerability Reduction, as many of the intended beneficiaries of these actions are very poor and have limited technical and/or organizational skills. Social and economic inequalities including gender roles and expectations could also complicate measures to increase food production and nutrition at the household level. The ESIA produced an Environmental and Social Management Framework (ESMF), with specific instruments designed to mitigate these risks.

70. As with the previous project (COOPERAR II), this project will continue to provide support for indigenous groups and ethnic communities and OP/BP 4.10 Indigenous Peoples has been triggered. These actions will be guided by the Indigenous and Quilombola Peoples Planning Framework (IQPPF). The proposed project is not expected to require any land acquisition; however, because the exact location and design specifications for the proposed investments will only be determined during project implementation, OP/BP 4.12 Involuntary Settlement was preventatively triggered and the ESIA prepared an Involuntary Resettlement Policy Framework (IRPF) to be applied if necessary. The Bank-approved IQPPF and IRPF were disclosed on March 28, 2016 in country and on the Bank's external website, and are available in COOPERAR's website.²³

71. Gender strategy. With Bank assistance, COOPERAR, conducted a gender assessment and designed a gender strategy. Key elements of the strategy include: (i) a differentiated communications strategy; (ii) specific training for women, women's groups and service providers; (iii) providing priority attention to communities that have greater numbers of women for water access and vulnerability reduction; and (iv) specialized technical assistance for women's groups and leaders in productive alliances. (See Annex 2 for details)

F. Environment (including Safeguards)

72. The project is classified as Category B, as possible negative impacts from agricultural and small-scale infrastructure activities are expected to be small, localized and reversible through close monitoring and on-time adjustments. Positive impacts are expected from the adoption of sustainable rural production practices. The following environmental policies are triggered by the

²² See COOPERAR's website: http://www.cooperar.pb.gov.br/?pg=documentos_oficiais

²³ See: http://www.cooperar.pb.gov.br/?pg=documentos_oficiais

project: OP/BP 4.01 Environmental Assessment; OP/BP 4.04 Natural Habitats; OP/BP 4.09 Pest Management; and OP/BP 4.11 Physical Cultural Resources. OP/BP 4.36 Forests and OP/BP 4.37 Safety of Dams were also preventively triggered, given that some project activities related to irrigation and water supply may rely on existing dams or require the construction of farm ponds.

73. Safeguard tools include an Environmental and Social Impacts Assessment (ESIA) and Environmental and Social Management Framework (ESMF), an Environmental and Social Manual for Civil Works, as well as environmental screening and monitoring templates tailored for each type of activity to be supported by the project. The ESIA and supporting documents and templates are part of the project's Operational Manual. Final versions of all the safeguards tools were approved by the Bank on March 23, 2016 and disclosed on March 28, 2016.

G. World Bank Grievance Redress

74. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit www.worldbank.org/grs. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

COUNTRY: BRAZIL

Project Name: Paraiba Sustainable Rural Development Project (P147158)

Results Framework

Project Development Objectives

PDO Statement

The objective of the Project is to improve access to water, reduce agro-climatic vulnerability and increase access to markets of Paraiba's rural inhabitants.

These results are at | Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values						End Target
		YR1	YR2	YR3	YR4	YR5	YR6	
Number of people in rural areas provided with access to Improved Water Sources under the project (Number) - (Core)	38,000	38,000	44,216	56,648	69,080	79,440	79,440	79,440
Clients who have adopted an improved agricultural technology promoted by the project (Number) - (Core)	0	0	9,623	28,868	48,113	64,151	64,151	64,151
Clients who adopted an improved agricultural technology promoted by project – female (Number, Breakdown) - (Core)	0	0	2,887	8,660	14,433	19,245	19,245	19,245
Increase in the average gross value of sales of producers under productive alliances (Percentage)	0	0	0	20	20	20	20	20
Agro-Climatic Risk Information System in operation (Yes/No)	No	No	No	Yes	Yes	Yes	Yes	Yes

Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values						
		YR1	YR2	YR3	YR4	YR5	YR6	End Target
Direct project beneficiaries (Number) - (Core)	160,388	160,388	160,388	193,002	242,506	292,010	325,401	325,400
Female beneficiaries (Percentage, Supplemental) - (Core)	30	30	30	30	30	30	30	30
<i>Component 1. Institutional Strengthening</i>								
Investments and subprojects with established institutional arrangements for operations and maintenance (Percentage)	0	0	20	40	60	70	70	70
State management model for rural sanitation designed, tested and implemented (Yes/No)	No	No	Yes	Yes	Yes	Yes	Yes	Yes
<i>Component 2. Water access and agro-climatic vulnerability reduction</i>								
Water access investments and vulnerability reduction subprojects implemented, by type (Number)	0	0	197	590	984	1,312	1,312	1,312
Number of families benefited by water access investments and vulnerability reduction subprojects (Number)	0	0	5,415	16,244	27,074	36,098	36,098	36,098
Agro-Climatic Risk Information System designed (Yes/No)	No	No	Yes	Yes	Yes	Yes	Yes	Yes
<i>Component 3. Productive alliances</i>								
Producer organizations that meet commercialization agreement or business plan specifications (Percentage)	0	0	0	70	70	70	70	70
Buyers who fulfill their obligations under the commercialization agreement or business plan (Percentage)	0	0	0	70	70	70	70	70
Productive alliance subprojects implemented, by type (Number)	0	0	68	119	170	170	170	170

Number of producers benefited with productive alliance subprojects (Number)	0	0	3,400	5,950	8,500	8,500	8,500	8,500
Number of female producers benefited by productive alliance subprojects (Number, Breakdown)	0	0	1,020	1,785	2,550	2,550	2,550	2,550
Potential buyers/investors identified by the business promotion agency (CINEP) (Number)	0	80	160	250	250	250	250	250
<i>Component 4. Project management, monitoring and evaluation</i>								
Baseline and follow up data for investments and subprojects collected systematically (Yes/No)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Grievances registered related to delivery of project benefits addressed (%) (Percentage) - (Core)	0	80	80	80	80	80	80	80

Indicator Description

Project Development Objective Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Number of people in rural areas provided with access to Improved Water Sources under the project	The actual number of people in rural areas who benefited from improved water supply services that have been constructed under the project.	Annual	Investment completion reports, MIS	COOPERAR
Clients who have adopted an improved agricultural technology promoted by the project	The number of producers who have adopted an improved agricultural technology promoted by the Agro-Climatic Vulnerability Reduction sub-component.	Annual	Baseline in each subproject proposal. End data by TA consultants. Subproject completion reports.	COOPERAR
Clients who adopted an improved agricultural technology promoted by project – female	The proportion of female producers who have adopted an improved agricultural technology promoted by the Agro-Climatic Vulnerability Reduction sub-component.	Annual		COOPERAR
Increase in the average gross value of sales of producers under productive alliances	The difference (with and without project) in gross sales value, after accounting for inflation, averaged across the participating members of the producer organization.	Annual	Results monitoring by technical assistants and COOPERAR. Completion reports. Impact evaluation by external consultant.	COOPERAR
Agro-Climatic Risk Information System in operation	Information available to the public via the web and other media for: (i) Alerts for droughts and other extreme weather events; (ii) forecasts of climatic parameters and water balance for selected agricultural products; (iii) forecasts of seasonal climates; and (iv) planting simulations (agricultural calendar for agricultural products).	Annual	AESA implementation reports	AESA and COOPERAR

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Direct project beneficiaries	Sum of all direct project beneficiaries	Yearly	MIS	COOPERAR
Female beneficiaries	Percentage of the beneficiaries who are female.	Yearly	MIS	COOPERAR
Investments and subprojects with established institutional arrangements for operations and maintenance	For providers in access to water investments: (i) internal regulation formally approved; (ii) revolving fund for O&M established; (iii) payment of monthly fees; (iv) delinquent users cut-off; (v) accounting system; and (vi) public accountability. For community associations in vulnerability reduction subprojects (with collective investments): (i) accounting system; and (ii) accountability to community members. For producer organizations in productive alliance subprojects: (i) services provided effectively by PO; (ii) accounting system; (iii) revolving fund, if necessary; and (iv) accountability to members.	Yearly, at mid-term and at end of project.	Field monitoring, completion reports, Mid-term and Final evaluations.	COOPERAR
State management model for rural sanitation designed, tested and implemented	Measured as follows: (i) design and establishment of management model (Year One); (ii) pilot project implemented and tested on selected communities from Sertao Paraibano region (Year Two); and (iii) model expansion to Borborema and Agreste regions (Year Three).	Annual	SEIRHMACT implementation reports	SEIRHMACT and COOPERAR

Water access investments and vulnerability reduction subprojects implemented, by type	Investments and subprojects physically and financially executed, and administratively closed. Sum of community investments in component 2, disaggregated by type in complementary report.	Annual	Investment and subproject completion reports, MIS	COOPERAR
Number of families benefited by water access investments and vulnerability reduction subprojects	Count of number of beneficiary households of component 2.	Annual	Investment and subproject completion reports, MIS	COOPERAR
Agro-Climatic Risk Information System designed	Information system designed finalized, discussed and approved by key Paraiba government players and the Bank.	Annual	Design reports and exchange of letters	AESA and COOPERAR
Producer organizations that meet commercialization agreement or business plan specifications	Number of POs who achieve the specifications described in the commercialization agreement or business plan / Total number of producers benefited from productive alliances) x 100.	Annual	Systematic monitoring, subproject completion reports, MIS	COOPERAR
Buyers who fulfill their obligations under the commercialization agreement or business plan	Number of buyers who meet the terms described in the commercialization agreement or business plan / number of buyers involved in all productive alliances x 100.	Annual	Systematic monitoring, subproject completion reports, MIS	COOPERAR
Productive alliance subprojects implemented, by type	Approved subprojects technically and financially executed, and administratively closed.	Annual	MIS	COOPERAR
Number of producers benefited with productive alliance subprojects	Number of producer households benefited directly by the project.	Annual	Subproject completion reports, MIS	COOPERAR
Number of female producers benefited by productive alliance subprojects	Number of female producers benefited directly by the project (head of household).	Annual	Subproject completion reports, MIS	COOPERAR

Potential buyers/investors identified by the business promotion agency (CINEP)	Number of buyers/investors who comply with business requirements established in the Project Operative Manual and have been contacted by CINEP for participation in productive alliances	Annual	CINEP implementation reports, MIS	CINEP and COOPERAR
Baseline and follow up data for investments and subprojects collected systematically	Baseline and end data collected for each intervention in water access, agro-climatic vulnerability reduction and productive alliances. Baseline, mid-term and final evaluation data collected for intervention and control groups in Productive Alliances component.	Yearly	MIS, pre-investment studies, impact evaluation, completion reports.	COOPERAR
Grievances registered related to delivery of project benefits addressed (%)	This indicator measures the transparency and accountability mechanisms established by the project	Yearly	Information registered in Regional Offices, User Service collect number, and email account.	COOPERAR

Annex 2: Detailed Project Description

COUNTRY: BRAZIL

Paraíba Sustainable Rural Development Project (P147158)

- Direct beneficiaries.** The target population consists of about 165,000 rural inhabitants, whose livelihoods depend primarily on small-scale agricultural production, transformation and related services. Potential beneficiaries will be targeted through different instruments depending on component characteristics. Investments in water supply and in agro-climatic vulnerability reduction (Component 2) will be targeted at households and community-level institutions living in 100 municipalities in the semi-arid region. These jurisdictions have high or medium-high levels of vulnerability and were selected on the basis of a Municipal Index of Agro-climatic Vulnerability (see below). The extreme poverty rate in these municipalities is estimated to be almost 50 percent higher than the rural average for the state. Investments in productive alliances (Component 3) would not be targeted spatially but aimed at smallholder producers, mostly family farmers,²⁴ organized in existing or new Producers Associations throughout the state. Institutional beneficiaries include the cooperating institutions (AESA, SEIRHMACT and CINEP) and other organizations, which may collaborate in setting up the rural water management system and the ARIS, as well as in investment/buyer attraction activities.
- Secondary beneficiaries** may include the population of the whole state through the implementation of the ARIS, as the system would improve planning, emission of early alerts and provide information for better targeted prevention and response measures. Technical service providers will receive training in culturally-appropriate and gender-sensitive techniques for working with Project beneficiaries. Finally, buyers under alliances will also benefit from the reduction of transactions costs and risks generated by the alliance identification process. Capacity improvement of SEIRHMACT, AESA and CINEP will allow for better service provision.
- Gender strategy.** The Project's overall gender strategy will be implemented through specific activities, as described below in each component. Key elements of the gender strategy include: (i) a differentiated communications strategy; (ii) specific training for women, women's groups and service providers; (iii) providing priority attention to communities that have greater numbers of women for water access and vulnerability reduction; and (iv) specialized technical assistance for women's groups and leaders in productive alliances. Application of the strategy will be reviewed at Mid-term and adjusted if necessary.
- Indigenous and Quilombola communities** will be eligible for all Project-financed activities regardless of location within the State. The Project will implement a separate strategy to reach these communities, including additional assistance, if required, to facilitate access to Project activities. Training and technical assistance will be tailored to their cultural characteristics. Requests for Project support may not necessarily be mediated by Municipal Sustainable Rural Development Councils.

²⁴ The term smallholder, smallholder producer and family farmer are used indistinctly in this document. Under Brazilian Federal Law 11.326 of 2006, family farms must comply with four characteristics: (i) farm size below four fiscal units (*módulos fiscais*); (ii) derive a majority of household income from agriculture; (iii) use primarily household labor; and (iv) manage on-farm activities themselves. Smallholder producers who employ non-household labor would also be eligible.

5. The project objective would be achieved through the implementation of the following components.

- (a) Component 1: Institutional Strengthening
- (b) Component 2: Water Access and Agro-Climatic Vulnerability Reduction
- (c) Component 3: Productive Alliances
- (d) Component 4: Project Management, Monitoring and Evaluation

Component 1. Institutional Strengthening (Total US\$ 4.02 million, of which IBRD 65%)

6. This component aims to increase the capacity of key actors (Community Associations, municipal councils, Producer Groups, service providers, purchasers and state institutions) to play active roles in the project cycle, from identification to operations.

7. The component would finance consultant and non-consultant services, goods training and operating costs. It would include the following activities:

- (a) Carrying out a differentiated²⁵ communication and outreach campaign to: (i) inform stakeholders about the scope and rules of the Project; (ii) publish and disseminate Project activities including, *inter alia*, information on demands, approvals, financing and results; and (iii) promote investments and attract buyers in rural value chains under the Project.
- (b) Strengthening the institutional capacity of Community Associations²⁶ (CA) and Municipal Councils to: (i) improve their governance and managerial skills for operations and maintenance of community infrastructure; (ii) provide hygiene, environmental and nutritional training to CA members; and (iii) provide training to farmers to facilitate adoption of good agricultural and environmental practices, including use of climate information for decision making.
- (c) Strengthening the capacity of Producer Organizations²⁷ (PO) to: (i) comply with organizational and business regulations; and (ii) improve organizational, managerial, business and risk-management skills.
- (d) (i) Provision of training to technical service providers which may provide technical support to CAs, POs, COOPERAR and any other selected public institution, under the Project; and (ii) establish a technical service provider database.
- (e) Strengthening the institutional capacity of the Secretariat of Infrastructure, Water Resources, Environment and Science and Technology (SEIRHMACT) and other selected public institutions to implement a management model for improving rural water and sanitation services, including, *inter alia*, the provision of support to: (i) define and establish sub-sector institutional arrangements; (ii) improve coordination between sub-sector institutions and programs; (iii) establish an

²⁵ To better reach different target beneficiaries such as women, youth, Indigenous and Quilombola Peoples.

²⁶ CAs include civil associations formed by members of a community, or any private association established in Paraiba in accordance to law, including communities of Indigenous and Quilombola Peoples.

²⁷ POs include producer-based cooperatives, civil associations or any group of smallholders organized into a legally established private association.

information system for registering and monitoring the status of rural water and sanitation systems; (iv) pilot the implementation of technical assistance mechanisms and management models for rural water systems; (v) support the federation of CAs; and (vi) provide training and technical assistance to improve the capacities of CAs to manage, operate and maintain rural water systems.

- (f) Strengthening of the Paraiba Development Company's (CINEP) capacity and other selected partners for targeting and reaching out to potential investors and buyers, and facilitating their decision to enter into Productive Alliances.

8. Key component outputs are: (i) radio spots (and other mass-media units) disaggregated by type of intervention and type of beneficiary; (ii) CAs, POs, households and farmers that receive training, disaggregated by type; (iii) potential investors/buyer leads reached; (iv) service providers registered and trained; and (v) rural water and sanitation management system established.

9. The communications campaign will help to mobilize and inform beneficiaries, partners and providers in order to facilitate their participation. Messages and media will be varied by type of intervention, stage of the investment cycle and target group. Additional efforts will be done to ensure that women, youth, indigenous and Quilombola groups obtain adequate information in order to participate fully.

10. Component activities will help to 'level the playing field' for women, Indigenous and Quilombola communities by providing specialized training and capacity building in relation to both technical and soft-skills. Service providers will also receive gender training so as to ensure they can identify the specific needs of male and female producers and ensure they deliver technical assistance in a gender-sensitive manner, for example, by taking into account women's childcare responsibilities when scheduling training sessions.

11. Institutional strengthening and capacity building of rural water and sanitation institutions will emphasize O&M and sustainable management of water systems. One or more specialized entities will be hired to support the development of the state management system for rural water and sanitation, including the development of an information system, planning instruments, technical assistance mechanisms, and management models, as well as to support CAs to develop the organizational arrangements and install the required capacity for systems management and O&M during and after the investment phase.

12. Producer organizations (POs) and potential investors/buyers may receive assistance from brokers to establish alliances. POs may also receive support, if so required, to acquire legal personality or comply with general business regulations.

13. COOPERAR will provide training to CAs and POs that receive matching grants and operate subprojects, in funds administration, including accounting, financial management and procurement.

14. COOPERAR will also be in charge of contracting related technical assistance to support SEIRHMACT in the development of the state management system for rural water and sanitation.

Component 2. Water Access and Agro-Climatic Vulnerability Reduction (Total US\$ 44.36 million, of which IBRD 58%).

15. The component objective is to decrease local vulnerabilities, defined by the extent to which rural livelihoods in Paraiba are susceptible to impacts from hydro-climatic conditions. It aims to increase the ability of rural populations to adapt and reduce local sensitivity to climate shocks (mainly droughts) and limited water access. Project activities aim to improve access to potable water, as well as strengthen resilience, especially of smallholders, by improving the management and use of natural resources and adopting appropriate methods and technologies for the production, storage, processing and marketing of agricultural goods.

16. The component would finance consultant services, training, goods and works to support the following activities:

- (a) Provision of support for: (i) identifying water supply investments, including, *inter alia*, construction and rehabilitation of piped and non-piped water systems, desalinization facilities and household rainwater harvesting systems, and Agro-Climatic Vulnerability Reduction Subprojects; (ii) carrying out pre-investment studies for water supply investments identified under (i) herein, and for Agro-Climatic Vulnerability Reduction Subprojects; and (iii) carrying out of the water supply investments mentioned under (i) herein.
- (b) Provision of Matching Grants to the CAs for carrying out the Agro-Climatic Vulnerability Reduction Subprojects including, among others: (i) water supply for agricultural production; (ii) agriculture diversification and natural resources management; (iii) food security and nutritional improvement; and (iv) improvement of rural roads access.
- (c) Provision of support to the Executive Agency for Water Management of Paraiba (AESA) for the establishment of an Agro-Climatic Risk Information System (ARIS).

17. Main component outputs are: (i) access to water investments and Agro-Climatic Vulnerability Reduction Subprojects identified and designed; (ii) implemented investments and subprojects; and (iii) ARIS financed.

18. *Component area.* COOPERAR designed a Municipal Agro-climatic Vulnerability Index (IMVA) which was applied to Paraiba's 222 municipalities to determine their degree of vulnerability. The index provides a better assessment of water insecurity and ability to response to drought, than the assessment of rainfall data alone. The IMVA includes the following indicators:

Category	Indicator
Climate	Precipitation
	Aridity
Agricultural production	Average yields per hectare
	Level of production per person
	Area under subsistence crops
	Average harvest losses

	# of farmers subscribed to the <i>Safra</i> program (agriculture insurance) per 100 rural inhabitants
Social	Human Development Index
	Proportion of families benefitting from <i>Bolsa Familia</i> transfers
	Rate of coverage of urban water supply

19. Out of this list, COOPERAR selected 100 municipalities categorized as having High Vulnerability or Medium-High Vulnerability to prioritize actions in the component. This prioritization will be reevaluated in the mid-term review of the Project or in case of an emergency.

20. **Subcomponent 2.a: Access to Water.** This subcomponent involves the promotion of access to drinking water, encompassing mainly the following types of investments:

- (a) Complete water supply systems or piped water (network) systems, which include abstraction, treatment, reservoir and water distribution (network and household connections);
- (b) Simplified water supply systems or non-piped (off-network) systems, which include abstraction, treatment, reservoir and one or more standpipes;
- (c) Household rainwater harvesting systems, which include collection pipes, and water tanks;
- (d) Desalinization facilities, which include the provision of equipment for water treatment to improve the drinking water quality, allowing for human consumption and waste water reuse or safe disposal.

21. The project will favor the development of piped (network) water investments since they ensure a greater reduction of vulnerability. Indeed, only 13 percent of the rural households in the 100 prioritized municipalities have improved access to water through a water network connection, 6.4 percentage points below the state's average. Thus, it is expected that about 65 percent of investment funds in the component will go to bridge this gap, which makes wells or springs either on property or outside property the option for accessing to water for around 27.5 percent of the households. Rainwater harvesting and storage in cisterns is the alternative for 17.9 percent of the households in rural communities where underground water is non-existent or does not meet the quality standards for human consumption. In fact, the cisterns contribute to reduction of vulnerability because they are often used during dry season for storing water supplied by water trucks as well.

Table 3. Percentage of household with access to water, by level of service

Rural areas of	Water network connection	Well or spring on property	Well or spring outside property	Rainwater harvesting and storage in cistern*	Water truck	Other
State of Paraiba	19.3	16.0	17.3	16.4	9.1	21.8
Prioritized municipalities (100)	13.0	13.4	14.1	17.9	15.6	25.9
<i>Difference</i>	-6.4	-2.6	-3.2	1.5	6.5	4.1

* Cisterns are household water tanks used for storing water.

22. The maximum cost per investment is established at US\$ 250,000 and will be estimated taking into account the cost ceilings per type of investment presented in Table 4. Nevertheless, investments exceeding the established ceilings may be eligible under agreement with the Bank.

Table 4. Cost ceilings and minimum number of beneficiaries, by type of system

Type of investment	Ceiling per family (US\$)	Minimum number of families per investment
Complete Water Supply Systems (ADC)	2,500	30
Simplified Water Supply Systems (ADS)	1,500	10
Household Rainwater Harvesting Systems	1,400	20
Desalination Systems	2,500	30

23. Eligibility criteria. Investments will be financed if they comply with the following criteria: (i) the applicant is a legal entity; (ii) all the permits and licenses required by law are obtained; (iii) a financial sustainability analysis of the investments, including the formal commitment of the community to cover the O&M expenses of the systems; (iv) an environmental sustainability analysis demonstrating the availability of the water resource to satisfy the demand required during the investment life cycle; (v) a sustainability analysis to prove the technical feasibility and suitability of the technical solution chosen by the community; and (vi) compliance with social and environment safeguards. Financing will be provided only for systems in rural communities and small towns of up to 2,500 inhabitants.

24. Prioritization criteria: (i) lack of access to water; (ii) deficient supply of water, in quantity and/or quality; (iii) number of people potentially covered; (iv) availability of water resources and/or proximity to alternative sources of water (springs, adductors and channels of treated or bulk water); (v) not to have benefited by COOPERAR II or other projects with the same purpose, except for extending coverage; (vi) communities with greater proportion of households headed by women; (vii) explicit commitment to operate and maintain the infrastructure; and (viii) investment costs within agreed ceilings per family and type of investment.

25. Investment cycle. Interventions start with the identification and prioritization of investments by CAs and municipal councils. Then, pre-investment studies, including technical feasibility, safeguards, and preliminary baseline data collection, will be carried out by consultants hired by COOPERAR. COOPERAR will assess and approve the results of these studies, prioritizing the communities where there are available alternative sources of water (springs, adductors and channels of treated or bulk water) to underground water. Where underground water is the only alternative, COOPERAR will contract-out separate firms for the implementation of a borehole drilling campaign and the measurement of underground water flow and quality, in order to define the type of investment feasible in those cases. Subsequently, COOPERAR will sign an investment agreement with the beneficiary CA before contracting-out separate firms for the completion of the baseline and the development of the final designs, and the construction of the water systems. This agreement will include the CAs obligation to undertake adequate O&M of the financed systems. COOPERAR will also be in charge of contracting related technical

assistance to support the SEIRHMACT in the development of the state management system for rural water and sanitation as well as the CAs in establishing organization and rules required for management, operations and maintenance before infrastructure investments begin. Supervision, control, and reception of the works will be carried out by COOPERAR with the support of CAs. The operation and maintenance of the systems will be under the responsibility of the CAs with the support of COOPERAR in the first year.

26. Sub-component 2.b – Agro-Climatic Vulnerability Reduction. The purpose of the sub-component is to scale-up support for family producers to reduce output volatility and smooth-out consumption in the face of climate variability and drought. The project will promote technologies and agricultural and resource management practices that have demonstrated highest on-farm suitability and effectiveness in semi-arid rural areas. The first two years, the Project will focus on continuous learning and monitoring of implemented technologies. Experiences during this period will be assessed for the Mid-term Review, to identify the necessary adjustments that ensure sustainable replication and scaling-up. The evaluation process will be conducted under the supervision of COOPERAR and a consulting firm, and will have the support of the most important institutions involved in semi-arid agriculture in Brazil.²⁸ The following types of intervention are contemplated:

- (a) Water supply for crop and livestock production, including works for water capture, storage and supply (i.e. simple irrigation systems, small surface and subterranean water collection infrastructure);
- (b) Agriculture diversification and natural resources management, including adapted annual and perennial crops and cultivars, livestock and agro-forestry practices; improved feedstock production and fodder storage infrastructure; and management and restoration practices for vegetation, soil, and water at the farm and community levels.
- (c) Food security and nutritional improvement, including the introduction or improvement of minor farm animal raising practices, cultivation of house gardens and fruit production. This activity will particularly target reduction of women's work burden and provide training on how to effectively transfer increased productivity into improved food and nutritional security, especially for children.
- (d) Small, community level works to improve year-round access to the transportation network, including drainage works, fords and small bridges as well as minor road surface improvements.

27. Vulnerability reduction subprojects may include works, goods and technical assistance services required by the CAs to implement and operate the chosen technologies and practices. CAs will manage subproject funds under community procurement rules and will provide at least 10 percent of the subproject cost in cash, labor and/or goods.

28. Eligibility criteria. Investments will only be financed if they comply with the following criteria: (i) the applicant must be a legal entity; (ii) all the permits and licenses required by law are obtained; (iii) financial sustainability analysis of the subprojects, establishing recurrent costs to be incurred by producers and/or communities; (iv) technical sustainability analysis of the

²⁸ A Technical Advisory Group will be established to guide the processes of monitoring, validation and evaluation of the sub-component.

subprojects to test the agro-environmental suitability of the technical solution; (v) costs below ceilings per household for each type of project; and (vii) compliance with social and environment safeguards. Beneficiaries must be small-scale producers with up to 4 fiscal units.

29. Prioritization criteria: (i) number of potential beneficiaries; (ii) proportion of women, indigenous or Quilombola beneficiaries; (iii) CAs that have not benefited from COOPERAR II or similar projects; and (iv) communities with greater proportion of households headed by women.

30. Subproject cycle. The following activities will be carried out in the implementation of the sub-component:

- (a) Identification of vulnerabilities and prioritization of demands by municipal councils.
- (b) Validation of demands and pre-analysis of vulnerabilities by regional offices.
- (c) Formulation of the Technical Opinion (*parecer técnico*), including safeguards, and base data collection for approval by COOPERAR.
- (d) Subproject formulation, including baseline and institutional arrangements, for community validation and approval by COOPERAR.
- (e) Signing of subproject agreement.
- (f) Implementation of subproject by CA (large or complex works may be executed directly by COOPERAR).
- (g) Subproject evaluation.

31. Interventions start with the identification and prioritization of subprojects by CAs with the support of municipal councils. Pre-investment studies, including the baseline, will be carried out by consultants hired by COOPERAR; working in close coordination with the CA. COOPERAR will evaluate and approve the pre-investment studies and, if so required, will contract the final designs for works. COOPERAR will sign a subproject agreement with the CA, which will be in charge of implementation under Community Procurement rules. Large or complex works may be delegated to COOPERAR for procurement management. Supervision and reception of the works will be carried out by COOPERAR with the support of the CAs. The operation and maintenance of the systems will be under the responsibility of the CAs, with the support of COOPERAR in the first year.

32. **Sub-component 2.c - Agro-Climatic Risk Information System (ARIS)**. The component will finance the development of a state-wide information system, which will provide access to: (i) integrated climate, water resources, and agriculture information and decision support systems accessible to different users; (ii) expanded agriculture and socioeconomic information to enable relevant agencies to improve prioritization of beneficiaries and vulnerable areas; (iii) visualization and analysis tools for the identification of vulnerabilities and potential opportunities for increased agricultural production systems due to climate variability. It will also provide the basis for future identification of technologies and methodologies that enhance the outcomes of on-farm investments and reduce vulnerabilities to extreme climatic events; use of insurance to cover climatic risks; and identification of climate smart interventions and best practices. ARIS will help fill a wide gap in the state of Paraíba regarding proactive management of climatic risks.

33. The ARIS would be built around AESA's existing Climate Information System, in partnership with EMBRAPA, INSA, EMATER, EMEPA and other relevant entities, which can contribute with the coordination and integration of relevant datasets. The system will also

facilitate the integration of existing state watershed monitoring initiatives, as well as national initiatives, such as the National Drought Monitoring System, currently being set up for the Northeast region of Brazil.

Component 3. Productive Alliances (Total US\$ 20.73 million, of which IBRD 70%).

34. The purpose of the component is to improve smallholder producers' access to dynamic markets through the creation of alliances with private and public buyers. Project support will help organized producers and buyers to jointly formulate and implement business plans. Financing would be provided solely to the PO, and would be aimed at reaching agreed product specifications (quality, quantity and delivery). Purchasers may provide technical assistance or financing to the POs, and commit to additional investments in logistics or transformation infrastructure. Successful alliances are expected to increase net benefits to both parties but will be measured solely through increases in the value of sales of participating producers.

35. The component would finance different combinations of consultant and non-consultant services, training, goods and works under subprojects to support the following activities:

- (a) Provision of technical assistance support for: (i) identifying and implementing Productive Alliances; and (ii) carrying out pre-investment studies for Productive Alliances, including the formulation of business plans and associated Productive Alliance Subprojects.
- (b) Provision of matching grants to the POs for carrying out Productive Alliance Subprojects consisting of, among others, one or more of the following: (i) minor on-farm infrastructure; (ii) soil and water conservation measures; (iii) provision and utilization of inputs, equipment and tools; (iv) technical assistance services; and (v) off-farm infrastructure for storage, processing and packaging.

36. Component outputs are: (i) alliances identified; (ii) business plans formulated and evaluated; (ii) POs which reach the specifications described in the marketing agreements; and (iii) buyers that comply with the terms of the business plans.

37. A productive alliance business plan includes: (i) a marketing agreement specifying the good to be produced in terms of quality, quantity and delivery, as well as the price determination mechanism; (ii) the roles and contributions of the parties to the agreement, including those of the Project and potentially other government institutions; (iii) the productive alliance subproject, comprising the activities required to reach the product specification, as well as the managerial strengthening of the PO; and (iv) the technical, financial and safeguard analyses required to establish feasibility.

38. Productive alliance subprojects will be formulated on the basis of the product specification agreed with the buyer and include: (i) a description of the activities to be carried out by the PO to fulfil its commitments under the alliance agreement; (ii) the areas of institutional strengthening required by the PO to provide specific services to its members; (iii) a simple procurement plan comprising on-farm, group and institutional investments; and (iv) subproject sequencing and funding tranches. POs will manage subproject funds under community procurement and business practices. They will pay for at least 30 percent of subproject costs in cash, divided per tranches and deposited ahead of Project disbursements.

39. Eligibility criteria. At the level of the *producers*, at least 80 percent of participating members must be smallholders (with up to four fiscal units of land) and must manage their own production units. Producers with larger properties may participate but would not be eligible for individual, on-farm investments. At the level of the PO, the following criteria apply: (i) signed marketing agreement with the buyer; (ii) PO legally constituted at the time of alliance approval; (iii) participation of at least 25 PO members²⁹; (iv) basic knowledge of the proposed production process; and (v) not to be in default.

40. Prioritization criteria. Alliances will be chosen through competitive processes. Scoring of productive alliance business plans will include the ratio of benefits to costs, the number of beneficiaries, the quality and level of commitment of buyers, adequacy of technical choices and resilience to climate change. Additional points will be awarded to women-led producer associations as well as associations from indigenous and Quilombola communities participating in feasible productive alliances.

41. Alliance cycle. The following steps will be followed for the implementation of component activities:

- (a) *Investment/buyer attraction and promotion.* CINEP and its partners (consultants, brokers and other institutions) will carry out investor and buyer promotion plans and activities, targeting potential members of productive alliances. This process will continue even during the call for proposals phase.
- (b) *Call for proposals.* The Project will carry out at least three public calls for potential alliance partners to present alliance profiles. The calls will be accompanied by a process of mobilization--a communications campaign aimed at producers and buyers, as well as field information and training workshops which take the different needs and capacities of different target groups into account. The Project may provide support through “brokers” to POs and buyers who request support for finding partners.
- (c) *Opportunity evaluation.* COOPERAR will evaluate alliance profiles jointly presented by POs and buyers with the following criteria: (i) compliance with eligibility criteria and safeguards; (ii) adequacy of buyer; (iii) adequacy of producer’s resource endowment; and (iv) commitment by POs to co-financing at least 30 percent of subproject cost. At this stage the Project will collect baseline data for the impact evaluation.
- (d) *Formulation of business plans.* Partners, whose profiles are approved, will receive technical assistance support for the formulation of their business plan.
- (e) *Evaluation of proposals.* The technical and financial evaluation of business plans will be conducted by an independent entity hired by COOPERAR under TOR approved by the Bank. Safeguards evaluation and inclusion of mitigating measures, if required, will be carried out by COOPERAR.
- (f) *Implementation.* Subprojects will be implemented by POs under community procurement and commercial practice rules. Buyers will implement agreed

²⁹ An alliance may include more than one PO.

measures separately. COOPERAR will provide implementation support and close monitoring during the investment phase and for one year of operations.

- (g) *Evaluation*. Each alliance will be evaluated to measure if it achieved its own objectives, as well as its contribution to expected Project results. An impact evaluation will be conducted on a sample of alliances.

Component 4. Project Management, Monitoring and Evaluation (Total US\$ 10.76 million, of which IBRD 65%)

42. The Project will finance consultant and non-consultant services, goods and incremental operating costs of COOPERAR to efficiently and effectively implement:

- (a) project coordination and management;
- (b) monitoring, evaluation and impact assessment;
- (c) fiduciary administration, internal controls and audits;
- (d) safeguards management;
- (e) Independent financial and technical evaluations of productive alliances' business plans;
- (f) a citizen's engagement mechanism; and
- (g) Project-related studies.

Project costs and financing

43. The following table includes the Project's indicative budget, including details on project component costs by source of financing:

Component and sub-component	Total	Bank	%	PB	%	Benefs.	%
1 – Institutional Strengthening	4,019,150	2,612,447	65	1,406,702	35	-	-
1a – Communication campaign	639,399	415,610	65	223,790	35	-	-
1b – Inst. Strengthening of CAs	937,652	609,474	65	328,178	35	-	-
1c - Inst. Strengthening of POs	1,374,336	893,318	65	481,018	35	-	-
1d – Training of service providers	57,000	37,050	65	19,950	35	-	-
1e – Inst. Strengthening of SEIRHMACT	780,842	507,547	65	273,295	35	-	-
1f – Inst. Strengthening of CINEP	229,920	149,448	65	80,472	35	-	-
2 – Access to Water and Agro-Climatic Vulnerability Reduction	44,362,590	25,799,222		17,041,958		1,521,410	-
2a – Water supply pre-investment and investment	32,663,321	19,692,507	60	12,970,814	40	-	-
2b – Agro-Climatic Vulnerability Reduction Subprojects	10,142,730	5,172,792	51	3,448,528	33	1,521,410	16
2c - Agro-Climatic Risk Information System	1,556,539	933,924	60	622,616	40	-	-

3 – Productive Alliances	20,729,225	14,510,458	70	621,150	-	5,597,618	30
3a – Pre-investment studies and TA	2,070,500	1,449,350	70	621,150	30	-	-
3b – Productive Alliance Subprojects	18,658,725	13,061,108	70	-	-	5,597,618	30
4 – Project Management, Monitoring & Evaluation	10,764,035	6,952,873	65	3,811,162	35	-	
4a – Project coordination & management	8,662,300	5,505,495	65	3,031,805	35	-	-
4b – Monitoring and evaluation	982,000	638,300	65	343,700	35	-	-
4c – Fiduciary administration, controls and audits	95,213	61,889	65	33,325	35	-	-
4d – Safeguards management	74,937	48,709	65	26,228	35	-	-
4f – Independent evaluation of productive alliances	595,000	386,750	65	208,250	35	-	-
4f – Citizen’s engagement mechanism	57,500	37,375	65	20,125	35	-	-
4g – Project-related studies	422,085	274,355	65	147,730	35	-	-
Front end fee	125,000	125,000	100				
TOTAL	80,000,000	50,000,000		22,880,973		7,119,027	

Annex 3: Implementation Arrangements

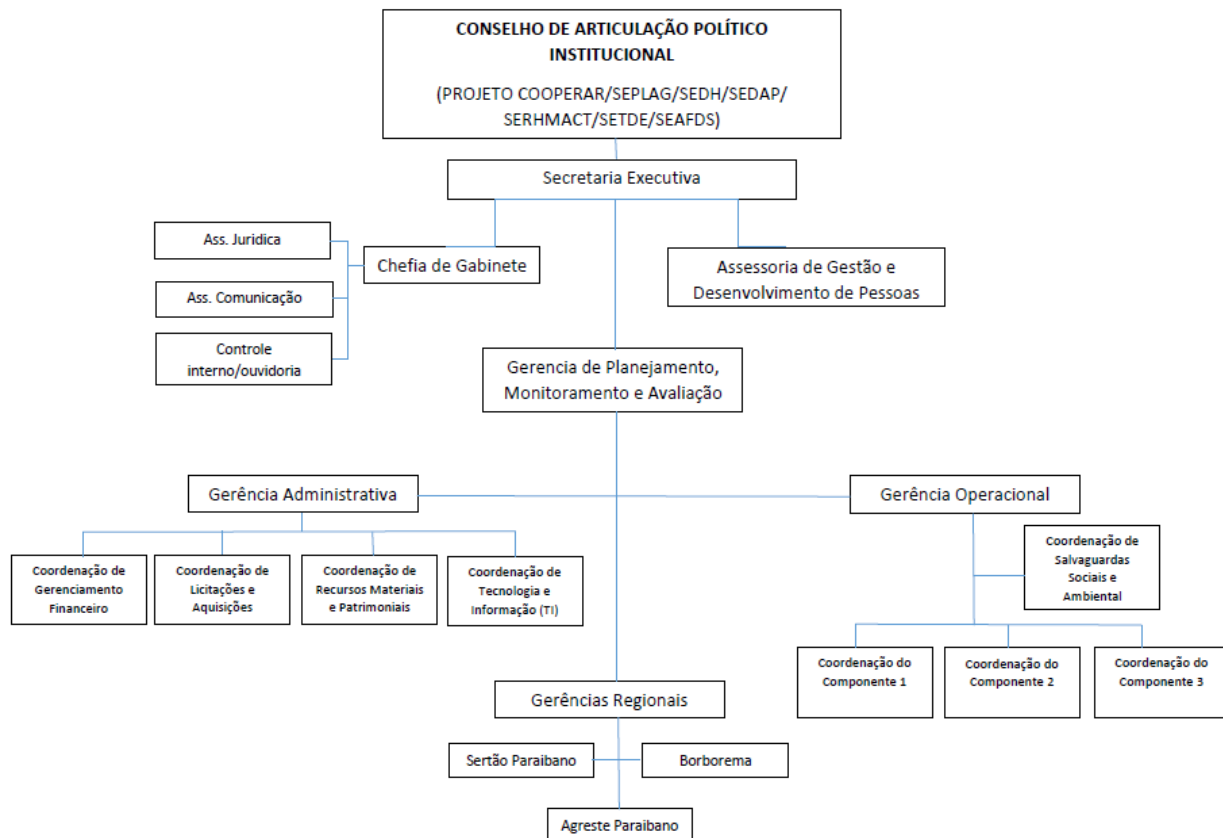
COUNTRY: BRAZIL

Paraiba Sustainable Rural Development Project (P147158)

Project Institutional and Implementation Arrangements

1. The Project will be implemented by COOPERAR, the Project Management Unit established for the Paraiba Second Rural Poverty Reduction Project (P104752), recently remapped to the newly created State Secretariat of Family Agriculture and Development of the Semiarid (SEAFDS). The Secretariat of Family Agriculture will be responsible to guide the coordination of COOPERAR on the general State policies, which are relevant to the Project context, approve the Annual Operating Plan, the Project Budget and the Progress Reports, and coordinate when necessary, collaboration with other State Secretariats. COOPERAR will be responsible and accountable for overall project management, planning, coordination, monitoring and evaluation of all project activities, as well as financial management, procurement disbursement, and accounting. The COOPERAR structure will be comprised by the organizational organogram illustrated in Figure 1. According to the institutional action plan, key managerial and technical staff will be formally designated and operational before project approval.

COOPERAR - Organizational Organogram



2. COOPERAR will ensure that financing for the project is included in the State Work Plans (PPAs), as well as the respective annual budgets during the implementation period of the project. COOPERAR will prepare annual operating plans and annual procurement plans that sufficiently forecast the needs of the project during the coming year in order to carry out successful implementation of project activities.
3. More specifically, COOPERAR's central office will be responsible for the overall plan and quality of implementation, establish a financial and technical strategy that rationalizes the execution, with the purpose to consolidate actions and ensure that project objectives are met, manage the budgetary resources of the Project, providing disbursement of resources according to approved schedules, ensure that all procurement carried out through the Project is in agreement with Bank safeguards standards, carry out an annual independent audit of project management and activities, promote active public communication and dissemination of project objectives and activities, and prepare the Terms of Reference and other specifications for hiring of technical consultants in the evaluation of the proposals.
4. COOPERAR's regional units will be in charge of project management, execution, and monitoring at local level. Three regional offices will be structured and strengthened covering the macro regions of Sertão Paraibano, Borborema and Agreste Paraibano. Activities in the Mata Paraibana macro region will be managed from the central office. Day-to-day project implementation would be decentralized and participatory, with a focus on the empowerment and self-management of participating communities and producers' organizations.
5. **Municipal Sustainable Rural Development Councils** will support CAs and POs in the identification of investments and subprojects, and help to stimulate synergies among public and private investments at local level.
6. **Community Associations (CA)** will identify and operate water supply investments and Agro-Climatic Vulnerability Reduction Subprojects. CAs are locality-based civil-society organizations, involved in social or productive activities, often managing local public resources. As such, they may include community associations per se, as well as cooperatives, mothers' clubs, and rural integration centers.
7. **Producer Organizations (PO)** will implement Productive Alliances in collaboration with private and public purchasers. POs vary greatly in size, spatial reach and capacity. They include producer associations, cooperatives and informal producer groups. To receive matching grants, POs will be required to possess legal personality. The project may assist in their formalization or change of legal status if required.
8. Capacity varies greatly among CAs and POs so the project will deploy a well-targeted, gender-differentiated communications campaign and a variety of training and technical assistance activities designed to build capacity and reduce information asymmetries. Day-to-day implementation would focus on the empowerment and self-management of participating organizations. Information related to the project would be disseminated through workshops, publications, and websites.
9. **The Secretariat of Infrastructure, Water Resources, Environment and Science and Technology (SEIRHMACT)** will lead the design, piloting and implementation of a State Management System for Rural Water and Sanitation in Paraiba, along the lines of the Integrated Rural Sanitation System (SISAR) developed in the neighboring State of Ceara, which is

considered best practice. For that purpose, the SEIRHMACT will create, within its structure, a dedicated Agency for Rural Water and Sanitation (*Gerência Estadual de Saneamento Rural - GESAR*) to coordinate, plan and monitor the implementation, provision of technical assistance, management, operation and maintenance of water and sanitation services in rural communities. SEIRHMACT will also establish a State Council for Rural Water and Sanitation (*Conselho Estadual de Saneamento Rural - CESAR*) as a deliberative body to promote coordination and harmonization of rural water and sanitation project implemented by the state institutions, federal programs, municipalities, and CAs, among other actors. *CAGEPA*, which is also part of the SEIRHMACT, will also support implementation of the State Management System for Rural Water and Sanitation providing technical assistance on specific areas of their expertise, such as water quality and metering, when requested.

10. **The Paraíba State Executive Agency for Water Management (AESA)** will lead the design, implementation and operations of the ARIS. AESA will be responsible for the coordination of relevant partners and the establishment of a working committee that will contribute with identification and integration of relevant datasets, as well as expertise in agriculture production and agrometeorology in the state. Finally, AESA will also be responsible for the dissemination of ARIS through workshops, publications, and websites.

11. **The Paraíba Development Company (CINEP)**, a public institution in charge of promotion of industrial development in the state, will play a critical role in coordinating, leading and assisting the different players involved in the productive alliances' identification process. CINEP will be responsible for leading and coordinating investment/buyer attraction and promotion plans and activities carried out to facilitate the creation of the productive alliances (from the early identification of potential buyers to the successful signature of business plans). This will imply extensive research and reach out at the state and national level, coordination with other institutions and provision of guidance to brokers, consultants and companies. CINEP may provide additional services to investors in productive alliances.

12. **SEIRHMACT, AESA and CINEP will enter into Cooperation Agreements with COOPERAR**, under terms and conditions acceptable to the Bank, prior to commencing activities under their responsibility. The Agreements will establish the obligations of the parties, including activities and products under their responsibility. Each Agreement will annex the budgetary allocation agreed by the parties. Project financing for the Agreement will be managed by COOPERAR, and may include goods, services and incremental operating costs. The partners will be in charge of: (i) preparing the TOR for consultants; (ii) developing technical specifications of goods; (iii) participating in the respective evaluation committees; (iv) reporting the performance of activities and purchases; (v) accountability and payment requests; and (vi) elaborate semiannual progress reports. The Technical Cooperation Agreement model will be included in the Operations Manual. Since all payments will be executed by COOPERAR, no funds will be transferred to partner institutions.

13. **The project components will follow four stages for investments:** (i) Identification; (ii) Pre-investment; (iii) Investment; and (iv) Operations and Maintenance (O&M). The table below summarizes the implementation arrangements by type of investment:

Type of Investment	Identification	Pre-investment	Investment	O&M
Water supply	CAs and Municipal councils	Consultants hired by COOPERAR	Works carried out by firms contracted and supervised by COOPERAR, with the help of CAs	CAs, with assistance from SEIRHMACT
Agro-climatic vulnerability reduction	CAs and Municipal councils	Consultants hired by COOPERAR with community validation	Matching Grants for CAs; community participation in procurement (possible delegation to COOPERAR for procurement of complex works). Counterpart requirements: at least 10% in cash, labor and/or kind.	CAs, with information provided by AESA.
Productive alliances	POs and buyers, some with the assistance of brokers, under CINEP's coordination	Consultants hired by COOPERAR, under guidance of alliance partners and CINEP's assistance	Matching Grants for POs; community participation and commercial practices. Counterpart requirements: at least 30% in cash. Buyers fund own activities separately.	POs and buyers

14. For the identification phase, Municipal Councils will assist CAs to identify and prioritize potential proposals for water supply and vulnerability reduction investments under Subcomponent 2.a. For the Productive Alliances component, specialized consultants (brokers) will be hired by COOPERAR, under CINEP's guidance, to provide support to POs and buyers in identifying joint business proposals.

15. During the pre-investment phase, consultants will be hired by COOPERAR to provide technical assistance to CAs to elaborate investment subprojects and business plans respectively. For Component 3, Productive Alliances, CINEP will coordinate buyer attraction and alliance formation, and an independent firm, hired by COOPERAR, will appraise the quality and feasibility of business proposals regarding technical, financial, environmental, and social practices.

16. For the investment phase, the project will promote the empowerment and self-management of participating communities and producers' organizations. For access to water (Subcomponent 2.a), investments will be executed by firms hired by COOPERAR and supervised by CAs and COOPERAR. For vulnerability reduction investments (Subcomponent 2.b), procurement and execution management will be carried out by CAs and will be supervised by COOPERAR. For more complex investments, CAs may request COOPERAR to carry out the procurement process. Finally, CAs and POs will be responsible for the operation and maintenance of investments.

17. Under Subcomponent 2.c, the establishment of the ARIS will be planned and executed by AESA, in partnership with other institutions, such as: Brazilian Enterprise for Agricultural Research (*Empresa Brasileira de Pesquisa Agropecuária – EMBRAPA*), State Enterprise for Technical Assistance and Rural Extension (*Empresa de Assistência Técnica e Extensão Rural da*

Paraíba – EMATER), State Enterprise for Agricultural Research (*Empresa Estadual de Pesquisa Agropecuária da Paraíba* – EMEPA), and National Institute for the Semi-arid (*Instituto Nacional do Semiárido* – INSA). COOPERAR will carry out all the procurement and monitor execution and results of these activities. No funds will be transferred to AESA.

18. COOPERAR will submit biannual reports to the Bank covering the planned actions including selected business initiatives, status of implementation, outcomes, financial statements, procurement plans, environmental and social issues, and actions taken to ensure satisfactory implementation. These reports will be shared with policy makers to facilitate effective project management, reformulation of project strategy, if needed, and dissemination of experiences.

19. **COOPERAR will implement the project in accordance with a Project Operational Manual**, satisfactory to the World Bank, which shall include: (a) the rules, methods, guidelines, standard documents and procedures for the carrying out of the project, including the following: (a) the procedures for the implementing, monitoring and evaluation of the Project (including the technical, procurement, disbursement, financial management, social and environmental requirements thereof); (b) the eligibility criteria for the selection of PO and CA; (c) detailed social, economic, financial, technical and environmental criteria for the evaluation and ranking for selecting Subprojects; (d) the functions, responsibilities, structure and key staff composition of the COOPERAR; (e) model forms of Subproject Agreements; (f) indicators to be used for Project monitoring and evaluation; and (g) the Safeguard Documents.

Financial Management, Disbursements and Procurement

Financial Management

20. A Financial Management (FM) assessment for the proposed project was conducted between March 12-13, and August 10-14, 2015 in accordance with OP/BP 10.00 and the Financial Management Manual. The objective of the assessment was to determine whether the main implementing agency, COOPERAR, has acceptable FM and disbursement arrangements in place to adequately control, manage, account for and report on the use of project funds³⁰. This assessment was validated in June 2017.

21. The proposed FM systems are based largely on those established under previous Bank-financed projects whose performance was overall moderately satisfactory during project implementation. The FM arrangements set out at COOPERAR were considered adequate. The PMU has hired the proper team and is establishing the necessary systems to ensure FM and disbursement arrangements to adequately control, manage, account for and report on the use of project funds. However, FM staff has limited experience implementing Bank projects, thus training will be required. In addition, reports from CGE-PB (*Controladoria Geral do Estado-PB*) of previous projects have highlighted the necessity of enhancing the internal controls systems within COOPERAR.

22. Vulnerability Reduction and Productive Alliance subprojects are based on collective action approaches in which FM arrangements place emphasis on participatory governance controls. This approach takes into account local culture, norms and lower institutional capacity,

³⁰ In accordance with OP/BP 10.00 and the Financial Management Practice Manual (issued by the Financial Management Sector Board in March 1, 2010).

and emphasizes simple procedures, with a high degree of transparency and accountability, and decision making and management responsibilities delegated to communities. The assessment identified as a risk the lack of appropriate financial management institutional arrangements within the POs and CAs. External audit reports of previous projects have also highlighted the necessity of enhancing the controls and reporting within the subprojects. Thus, these organizations must receive training and technical assistance to improve managerial and fiduciary capacity, and internal control structures (including public accountability) will be reinforced.

23. To build capacity within the implementing agencies and mitigate risks at the regional level, the project component on Technical Assistance must include actions related to (i) developing specific FM procedures; (ii) training of PO and CA staff in the application of these procedures; and (iii) enhancing the capacity of COOPERAR to undertake financial inspections at the regional level. COOPERAR will also identify and contract dedicated FM staff and establish partnerships with market access initiatives (e.g. SEBRAE, SENAR, NGOs), to strengthen the FM stream within the POs and CAs, focusing mainly on internal controls, funds flow, cash and revenue management, and reporting aspects. This will ensure that the all FM processes are adequate. COOPERAR's compliance with these requirements shall be designed within the first 12 months of Project implementation, and will be reviewed throughout the entire project lifecycle.

24. The conclusion on the assessment of COOPERAR is that the financial management arrangements as set out for this project are Moderately Satisfactory. FM-related capacity building measures are included in Component 4. FM control risk was assessed as Substantial because of the challenge of ensuring that (i) COOPERAR has capable FM arrangements in place, (ii) there are adequate internal controls and country systems, and (iii) POs and CAs receive training in financial management and the funds transferred are adequately accounted for. Fiduciary Risks have been identified and mitigating actions as reflected in the action plan.

Overall Financial Management Arrangements

25. *Implementing Agency (Staffing and institutional arrangements):* COOPERAR will undertake the primary fiduciary responsibilities for the project. These responsibilities will be carried out by COOPERAR's financial department. The primary project coordinating unit fiduciary responsibilities shall include: (i) preparing and obtaining approval of project FM arrangements; (ii) coordinating and supervising project implementation; (iii) submitting disbursement requests and documentation of expenditures to the Bank; (iv) preparing and submitting project financial reports (IFRs) to the Bank; (v) preparing and providing all financial documentation and project reports requested by external auditors and Bank staff and (vi) preparing, updating and ensuring that all project executors follow the Project Operating Manual, and (vii) coordinating the FM capacity building component with the PO's and CAs .

26. *Staffing:* the Financial Management team is composed of qualified professionals that have a basic understanding of Bank policies and procedures. Training for the staff on Bank's procedures is required.

27. *Budgeting, Accounting and FM Systems:* The budget cycle includes planning and implementation of all government activities, which are reflected in its budgetary framework³¹. All project budgeting and accounting transactions will run through the public state accounting system (SIAFI). The SIAFI system is used by all state institutions that receive/transfer government funds. All payments will follow the official commitment (*empenho*) and verification (*liquidação*) and payment (*pagamento*) routine. These functions are carried out by the Administration and Finance Department of each spending entity. COOPERAR uses two different, but not fully integrated systems: (i) SIAFI, the State of Paraíba's budgetary and accounting tool, is used to record the project's expenditures and to make relevant payments in accordance with the annual budget law. This is because the project is a cost center (*Unidade Gestora*) within the system; (ii) COOPERAR's own management information system (MIS), that is the basis for the preparation of SOEs/IFRs and project financial statements, subproject monitoring, physical progress and contract management. COOPERAR's financial management system does not communicate electronically with SIAFI; therefore, financial data will need to be periodically and manually reconciled between the two systems. In addition, the current version of MIS is not equipped to manage subproject processes, and a new tool is being designed to control funds, economic evaluation and progress. The Finance Secretariat (SEFAZ) has the responsibility to maintain the State's accounting records, including those of the project. COOPERAR is responsible for making the respective payments within the limits of the authority provided by the annual budget law.

28. The state of Paraíba follows the Brazilian Accounting Rules (NBC), Law 4320/64, which establishes certain high level accounting principles, and the Accounting Manual Applicable to the Public Sector (MCASP), issued under Law 10180 of February 6, 2001 and Decree 3589 of September 6, 2001. It will be required to follow the first set of national accounting standards applicable to the public sector (NBCASP) and the revised Accounting Manual Applicable to the Public Sector (MCASP) issued under Portaria STN 467 of August 6, 2009 and updated on 2013. The last Country Financial Accountability Assessment (CFAA) for Brazil indicated that law 4320/64 was in line with international accounting standards.

29. *Internal Controls and Internal Audit:* Although the FM arrangements set out at COOPERAR were considered adequate in previous Bank-financed operations, reports from the CGE-PB (*Controladoria Geral do Estado- PB*) have highlighted the need to enhance its internal controls. All transaction processing uses COOPERAR's processes and systems, which provide for reasonable segregation of duties, supervision, quality control reviews and reconciliations. Process flows appear to be clear and well understood by COOPERAR's personnel. FM activities within project Component 4 will aim to ensure that the control process, including over all funds, is extended to subprojects. The Project Operations Manual will document these processes to guide their implementation. It shall contain detailed procedures and guidelines for disbursements, payments, approvals, commitments, payments and reporting, and will be submitted to the Bank for review.

30. *Financial Reporting:* COOPERAR, with the support of the financial coordinator, will ensure the timely production of semester interim unaudited financial monitoring reports (IFRs) to be submitted within 45 days after the end of each reporting period. These IFRs will be produced from the MIS system and will consolidate the project's financial data for all components.

³¹ PPA–Plano Pluri-Anual, LDO–Lei de Diretrizes Orçamentárias, LOA–Lei Orçamentária Anual which includes the government's goals and programs that are approved by Congress every five years, 18 months, and 12 months, respectively.

Accordingly, the format and content of the IFRs, to be agreed with the borrower will cover the following items:

- a. IFR 1A - Sources and Uses of Funds (by disbursement category, showing the Bank's share in the financing of expenditures, cumulative (project to-date; year-to-date and for the period) actual vs. budgeted expenditures, including a variance analysis;
- b. IFR 1B - Uses of Funds by Project Activity or Component, cumulative (project-to-date; year-to-date and for the period) actual vs budgeted expenditures, including a variance analysis;
- c. IFR 1C – Statement of Expenditures from the POs and CAs responsible for subproject implementation.

31. *External Auditing:* Annual project financial statements will be audited by an independent external auditor, in accordance with acceptable auditing standards. The external audit will be conducted under Terms of Reference acceptable to the Bank. Specific provisions will be specified in the auditors TOR regarding the review of subproject execution/activities. Auditors will be required to issue a single opinion on project's financial statements. Auditors will also have to produce a management letter, where relevant internal control weaknesses will be identified, which will contribute to the strengthening of the control environment. The auditor's report will be submitted to the Bank no later than six months after the closing of the borrower's fiscal year.

32. *Supervision Plan:* The scope of project supervision will review the implementation of FM arrangements and FM performance, identify corrective actions, if necessary, and monitor fiduciary risk. It will take place semi-annually and include (a) reviewing of semester IFRs; (b) reviewing of the auditors' reports and follow-up of any issues raised by auditors in the management letter, as appropriate; (c) participation in project supervision (including visits to the subprojects –POs and CAs) and (d) updating the financial management rating in the Implementation Status Report (ISR).

Disbursements

33. *Funds Flow and Disbursement Arrangements:* The proposed funds flow and disbursement arrangements will be streamlined within the project to facilitate execution, avoid unnecessary incremental operational arrangements, and rely as much as possible on existing country systems. All payments will be made by COOPERAR using the SIAFI system, once payment obligations have been incurred, verified and properly documented. Payments to the POs and CAs for subprojects will be made, through the issuance of an *ordem bancária* to the POs and CAs, who will then pay service providers and contractors. To make payments, the state system requires that funds be committed by source, making possible the tracking of loan disbursements to Project expenditures. A subsidiary finance agreement (*Convênio de Financiamento*) with each participating PO/CA shall be signed, enabling it to receive funds in a specific account opened for the Subproject. In addition, counterpart funds are expected to be deposited in the same specific account.

34. The disbursement of Project funds will be processed in accordance with normal Bank procedures, and as stipulated in the Loan Agreement and the Disbursement Letter. Funds will be disbursed in respect of eligible expenditures incurred or to be incurred under the Project and will be disbursed in accordance with agreed financing percentages. The primary disbursement

method will be Advances. The Project will also be able to use the Direct Payment and Reimbursement disbursement methods if required. The Project will report on the use of Advances and withdraw the funds through Withdrawal Applications supported by Statement of Expenditures (SOEs), as defined in the Disbursement Letter. Direct payments will be documented by Records. The Minimum Value of Applications for Direct Payment and Reimbursement is US\$ 500,000 equivalent. The Designated Account (DA) will have a Fixed Ceiling of R\$ 10,000,000. COOPERAR will sign off on the Withdrawal Applications, and request disbursements and/or document expenditures based only on actual expenditures, with the exception of subproject expenditures, where the lump sum method will be used, i.e. treating the sequenced disbursements to the POs and CAs as actual expenditure, as adequate systems will be in place to monitor and account for subproject execution.

35. The Project disbursement deadline date (final date on which the Bank will accept applications for withdrawal from the Borrower or documentation on the use of loan proceeds already advanced by the Bank) will be four months after the Loan Closing Date. This "Grace Period" is granted in order to permit the orderly Project completion and closure of the Loan Account via the submission of applications and supporting documentation for expenditures incurred on or before the Closing Date. Project expenditures will be reported on after they are approved by the Project Management unit and fully documented, ensuring that the loan proceeds were exclusively used for eligible expenditures.

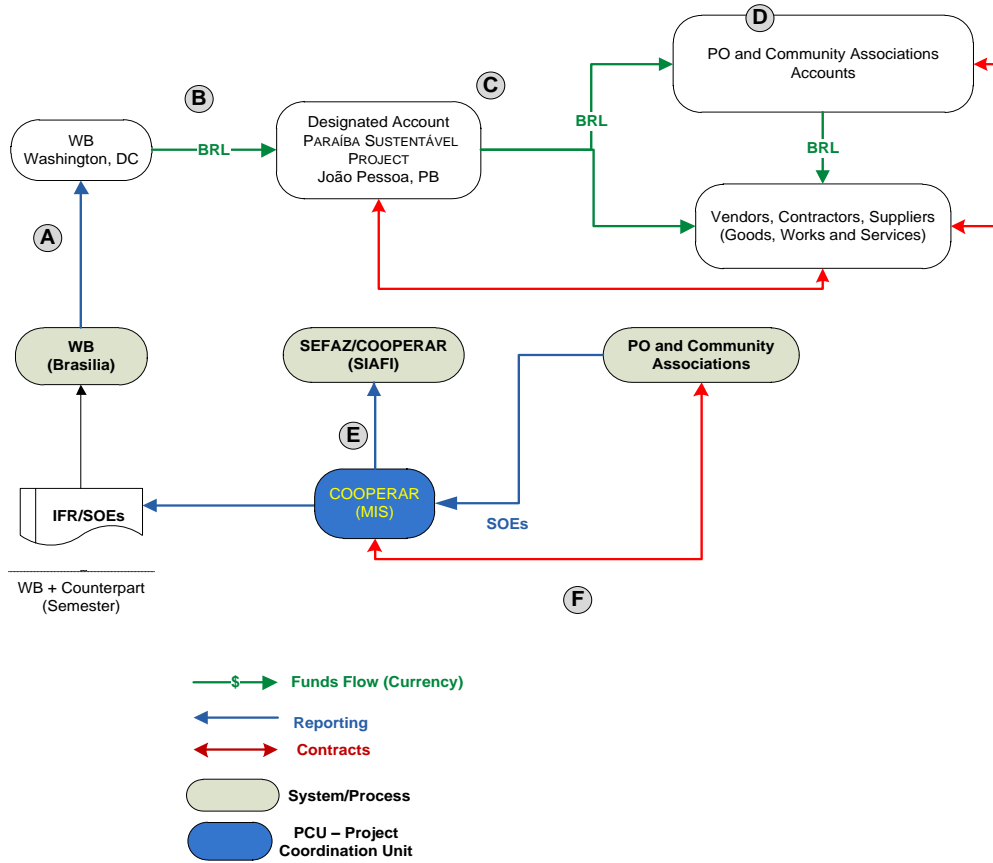
Project Flow of Funds

36. COOPERAR will open a segregated Designated Account (DA) in its name, in Banco do Brasil, to receive loan funds in Brazilian Reais (BRL), and will send Withdrawal Applications to the Bank together with SOEs accounting for advances from the Bank; the Bank advances funds into Designated Account (DA); from the DA, exclusively for the project, COOPERAR shall be responsible for managing all project proceeds, through SIAFI.

37. POs and CAs will open new bank accounts exclusively for the project, where proceeds will be deposited upon payment instructions from COOPERAR via SIAFI/MIS, for eligible and duly approved subprojects. Disbursements from the Borrower to CA and POs under eligible Subprojects will be sequenced and made in line with physical progress. Such payments will have to be authorized by COOPERAR. The POs and CAs counterpart contribution to subproject investments would be defined in the agreement between COOPERAR and the POs and CAs. Amounts disbursed under Loan for the Subprojects correspond to a financial transfer to the POs and CAs at agreed proportion of matching grant for Bank financing defined in the project Operational Manual and Subsidiary Agreements. Simple, standard records, whose formats are included in the project Operational Manual, would be completed by a designated PO and CA representative for reporting on the eligible expenditures made under the Subprojects. They would be used to record cash contributions from all sources and also funds directly paid to suppliers, materials and labor inputs, and these records would be subject to project audit procedures.

38. POs and CAs will make payments to providers or contractors (observing the Bank's FM and Procurement Guidelines) and will submit all supporting documentation to COOPERAR, which will send Customized SOEs to the Bank.

Flow of funds



39. The table below specifies the categories of eligible expenditures that may be financed out of the proceeds of the Project and the percentage of expenditures to be financed for eligible expenditures in each category:

Table 5: Allocation of Loan Proceeds

Category	Amount of the Loan Allocated (US Dollars)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) Works, Goods, Non-Consulting Services, Consultant's Services, Training and Operating Costs under the Project, excluding Categories (2) and (3)	31,641,100	100%

Category	Amount of the Loan Allocated (US Dollars)	Percentage of Expenditures to be financed (inclusive of Taxes)
(2) Works, Goods, Non-Consulting Services and Consultant's Services under Agro-Climatic Vulnerability Reduction Subprojects	5,172,792	100% of the relevant Matching Grant
(3) Works, Goods, Non-Consulting Services and Consultant's Services under Productive Alliances Subprojects	13,061,108	100% of the relevant Matching Grant
(4) Front-end Fee	125,000	Amount payable pursuant to Section 2.03 of the Loan Agreement in accordance with Section 2.07 (b) of the General Conditions
(5) Premium for Interest Rate Caps and Collars	0	Amount payable pursuant to Section 2.09 (c) of the Loan Agreement
TOTAL AMOUNT	50,000,000	

Table 6: Subprojects' Financing Arrangements

Types of Subprojects³²	Percentage of Subproject cost		
	Beneficiary Contribution	GoPB Counterpart	IBRD Matching-Grant³³
1. Agro-Climatic Vulnerability Reduction Subprojects	at least 10% in cash, labor and/or kind	up to 33%	57%
2. Productive Alliance Subprojects	at least 30% in cash, divided per tranches and deposited ahead of Project disbursements	0%	70%

40. *Operational Costs* which would be financed by the Project include reasonable incremental recurrent costs (which would not have been incurred absent the Project), related to Project technical and administrative management, monitoring and supervision, including, inter

³² For each Subproject, the exact amount of beneficiary contribution will be defined in the Subproject Agreements between COOPERAR and the beneficiary PO or CA, therefore determining the amount of the GoPB counterpart funding.

³³ 'Matching-Grant' means a grant made out of the proceeds of the Loan to a selected PO or CA for the partial financing of an eligible Subproject, subject to the specific terms and conditions set forth in the Project's Operational Manual and in the corresponding Subproject Agreement.

alia, administrative and operational support staff, office equipment, supplies, travel costs (including accommodations, transportation costs and per diem), printing services, communication costs, utilities, maintenance of office equipment and facilities, vehicle operation and maintenance costs, and logistics services. These expenditures would be incurred following the agency's administrative procedures, which were reviewed and found acceptable to the Bank.

41. *Training* which would be financed by the Project include expenditures (other than those for consultants' services) incurred by the Borrower in connection with the carrying out of training, seminars, and workshops, including the reasonable travel costs (e.g. accommodations, transportation costs and per diem) of trainees and trainers (if applicable), catering, rental of training facilities and equipment, training enrollment fees, logistics and printing services, as well as training materials needed under the Project.

Procurement

A) General

42. Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011, revised January 2014, and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011, revised July 2014, and the provisions stipulated in the Legal Agreement. The general description of various items under different expenditure category is described below. For each contract to be financed by the Loan, the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank project team in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

43. *Procurement of Works*: Works would be required for Components 2 and 3 of the Project, as part of investments and subprojects. Under Component 2 (water supply and sanitation and vulnerability reduction subprojects), the procurement of works would be carried out by COOPERAR and it would follow National Competitive Bidding or Shopping procedures, using standard model documents approved by the Bank and included in the Project Operational Manual. Such works would include: (i) construction of complete or simplified water supply systems, piped or non-piped water systems, desalinization facilities, sanitary facilities (toilets) and (ii) construction of irrigation systems, small surface and subterranean water collection infrastructure, road drainage, fords, small bridges and minor road surface improvement. Under Component 3 (productive alliance subprojects), works would be procured by producer organizations (PO), following Commercial Practices (par. 3.13 of the Guidelines, and detailed below), if so required in the simple procurement plan included in the productive alliance business plan, or Community Participation in Procurement (par. 3.19 of the Guidelines), and would include minor on-farm infrastructure and off-farm infrastructure for storage, processing and packaging.

44. *Procurement of Goods*: Under Subcomponent 2.b, goods would be procured by Community Associations (CAs) implementing subprojects, following Community Participation in Procurement (par. 3.19 of the Guidelines), whose procedures would be outlined in the Project

Operational Manual, and would include crop and livestock production equipment and supplies. Under Component 3, goods would be procured by POs following Commercial Practices (par. 3.13 of the Guidelines, and detailed below), if so required in the simple procurement plan included in the productive alliance business plan, or Community Participation in Procurement (par. 3.19 of the Guidelines) and would include production inputs, farming, storage, processing and packaging equipment and tools. Under the other components, goods would be procured by COOPERAR following National Competitive Bidding or Shopping procedures, using standard model documents approved by the Bank and included in the Project Operational Manual and would include vehicles, IT/IS equipment, and automatic agro-weather stations. Under NCB and as an alternative to Shopping, these services could be procured following reverse auction (*Pregao*) procedures or Framework Agreements, as these have been reviewed and found acceptable to the Bank. Direct Contracting may also be used in exceptional circumstances when the provisions of par. 3.7 of the Guidelines are met.

45. *Procurement of non-consulting services:* Under Components 2 and 3, non-consulting services would include, *inter alia*, unskilled labor and equipment installation, repair or maintenance services. Under Component 2, those services would be procured by CAs implementing subprojects, following Community Participation in Procurement, whose procedures would be outlined in the Project Operational Manual. Under Component 3, those services would be procured by POs following Commercial Practices (par. 3.13 of the Guidelines, and detailed below) or Community Participation in Procurement (par. 3.19 of the Guidelines). Under Components 1 and 4, non-consulting services would include, *inter alia*, communication and marketing campaigns and data collection surveys, which would be procured by COOPERAR following National Competitive Bidding (NCB) or Shopping procedures, using standard model documents approved by the Bank and included in the Project Operational Manual. Under NCB and as an alternative to Shopping, these services could be procured following reverse auction (*Pregao*) procedures or Framework Agreements, as these have been reviewed and found acceptable to the Bank. Direct Contracting may also be used in exceptional circumstances when the provisions of par. 3.7 of the Guidelines are met.

46. *Selection of Consultants:* Under Component 3, consulting services from firms and individuals would be selected by POs implementing subprojects, following Commercial Practices (par. 3.13 of the Guidelines, and detailed below) and would include: (i) capacity building on identification, negotiation and creation of productive alliances, on organizational and business regulations compliance, and on managerial, business and risk-management skill improvement and (ii) technical assistance on agriculture diversification, natural resources management, food security and nutritional improvement.

47. Under Sub-component 2.b, consulting services from firms would be selected by CAs implementing subprojects, following a Selection Based on the Consultant's Qualifications (par. 3.7 of the Guidelines) or a Single-Source Selection (par. 3.8(c) of the Guidelines); individual consultants would be selected on a single-source basis (par. 5.6(b) and 5.6(d) of the Guidelines). These services would include technical assistance and capacity building for technical assistance on agriculture diversification, natural resources management, food security and nutritional improvement.

48. Under the other components, consulting services from firms would be selected by COOPERAR, following either a Selection Based on Quality and Cost, Selection under a Fixed Budget, Least-Cost Selection, Selection Based on the Consultant's Qualifications, or a Single-

Source Selection; individual consultants would be selected following the procedures outlined in par. 5.2 and 5.3 of the Guidelines and on a sole-source basis, in accordance with par. 5.6 of the Guidelines. These services would include identification and preparation of subprojects and business proposals and plans; subproject supervision, capacity building of service providers to enhance the quality of their services in support of POs' competitiveness; capacity building on subproject administration and business processes (administration of common infrastructure and services, accounting, audits and access to finance); works supervision; provision of training and technical assistance to CAs and POs for subproject administration and management; setup of a supralocal system for rural water and sanitation and a state-wide agricultural risk information system; and design, development and implementation of project impact evaluation.

49. Short lists of consultants for services estimated to cost less than US\$1,500,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

B) Guidelines for use of Commercial Practices under Component 3

50. Component 3 would finance subprojects following business plans proposed, developed and implemented by participating POs through matching grants. The matching grant to a PO in support of a business plan would be, on average, US\$100,000 equivalent.

51. The provisions described under Section I of the Guidelines apply to all procurement methods used under the Project, that is, all principles, rules, and procedures outlined in the Guidelines apply to all contracts financed in whole or in part from Bank loans. To comply with such requirement, five main considerations should guide the use of Commercial Practices by the POs:

- a) the need for economy and efficiency;
- b) the need for quality services;
- c) giving all eligible bidders the same information and equal opportunity to compete in providing goods, works, and services;
- d) the importance of transparency;
- e) Commercial Practices should be required by the business plan.

52. POs, as private sector enterprises, would often meet these concerns by following established commercial practices other than formal open bidding for their procurement. This is true because when POs seek a supplier, key considerations include quality, performance, price, delivery, capacity, and assurance of supply. In addition, POs would buy-to-sell a product or service to raise revenues. POs are for-profit and have the threat of bankruptcy, which force efficiencies into their procurement process. Business plans must contain specific criteria to measure performance of the commercial practices used.

C) Guidelines for use of Community Participation in Procurement under Component 2

53. The procedures for procurement under these subprojects would normally include the comparison of at least 3 price quotations. However, building on the experience from projects implementing similar operations in other Northeastern states (Bahia, Ceara, Pernambuco, and Rio Grande do Norte), direct contracting would also be permitted when circumstances indicate

this method offers an advantage over local Shopping. This advantage should be assessed on the basis of economy, efficiency, and transparency.

- a) Economy could be assured by COOPERAR, at the time the subprojects are reviewed and final cost estimates are defined. To come up with these final figures, COOPERAR would survey the regional market, in the case of goods, works, and services, or consult official price databases to establish the grant amounts required to finance the contracts under the subprojects.
- b) As the CAs would not be required to compare price quotations for works contracts, for instance, or to request prices from suppliers from out of state to which they do not have easy access, the direct contracts would be less time consuming and more efficient than the “competitive” process.
- c) The associations would, ensure that transparency of all procurement, purchase, and/or contract decisions through public assemblies (“*assembleias*”), where all issues would be publicly discussed and decisions duly recorded in the meeting minutes. Additional recommended actions would include using regular advertisement tools that are available at the communities, such as notice boards at schools and public buildings, local radios, municipal councils, etc.

D) Assessment of the agency’s capacity to implement procurement

54. Procurement activities will be carried out by COOPERAR and by CAs or POs. COOPERAR’s procurement unit is staffed by one procurement officer. The Project Operational Manual will include, in addition to the procurement procedures, the SBDs to be used for each procurement method, as well as model contracts.

55. An assessment of the capacity of COOPERAR to implement procurement actions for the project was carried out in March 2015. Although the agency has had previous experience with implementing a Bank-financed project, important aspects are different, and these include the agency's organization structure, staffing (which needs to be recruited), and a new project design (which will challenge the agency's capacity). The risk rating has been defined as Substantial because the major pillars for smooth procurement implementation are considered insufficient, and it is likely that they would only be strengthened after the initial 2 years of project implementation, which could cause unnecessary delays to implementation. The main risks are that COOPERAR lacks adequate staff in number and qualifications and adequate capacity to supervise the procurement under the subprojects. This assessment was validated in June 2017.

56. The proposed mitigation measures aim to strengthen the agency's capacity to implement procurement by providing detailed information on procurement processing and decision making, establishing sample bidding/evaluation/contract documents and record keeping requirements, training on Bank's procurement rules, securing external expertise from a consultant, and providing increased implementation support in the early stages of project implementation. The implementation of the mitigation measures is expected to substantially strengthen the agency's capacity and, thus, to reduce the risks. As such, any unmitigated residual risk could only be identified if, for whatever reason, the agency is unable to implement the proposed measures. All mitigation actions have been included in the Institutional Action Plan agreed with the Borrower. The overall project risk for procurement is Substantial.

E) Procurement Plan

57. The Borrower, at appraisal, developed a Procurement Plan for project implementation which provides the basis for the procurement methods. This plan has been agreed between the Borrower and the Project Team on May 20, 2016, validated in June 2017 and is available at COOPERAR (R. Antônio Francisco Araújo - Lot. Morada Nova, Cabedelo - PB, 58310-000). It will also be available in the Project's database and in the Bank's external website. The Procurement Plan will be updated in agreement with the Project Team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

F) Frequency of Procurement Supervision

58. In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of COOPERAR has recommended semiannual supervision missions to visit the field to carry out post review of procurement actions.

G) Details of the Procurement Arrangement involving international competition.

G.1) Goods and Works and non consulting services.

(a) No ICBs or Direct Contracting are expected at this time.

(b) ICB contracts and NCB contracts for goods and works, estimated to cost above US\$1,000,000 and US\$10,000,000 per contract, respectively, and the first two NCBs and all Direct Contracting will be subject to prior review by the Bank.

G.2) Consulting Services.

(a) No Consulting Assignments with short-list of international firms are expected.

(b) Consultancy services estimated to cost above US\$300,000 per contract and all Single Source selection of consultants (firms) for assignments estimated to cost above US\$100,000 will be subject to prior review by the Bank.

(c) Short lists composed entirely of national consultants: Short lists of consultants for services estimated to cost less than US\$1,500,000 equivalent per contract, may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Environmental and Social (including safeguards)

Environment

59. The project is classified as Category B, as possible negative impacts from agricultural and small-scale infrastructure activities are expected to be small, localized and reversible through close monitoring and on-time adjustments. Positive impacts are expected from the adoption of sustainable rural production practices. The following environmental policies were triggered by the project: OP/BP 4.01 Environmental Assessment; OP/BP 4.04 Natural Habitats; OP/BP 4.09 Pest Management; and OP/BP4.11 Physical Cultural Resources. OP/BP 4.36 Forests and OP/BP 4.37 Safety of Dams were also preventively triggered, given the connection between agricultural activities and forests in Brazil, and that some project activities related to irrigation and water supply may rely on existing dams or require the construction of farm ponds.

60. A comprehensive environmental and social analysis was prepared by the State in accordance with Bank safeguard policies and federal and state legal requirements, was reviewed by the Bank and adequately consulted. Based on the findings of this analysis, the State prepared an Environmental and Social Impacts Assessment (ESIA), including an Environmental and Social Management Framework (ESMF), an Environmental and Social Manual for Civil Works, as well as environmental screening and monitoring templates tailored for each type of activity to be supported by the project (e.g., rural production, natural resource management, production and processing infrastructure, water supply systems and irrigation, sanitation systems, spot improvement of feeder roads). The ESIA and supporting documents and templates integrate the project's Operational Manual.

Main positive environmental impacts expected from the project

61. *Reduced soil and water contamination.* The vulnerability reduction component (Component 2) focuses on 100 vulnerable or highly vulnerable municipalities. Technical assistance and other support provided through the project to rural production systems will include environmental sustainability aspects, which involve guidance for the adoption of alternative agricultural practices that reduce or forego the use of pesticides, which can also contribute to reduce soil and water contamination.

62. *Improved efficiency in water use.* By improving the efficiency of irrigation systems and water storage solutions, the project will contribute to reduce waste and reduce pressure on water resources. Support to water reuse systems will also contribute to reduce water demand and improve resilience to drought.

63. *Adaptation co-benefits.* Component 2 focuses on improving the resilience to climate variability and change of Paraíba's rural population. As drought conditions are expected to worsen in the future, the proposed project focuses on improving access to reliable sources of potable water and reducing the vulnerability of agricultural systems. In addition, the creation of the Agro-climatic Risk Information System will allow for evidence-based forecasting and planning of agriculture and animal raising activities, as well as for increasing preparedness and response to extreme climate events.

64. *Biodiversity.* Support provided to POs and through rural technical assistance will promote the maintenance and/or restoration of natural habitats in rural properties. This will not only ensure compliance with legal environmental requirements regarding Permanent Preservation Areas and Legal Reserves (portions of rural properties designated for environmental protection), but will also contribute to the maintenance and recovery of native biodiversity, water resources, soil fertility, and non-timber forest resources, among other benefits. The promotion of practices that reduce the use of pesticides and promote the diversity and combination of crops will also benefit biodiversity, particularly pollinators and soil biodiversity.

65. *Reduced erosion.* The promotion of agricultural and livestock production practices that are adequate to the semi-arid region takes into account environmental sustainability aspects and should also contribute to reduce soil loss and erosion. The application of good practices in spot improvements of feeder roads, particularly at fords and in the construction of small bridges, will also contribute to reduce erosion and the siltation of water bodies, particularly when accompanied by the restoration of riparian vegetation and adequate drainage.

Possible negative impacts foreseen during project implementation

66. It is envisioned that the interventions will contribute to increase the environmental sustainability of supported communities and POs, as well as to improve the resilience to drought of local population and production practices. All interventions are designed to reduce pre-existing socio-economic and environmental impacts and avoid exacerbating problems in sensitive habitats. Expected negative impacts should be mostly small, localized and reversible, resulting from the small-scale infrastructure works to be financed (production, water/sanitation, improvement of feeder roads), as well as from directly or indirectly supported agricultural and livestock production systems.

67. No new road construction will be financed, and works to improve existing roads should follow specific guidance included in the project's Environmental and Social Management Framework and Environmental and Social Manual for Civil Works in order to minimize or prevent possible impacts, particularly in sensitive areas such as water crossings. Following guidance provided by the State's environmental and water agencies to minimize potential negative impacts such as erosion, engineering projects for small bridges should be tailored for the particular characteristics of each crossing and water body. In all cases, such crossings would not interrupt the natural water flow.

68. OP/BP 4.37 (Safety of Dams) was preventively triggered, although no construction of dams is foreseen. Nevertheless, some project activities related to irrigation and water supply may require the construction of farm ponds, or rely on existing dams, which may need maintenance or repair works. Adequate guidance and procedures according to this policy regarding the construction, use and/or restoration of existing dams was included in the project's ESMF. Other impacts from water infrastructure should be prevented or minimized through prior assessment of impacts (e.g. possibility of soil salinization with inadequate irrigation; or excessive water demand for a specific water source), including the assessment of cumulative impacts when relevant (e.g. from drilling multiple wells for water supply in the same region).

69. Identified impacts will be mitigated or prevented with the adoption of a set of Bank approved criteria and procedures for the design and construction of infrastructure works, as well as mitigation measures defined for other project activities.

70. The core COOPERAR team, which has previous experience with managing Bank-financed projects, will manage environmental safeguards. However, to address deficiencies in safeguards management identified in the previous operation, the Project will ensure: (i) that the project staff includes sufficient safeguards capacity to oversee planned activities, (ii) that all necessary safeguards instruments (frameworks and guidelines, assessment and monitoring forms, electronic monitoring system) are in place before the onset of Project activities, and (iii) plan adequate and timely training on safeguards implementation to all technical staff (particularly field staff). Bank supervision of the new operation will closely monitor safeguards implementation.

71. The organizational structure designed for the present operation includes the following provisions to ensure environmental and social compliance and sustainability of project activities:

- COOPERAR currently includes: (i) an Environmental Analyst responsible for overall supervision and coordination of environmental and social compliance of project activities; and (ii) a Water Specialist responsible for providing guidance on compliance of activities involving water infrastructure or significant water use.

- Two additional technical staff (one social and one environment) will be hired to assist in providing guidance, coordination, training and field supervision to the environmental and social staff in the Regional Units.
- The Regional Units will designate one technical staff to be the regional focal point for safeguards compliance. Such staff will receive specific training and report regularly to the COOPERAR on compliance of subprojects.

72. All proposed investments and subprojects will be screened for environmental and social sustainability and compliance with Bank safeguards and environmental legislation (including licensing procedures) before approval for financing. During subproject implementation, supervision carried out by project staff will include monitoring environmental compliance and eventual impacts, with the assistance of environmental monitoring templates. Monitoring information will be uploaded into the project monitoring system, including the progress of eventual mitigation measures. Periodic project reports to the Bank will include a safeguards section where social and environmental monitoring results will be reported, including any negative impacts identified during implementation and the respective mitigation measure applied, as well as lessons learned and positive environmental impacts resulting from the project.

Environmental Safeguard Policies Triggered

73. *Environmental Assessment (OP/BP 4.01)*. The State of Paraíba has prepared an ESIA, which includes a focused analysis of the social and environmental context and the potential (positive and adverse) impacts of the types of activities to be supported, including cumulative impacts when relevant. The ESIA resulted in the development of framework guidance to ensure environmental and social sustainability and compliance of rural production and infrastructure investments, including procedures for screening subproject proposals, for monitoring implementation, and for preventing or mitigating eventual negative impacts.

74. The ESIA identifies and provides management solutions for all potential project-related risks and impacts to the natural and social environments, and to the health and safety of all project stakeholders. This includes adequate guidance and procedures for the use of pesticides and other chemicals, interventions involving existing dams or the construction of farm ponds, chance findings of physical cultural resources, restoration of native forests, and sustainable management of non-timber forest resources (see below).

75. ESIA findings produced an ESMF with sustainability guidance and procedures to satisfy Brazilian legislation and Bank safeguard policies, as well as prevention and mitigation measures satisfactory to the Bank, to address all identified possible impacts. Given the planned infrastructure to be supported, and the project design involving numerous subprojects, complementary detailed documents were prepared to guide infrastructure works (an Environmental and Social Manual for Civil Works) and the adequate screening and monitoring of project activities (environmental screening and monitoring templates tailored for each type of activity to be supported by the project). The ESMF also includes measures to improve project capacity for environmental monitoring, based on lessons learned from the previous operation (COOPERAR II).

76. *Natural Habitats (OP/BP 4.04)*. Planned activities to improve resilience to drought in agricultural systems and rural communities will result in impacts on water resources, which may be positive (e.g. increased availability resulting from the restoration of riparian forests, and reduced demand resulting from increased efficiency of irrigation systems and storage of

rainwater), or negative (e.g. increased water intake resulting from new wells, or water collection and distribution systems). Moreover, criteria for supporting rural production subprojects, as well as rural technical assistance provided under the project seek to promote compliance with legal requirements regarding the maintenance and restoration of native vegetation (particularly Permanent Preservation Areas and Legal Reserves), which should result in positive impacts on natural habitats. The ESMF includes specific guidance on good rural production practices that support the conservation of natural resources (particularly water, soils and pollinators); screening procedures for proposed investments; and detailed guidance on compliance with environmental legislation and OP 4.04. Guidance also includes best practices for the restoration of native forests (see OP 4.36 below) and for the sustainable management of non-timber forest products. Additionally, sanitation investments in rural areas are expected to result in positive impacts on natural habitats and the Environmental and Social Manual for Civil Works includes guidance on adequate design of sanitation solutions and location in relation to water bodies and sensitive habitats.

77. *Forests (OP/BP 4.36)*. No activity involving timber products is currently foreseen under the project. However, given the connection between agricultural activities and forests in Brazil this policy was preventively triggered. Some rural production subprojects may involve the use of non-timber products and/or the restoration of native forests (Permanent Preservation Areas and Legal Reserves in rural properties), which will be addressed under OP 4.04 and should follow best practices as outlined in the project's ESMF. All rural producers supported by the project will be required to comply with national environmental legislation, particularly regarding the percentage of native forests in their properties to be maintained or restored.

78. *Pest management (OP/BP 4.09)*. The project will support the institutional strengthening of POs and promote the adoption of agricultural practices that are resistant to drought. Such activities shall promote environmental sustainability of agricultural production through the adoption of practices such as agroforestry and integrated pest management, among others, aiming at reducing or eliminating the use of pesticides. The project's ESMF includes provisions on the promotion of such sustainable practices, as well as guidance on the pesticide use restrictions prescribed by OP 4.09. Moreover, the ESMF includes guidance on the safe handling and storage of acceptable agricultural chemicals, and the adequate disposal of left-over products and empty containers.

79. *Physical Cultural Resources (OP/BP 4.11)*. As the exact location of planned activities is not yet known and cultural heritage sites are present in Paraíba state, the project's ESMF includes guidance on the adequate procedures to be followed for chance findings, with relevant provisions to mitigate any potentially adverse impacts. Such provisions include compliance with the guidelines defined by the National Institute for Historical and Cultural Heritage (IPHAN) regarding historical sites and/or archeological finding.

80. *Safety of Dams (OP/BP 4.37)*. *The project does not foresee the construction of dams.* However, support provided to improve resilience to drought in agricultural systems may involve the construction of farm ponds, and some project activities related to irrigation and water supply may rely on existing dams; therefore, this policy was preventively triggered. Adequate guidance and provisions according to this policy regarding the use and/or restoration of existing dams were included in the project's ESMF.

Social

81. The ESIA included an analysis of the experience and the capacity of the implementing agencies to address key social issues expected to influence the outcomes of the proposed investments. These include the transparency and fairness of the processes of identification and selection of beneficiaries and sub-projects, potential adverse impacts on livelihoods and relations with indigenous peoples and traditional communities such as *Quilombolas*, gender equality, land expropriation and resettlement. The findings of the ESIA were discussed and revised based on a series of regional public consultations with interested stakeholders.

82. The key social development conclusion of the ESIA is that the proposed project will have significant positive impacts. In addition to expected positive outcomes from reduced household vulnerability and improved access to markets, the project will: (i) create direct and indirect employment opportunities in areas of significant social and economic vulnerability; (ii) build valuable technical and organizational skills among local residents (including youth, women, and ethnic communities) that will be essential for their productive participation in the new social and economic opportunities created through increased access to markets; and (iii) reduce regional disparities and promote the social and economic integration of beneficiaries within the project areas.

83. The social risks associated with the project range from low to moderate. The main concerns are likely to arise from Component no.2 Reducing Vulnerability, as many of the intended beneficiaries of these actions are very poor and have limited technical and/or organizational skills. Social and economic inequalities including gender roles and expectations could also complicate measures to increase food production and nutrition at the household level. The ESIA produced an ESMF, with specific instruments designed to mitigate these risks. For example, the institutional strengthening measures included in Component no. 1 will support communication campaigns to increase access to project information, capacity building for CAs, eligibility criteria that favor female-headed households, gender disaggregated indicators.

84. According to Brazil's National Indian Foundation (FUNAI, Indigenous Census 2005/2006) Paraíba has an indigenous population of about 12,600. Under the previous World Bank financed COOPERAR II project, indigenous communities successfully identified and executed four subprojects – mostly agricultural - valued at around R\$291,000 and directly benefiting 65 families. COOPERAR II also effectively served 602 Quilombola (African slave descendent) families with investments in water and transport infrastructure valued at R\$1,029,021.61. The proposed project will continue to provide support for diverse groups and ethnicities by expanding its sphere of action to cover regions, indigenous groups and ethnic communities that did not benefit from COOPERAR II. These actions will be guided by the IQPPF. The IQPPF will assist the Borrower to ensure that the interested communities support the proposed activities as well as any additional measures required to maximize their culturally appropriate benefits and/or avoid potentially adverse effects.

85. Under COOPERAR II, there were no cases of land acquisition. The proposed project is not expected to require any land acquisition either, however because the exact location and design specifications for the proposed investments will only be determined during project implementation, the ESIA prepared an IRPF, setting out the guidelines, procedures and criteria to avoid, minimize, mitigate and/or compensate any unforeseen resettlement impacts that could potentially result from any eventual design specifications.

Gender

86. In both rural and urban areas of Paraiba, women represent a significantly higher percentage of the poor and extreme poor than their male counterparts. Female-headed households (FHH) are particularly disadvantaged compared to households headed by men (MHH). Both men and women who work in the agriculture sector are more likely to be poor or extremely poor than those working in other sectors. While in urban areas FHHs have greater access to adequate sewage and piped water systems than MHHs, in rural areas where access is generally worse, the situation is reversed with FHHs having less access. In both rural and urban areas, women and girls' have productive roles, as well as the majority of the burden of domestic responsibilities (childcare, cooking, cleaning, etc.) resulting in higher time poverty than their male counterparts.

87. In the traditional Northeastern farming households, women and girl's contributions to productive activities are often undervalued. They are less likely to participate in decisions related to family finances such as whether to access credit, how to invest it, how to spend family income, etc. The imbalance in decision making in the household is often reproduced in agriculture,³⁴ where women experience lower rates of access to credit, land, technical assistance, productive inputs and participation in productive projects relative to their male counterparts— a lost opportunity for increasing levels of productivity and food security amongst poor family farming households in Paraiba.

88. With Bank assistance, COOPERAR, conducted a gender assessment and designed a gender strategy. Key elements of the strategy include: (i) a differentiated communications strategy; (ii) specific training for women, women's groups and service providers; (iii) providing priority attention to communities that have greater numbers of women for water access and vulnerability reduction; and (iv) specialized technical assistance for women's groups and leaders in productive alliances. Specific gender actions are detailed under each component in Annex 2. Application of the strategy will be reviewed at Mid-term and adjusted if necessary.

Monitoring & Evaluation

89. COOPERAR will monitor and evaluate the Project's progress and results at the technical, financial, social and environmental levels. The project's M&E system will monitor progress according to the indicators and targets described in the Results Framework and Monitoring from Annex 1. The M&E system will build on the existing information systems and databases managed by COOPERAR in the context of the Paraiba Second Rural Poverty Reduction Project (P104752). The M&E system will monitor the performance of the Project with respect to the baseline situation by: tracking progress towards outcome indicators; justifying necessary adjustments during implementation; promoting accountability for resource use against objectives; providing and receiving stakeholder feedback; and generating inputs for dissemination of results and lessons learned.

90. *Monitoring.* Progress in implementing activities related to Subcomponent 2.a and 2.b (water supply and agro-climatic vulnerability reduction) will be overseen and monitored by CCOOPERAR's regional offices. Following signature of the subproject agreements with COOPERAR, each CA will be required to submit annual technical and financial progress reports

³⁴ World Bank, Expanding Women's Agency through Women's Productive Inclusion in Northeast Brazil: Fieldwork reports, 2015.

to the regional offices. This information will be submitted to and consolidated by COOPERAR M&E at the central office. With regard to Subcomponent 2.c (ARIS), AESA will provide periodic implementation reports which will be monitored by COOPERAR.

91. With regard to Component 3 – Productive Alliances, COOPERAR’s regional offices and CINEP will provide real-time information on progress of each business initiative being reviewed and/or supported by the Project. The regional offices will be in charge of overseeing the Productive Alliances Subproject execution activities as detailed in Annex 2 and will keep track of data on sales value and volume, and environmental practices. Progress in beneficiary organizations’ managerial and accounting capacity will be assessed annually by the technical assistance providers facilitated through the project. This information will be submitted to, and consolidated by, the COOPERAR central office.

92. *Evaluation.* During subproject implementation, supervision carried out by COOPERAR staff will include monitoring environmental compliance and eventual impacts, with the assistance of environmental monitoring templates. Monitoring information will be uploaded into the project monitoring system, including the progress of eventual mitigation measures. Periodic project reports to the Bank will include a safeguards section where social and environmental monitoring results will be reported, including any negative impacts identified during implementation and the respective mitigation measure applied, as well as lessons learned and positive environmental impacts resulting from the project.

93. The Bank and COOPERAR will carry out a Mid-term Review two years after Effectiveness. This review will analyze progress towards results indicators and the likelihood of achieving the PDO. Results will allow for technical adjustments, if warranted. COOPERAR will conduct a final evaluation under terms of reference agreed with the Bank. The evaluation strategy takes into account differences in the state of knowledge as well as data generation capabilities in three lines of action. For access to water, the results evaluation will focus on outputs and behavioral change (use and adoption), as solid evidence already highlights the positive impacts of these types of interventions. For agro-climatic vulnerability reduction, given the difficulty in establishing outcome indicators that do not depend on the occurrence of weather events, results will be measured at the level of adoption of technologies and practices, and evaluation will follow an approach focused on learning from experience. Here the Project will collect information for relevant inputs and results, before and after investments, in order to measure effectiveness and efficiency while controlling for other factors that might change over time. In both cases, the analysis will take into account socio-economic variables, including gender and ethnicity.

94. *Impact evaluation.* A rigorous impact evaluation of Component 3 - Productive Alliances will be carried out using quasi-experimental methods (matching methods with difference-in-differences). For each call for proposals, consultants will collect baseline data, and a follow-up survey for a representative sample of applicants. Baseline surveys will collect a comprehensive set of information, including production, outcomes and control variables. Follow-up surveys will collect the same set of information when alliances are closed (about three years from the application year). The schedule for those surveys will be defined in accordance to the progress in the implementation of the Project.

95. The key variables to be assessed will be agricultural household net income, total sales volume, and level of employment by productive alliances. The evaluation will help to single out

the influence of external factors (e.g. international market prices) that are not attributable to the project itself. Although it will not be possible to stratify by gender or ethnicity ex ante, the analysis will be gender and ethnically disaggregated wherever possible.

Annex 4: Implementation Support Plan

COUNTRY: BRAZIL

Paraiba Sustainable Rural Development Project (P147158)

Implementation Support Plan

1. Due to the technical complexity of the Project in relation to existing capacity, and the emphasis placed on technical quality and adequate monitoring and evaluation, the Project will require intense implementation support.
2. Technical support will focus on quality. In water access, emphasis will be placed on engineering and institutional aspects, including linkages with the state-wide. In agro-climatic vulnerability reduction the Task team will focus on adequacy and efficacy of technological solutions as designed and implemented. Design of the Agro-climatic Risk Information System will require close advice during the first year. Implementation of productive alliances will require intense support during the first two years.
3. Monitoring and evaluation will require specific support to ensure quality of baselines and design and execution of the impact evaluation.
4. Safeguards management will require specific attention during the first year or two, particularly for environment, followed by continuous support from the country office.
5. Fiduciary management will require intense support during the first year, followed by ex post reviews once per year and continuous support from the country office
6. The WB office in Brasilia will be the main source of project support as it has qualified safeguards and fiduciary staff available to follow-up on the Project's implementation. Every year two specific support missions will be required to assist with the yearly planning, analysis of project progress and implementation quality.

Table 7: Implementation support focus, skills, resources and origin

Time	Focus	Skills needed	Resource Estimate
Year 1	- Implementation planning - Technical quality - Baseline design and data collection - Fiduciary processes - Safeguards	- Project management - Water, Vulnerability reduction and Productive alliances - Fiduciary Management - Monitoring and evaluation - Safeguards management	- 2 support missions with full Task Team - intense support from country office
Year 2 - 5	- Project implementation - Technical quality - Safeguards - Monitoring and evaluation	- Project management - Water, Vulnerability reduction and Productive alliances - Fiduciary Management - Monitoring and evaluation - Safeguards management	- 2 yearly support missions, one with full Task Team - support from country office at the safeguards and fiduciary level
Year 6	- Monitoring and evaluation - Reporting	- Project management - Technical quality - Monitoring and evaluation	- 2 support missions, one with full Task Team

Table 8: Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips
Project management	- 8 staff weeks per year	- 2 per year
Operational specialist	- 8 staff weeks per year	- Two per year and continuous country office support
Fiduciary Specialists (FM and Procurement)	- 2 x 3 weeks per year	- One per year and continuous country office support
Safeguards specialists (environment and social)	- 2 x 3 weeks per year	- One per year and continuous country office support
Technical Specialists including M&E	- 5 x 3 weeks per year - M&E 2 x 4 weeks for Mid-term Review and final evaluation	- 1 to 2 per year, depending on specific requirements

Annex 5: Greenhouse Gas Accounting

COUNTRY: BRAZIL

Paraiba Sustainable Rural Development Project (P147158)

Background and Methodology

1. In its 2012 Environment Strategy, the World Bank adopted a corporate mandate to conduct greenhouse gas (GHG) emissions accounting for investment lending. The quantification of GHG emission is an important step in managing and ultimately reducing GHG emissions, and is becoming a common practice for many international financial institutions.
2. To estimate the impact of agricultural investment lending on GHG emission and carbon sequestration, the World Bank adopted the Ex-Ante Carbon-balance Tool³⁵ (EX-ACT), which was developed by the Food and Agriculture Organization of the United Nations (FAO) in 2010. EX-ACT is a land-based appraisal system that allows the assessment of a project's net carbon-balance, defined as the net balance of CO₂ equivalent GHGs that were emitted or sequestered as a result of project implementation compared to a business-as-usual scenario. EX-ACT estimates the carbon stock changes (i.e. emissions or sinks of CO₂) as well as GHG emissions per unit of land, expressed in equivalent tons of CO₂ per hectare and year.

Application of EX-ACT

3. **Project area.** The GHG accounting considers three types of projects. First type, resiliency/vulnerability projects (480 projects in 11.544 ha) will use two type of technologies that will increase climate resiliency: water management/irrigation systems (small dams and water tanks/cisterns) and pasture management. This selection of technologies was done from a consultancy developed by the project unit during the beginning of 2015. The second type of projects (251 projects) are productive alliances that will aim to improve goat management, and the production of vegetables, honey, fruit pulp and fish. The Project will also support spot improvement of rural roads.
4. **Data source.** As for the Economic and Financial Analysis, the feasibility studies carried out by the project implementation unit were used as main data source for the analysis. The studies provide, amongst others, a detailed assessment of current agricultural activities regarding crop and livestock production, and employ standard farm models to project changes in agricultural activity as a consequence of irrigation modernization and diversifying crop production.
5. **Basic assumptions.** Paraiba has a tropical climate and dry moisture regime. Paraiba has several soil types, but the dominant soil type is LAC soils, specifically Lithosol. The project implementation phase is 5 years and the capitalization phase is assumed to be 20 years, as most of the technologies implemented will have a lifespan of maximum 20 years. This amounts to a 25 year implementation period which is in the standard range for the use of EX-ACT³⁶. For the

³⁵ <http://www.fao.org/tc/exact/ex-act-home/en/>

³⁶ The 25 year timeframe for this particular project was chosen after consultation with the World Bank GHG helpdesk. The joint period of implementation and capitalization should not be shorter than 20 years when relevant land use change takes place. This is established as a minimum period by the scientific literature in which the most important impacts on carbon stocks are expected to take place (EX-ACT. User Manual. Estimating and Targeting Greenhouse Gas Mitigation in Agriculture; FAO, 2014). Similarly, the World Bank GHG Accounting Guidance

analysis, the “Business as usual scenario” is expected not to differ from the “Baseline scenario”. This default scenario is deemed reasonable as changes in agricultural activity depend on available technologies contributed by the project. The GHG assessment further assumes that the dynamics of change are linear over the duration of the project.

6. **Irrigation systems.** In the current situation, the project area is equipped with minimal surface irrigation systems--only 390 ha dedicated to vegetable production in potential Productive Alliances projects. To reduce agro-climatic vulnerability, the project is expected to introduce small dams and water tanks/cisterns in 2,480³⁷ ha (estimated using 1240 ha under sorghum, and 1240ha under maize) and small sprinkle systems in 105 ha in Productive Alliances, both will require pumping and hence electricity consumption. The introduction of more modern irrigation will lead to more efficient water use as well as increased agricultural production. Based on the review of subproject information and other related studies in the area we assume that the project will not lead to expansion of the agricultural area but rather to intensification and change in crop production. This increase is expected primarily to be due to land use changes and technological adoption, as described in the following.

7. **Crop production and Land Use Change.** Currently, the largest share of the target farms cultivated land is under annual crops. Based on the information from the subproject models, the introduction of irrigation infrastructure and provision of technical assistance is expected to lead to high rates of conversion from annual to perennial crops. For example, land that is currently used for annual crop cultivation (particularly corn and beans), is expected to be turned over to production of *barbary* fig (perennial) (1876 ha) and other annual crops sweet potatoes, onion, tomatoes, among others (105.3 ha). In addition, some land use change to perennials is assumed from currently moderately degraded lands (500 ha). Both land use changes are accounted for in EX-ACT’s “Land use change” module. The estimated 500 ha that are used for perennial crop cultivation at baseline are expected to remain for perennial production, but with improved practices. In general, we assume that the activities of Component 2 will lead to improved agronomic and water management practices, as is captured in EX-ACT’s “Cropland” module.

8. **Livestock.** The introduction of water systems and pastoral systems will provide incentives for farmers to increase the number of goats per farm. From the information of the subprojects for small and medium-scale family farming in the project areas, we expect an increase in the mean number of goat heads of 20 percent from 1000 to 1200 heads during the project timeline. Although goats are the ruminants with one of the lowest methane emission per head per year--5 Kg of CH₄ compared for example to buffalos’ 55 kg of CH₄ per year--they are a land degradation factor in the project.

9. **Inputs and investments.** With the exception of the possible subprojects under irrigated agriculture projects within the Productive Alliances (105.3 ha), most of the crops in the project area do not use chemical fertilizers. However, most of the vulnerability reduction subprojects are expected to use compost/manure. The electricity used in the different subprojects and oil consumption is described in the table below. The improvement of rural spot roads will not be accounted in the Ex Act as the tool only accounts for concrete and asphalt roads.

Note #3 for Agriculture Sector Investment Projects recommends considering a 30-year time horizon similar to the Economic and Financial analysis.

³⁷ Estimated 1240 ha of sorghum and 1240 ha of maize

Type of technology	Energy consumption per year in MWh (without vs with)		Oil consumption per year m ³
Water tanks and cisterns	0	0.48825	
Goat's milk refrigeration service	4.4*67	8.3*67	1.2*67
Honey production	0	3*39	6.4*39
Irrigated agriculture	0	3.6*39	
Fruit pulp production	12*67	28*67	1.2*67
Total	1098 per year	2583.5 per year	410.4 per year

Results

10. **Net carbon balance.** The net carbon balance indicates tons of CO₂ equivalent (tCO₂-eq) GHGs emitted or sequestered as a result of project implementation compared to a business-as-usual scenario. Over the project duration of 25 years, the project constitutes a carbon sink of 25,075 tCO₂-eq (see table below, last column balance is per year).

Project Name	Paraiba - P147158		Climate	Tropical (Dry)			Duration of the Project (Years)	25			
Continent	South America		Soil Regional Soil Type	LAC Soils			Total area (ha)	2980			
Components of the project	Gross fluxes			Share per GHG of the Balance				Result per year			
	Without	With	Balance	CO ₂			N ₂ O	CH ₄	Without	With	Balance
	All GHG in tCO ₂ eq			Biomass	Soil	Other					
	Positive = source / negative = sink										
Land use changes											
Deforestation	0	0	0	0	0	0	0	0	0	0	0
Afforestation	0	0	0	0	0	0	0	0	0	0	0
Other LUC	0	80,930	80,930	-9,751	90,680		0	0	0	3,237	3,237
Agriculture											
Annual	0	-60,182	-60,182	0	-60,182		0	0	0	-2,407	-2,407
Perennial	0	-75,900	-75,900	-72,600	-3,300		0	0	0	-3,036	-3,036
Rice	0	0	0	0	0		0	0	0	0	0
Grassland & Livestocks											
Grassland	0	0	0	0	0		0	0	0	0	0
Livestocks	6,886	8,125	1,239				751	489	275	325	50
Degradation & Management	0	0	0	0	0		0	0	0	0	0
Inputs & Investments	2,803	31,630	28,827			28,827	0		112	1,265	1,153
Total	9,689	-15,397	-25,086	-82,351	27,199	28,827	751	489	388	-616	-1,003

11. **Carbon sources and sinks.** Most of the carbon sequestered is due to the improvement in annual crops and increased perennial systems after non-forest land use. Livestock and inputs (oil and electricity) are the main carbon sources of the project.

12. **Caveats.** The project will finance subprojects that are demand driven and therefore not known ex-ante. Hence, for the carbon analysis the team has only taken into account the carbon sinks of the resiliency/vulnerability subprojects. The tool will be updated once the project has data on areas (ha or km) with project for (i) productive alliances subprojects and (ii) spot improvement of rural roads. Also, it is important to mention that as inputs for these types of subprojects have already been taken into account, the total carbon sink of the project may increase notoriously.

Annex 6: Climate Variability and Future Projected Changes in Northeast Brazil

COUNTRY: BRAZIL

Paraíba Sustainable Rural Development Project (P147158)

Increasing Drought Stress and Rural Livelihoods

1. A large part of the Northeast is situated within the so-called “drought polygon or Semiarido³⁸”, an area characterized by a semi-arid climate that suffers from recurrent droughts. The semi-arid areas of Northeast Brazil are areas under water stress and highly sensitive to inter-annual climate variability. Most poor areas of this region are identified as socio-climatic hotspots, given the naturally limited water availability, a relatively low human development index, and a high population density, in which conflicts over water already exist. Under a projected path of a 4°C warmer world, the dry regions of the Northeast are expected to face increases in unusual heat extremes, leading to more intense and longer drought events, and increased aridity (Figure 1). There has been significant progress over the past decades in the semi-arid regions, lifting a considerable number of communities out of extreme poverty; however, the possibility of more frequent droughts and extreme precipitation threatens to force many of these populations back into extreme poverty.

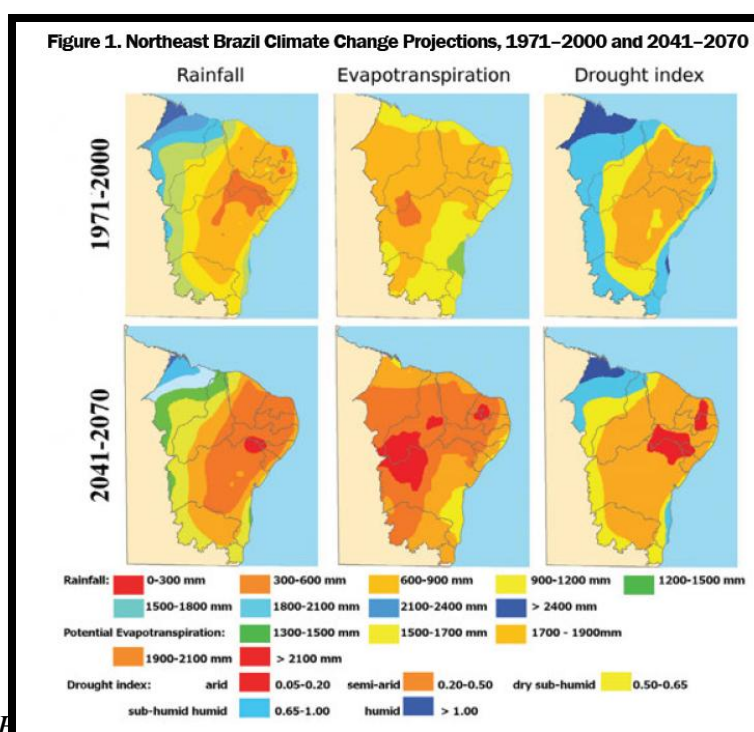
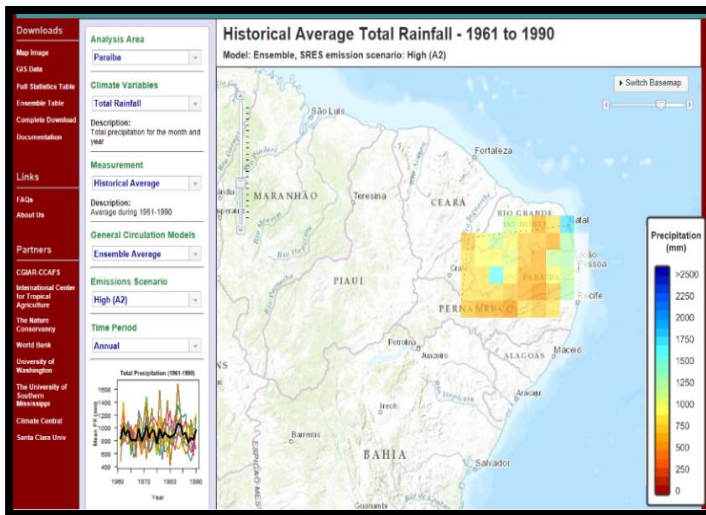


Figure 1: Mean annual precipitation, mean annual evapotranspiration, and drought index (precipitation divided by evapotranspiration) for the periods 1971–2000 and 2041–2070 (projected) using the MIMR climatic model under the B1 emission scenario. Evolution to more reddish color corresponds to increased drought, due to reduced rainfall and/or increased evapotranspiration (source World Bank, 2014)

³⁸ The geographical area of the Brazilian semi-arid stretches over eight states in the Northeast (Alagoas, Bahia, Ceará, Paraíba, Pernambuco, Piauí, Rio Grande do Norte and Sergipe) plus the North of Minas Gerais, with a total land area of 980,133.079 km² (IBGE, 2010).

The state of Paraíba under Climate Change

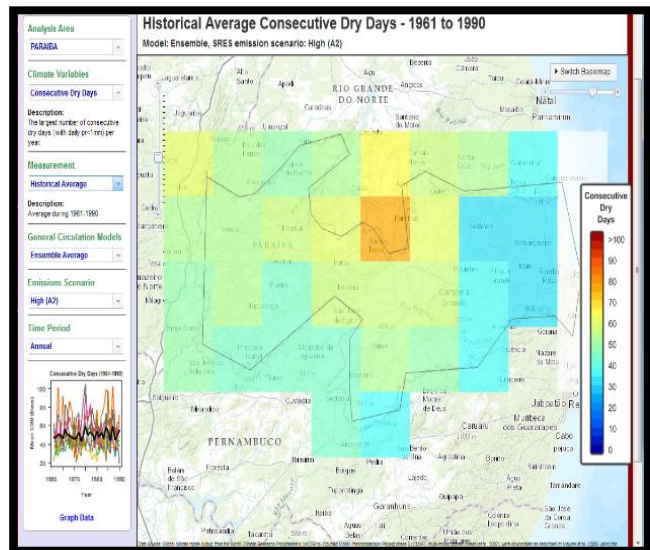
Historical Trends



Located in the Northeast region, the State of Paraíba occupies an area of 56,469.47 km² and has 223 municipalities. The climate of Paraíba varies. It is tropical humid on the coast, with abundant rainfall (~1300 mm/yr) while inland it becomes semi-arid and subject to prolonged droughts and low average rainfall (~600-1200 mm/yr) (Figure 2). A considerable increase in the frequency of warm nights in this region has also occurred for the same period.

Figure 2: Historical Average of Total Precipitation from 1961-1990 in the state of Paraíba. (Source: University of Sussex-CRU dataset, and Climate Analysis tool, Climate Change Knowledge Portal).

According to historical analysis of global climate data, there were an average of 55 days of ‘consecutive dry days’ -the maximum number of consecutive days with daily precipitation less than 1mm- in the state from 1961-1990 (Figure 3).



Future Climate Trends

2. In addition to an increase of mean annual temperature up to 2-3 °C, a range of future downscaled climate models from IPCC, project an average increase of the duration of drought spells by an additional 20-30 days³⁹ in the state by mid-century (Figure 4) due to climate change by mid-century under high emission scenarios⁴⁰.

³⁹ Consecutive Dry Days: Maximum length of a dry spell. Maximum number of consecutive days with daily precipitation < 1mm

⁴⁰ Data Source: Global climate model output, from the World Climate Research Programme's (WCRP's) Coupled Model Intercomparison Project phase 3 (CMIP3) multi-model dataset (Meehl et al., 2007), were downscaled as described by Maurer et al. (2009) using the bias-correction/spatial downscaling method (Wood et al., 2004) to a 0.5 degree grid, based on the 1950-1999 gridded observations of Adam and Lettenmaier (2003). Data available on Climate Analysis Tool (<http://climatemwizard.ciat.cqjar.org/outputs/Paraiba/>). See also World Bank, 2014. Turn Down the Heat: Confronting the New Climate Normal.

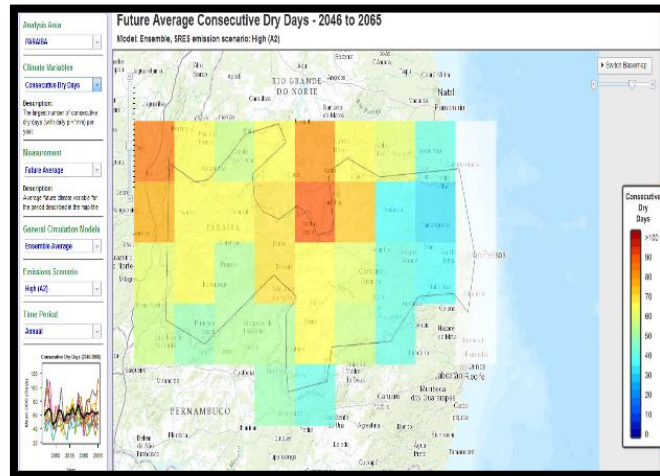


Figure 4: Historical Average Consecutive Dry Days from 1961-1990 in the state of Paraiba. (Source: University of Sussex-CRU dataset, and Climate Analysis tool, Climate Change Knowledge Portal (<http://climatewizard.ciat.cgiar.org/outputs/Paraiba/>).

Potential impact of a changing climate

3. Increasing drought events in the state of Paraiba may lead to widespread crop and cattle raising failure, threatening of livelihoods of smallholder farmers. A decline in agricultural productivity may limit access to food and, if not mitigated, possibly long-term impacts on the household nutritional status. Increases in irrigated agriculture, if not well integrated with long-term water resource planning and management, could exacerbate water availability challenges due to competing needs for urban and human consumption. A diminished drinking water supply in rural communities may lead to an increasing reliance on water trucks, raising private and fiscal costs while augmenting morbidity. Moreover, the need to search for drinking water and the associated health problems associated with low quality drinking water could have an impact on the work force and income in rural areas, potentially leading to additional social problems related to rural-urban migration during drought events. Increasing water stress may lead to the over-exploitation of already depleted aquifers. This in turn, would lead to the release of groundwater minerals affecting groundwater quality and, in coastal aquifers, could lead to sea water intrusion. In general, hydropower and energy systems will be stressed across these dry regions. Direct damages from droughts and also secondary impacts on the agriculture sector and related labor markets may result in negative GDP growth rates in the agriculture sector during these events.

