1. Project Data

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Prepared by Hassan Wally  Reviewed by John R. Eriksson  ICR Review Coordinator Christopher David Nelson  Group IEGSD (Unit 4)

2. Project Objectives and Components

a. Objectives

The Project Development Objective as articulated in the Project Appraisal Document (PAD, para 17) was to:

"(i) improve the sustainability of rural production and rural income generation; and (ii) contribute to the State’s efforts to universalize access to water services."

The Project Development Objective as articulated in the Loan Agreement (p. 6) was to:
(i) improve the sustainability of rural production and rural income generation; and (ii) contribute to the Borrower's efforts to universalize access to Water Services."

Both statements were almost identical except where underlined.

This Review will evaluate the outcomes of the project against the PDO statement as stated in the Loan Agreement. A split rating will not be applied because activities were re-aligned and resources were re-allocated from one component to another with no changes to the PDO or the key outcome indicators or theory of change. Outcomes of the project will be assessed based on the objectives under the revised coverage.

b. Were the project objectives/key associated outcome targets revised during implementation? Yes

Did the Board approve the revised objectives/key associated outcome targets? No

c. Will a split evaluation be undertaken? No

d. Components

The project was supported by three components as follows:

1. Economic Inclusion (appraisal cost: US$46.69 million, actual cost: US$39.45 million). This component would promote investments in rural economic inclusion in the Borrower’s territory, through:

   (a) the provision of support to Secretariat of Agrarian Development (SDA) for: (i) the preparation of Business Plans, implementation and supervision; and (ii) the construction of approximately five warehouse facilities in selected rural areas for collecting, processing and distributing farm products.
   (b) the provision of support to Producers’ Organizations (POs are community associations and cooperatives, mostly composed of small-scale producers) for the carrying out of: (i) Productive Sub-projects; and (ii) Environmental Services Sub-projects, all included in eligible Business Plans.
   (c) the provision of support to SDA for the development of a state-wide disaster risk management policy, contingency plans and early warning systems for the prevention of natural disasters

2. Water Services (appraisal cost: US$74.50 million, actual cost: US$74.12 million). This component would support the State’s efforts to ensure universal access to potable water and basic sanitation services through:

   (a) the provision of support to: (i) SDA for the preparation and implementation of engineering designs for selected potable water and basic sanitation infrastructure investment; and (ii) State Water and Sanitation Company (CAGECE) and State Superintendency for Water Works (SOHIDRA) for the analysis of engineering designs and supervision of works for the implementation of selected potable water and basic sanitation infrastructure investments, using existing water sources to complete the link between the main water distribution system and the relevant households.
   (b) the provision of support to CAGECE and SOHIDRA for the scaling up of existing water distribution management system models, including Integrated Rural Water Supply and Sanitation System (SISAR), and
the development of pilot solutions for the sustainable operation and management of Water Services delivery and management in selected rural areas. 
(c) the provision of support to Community Associations for the carrying out of Grey-water Reuse Pilot Sub-projects.

3. Institutional Strengthening and Project Management (appraisal cost: US$29.75 million, actual cost: US$24.96 million). This component would provide support for, inter alia: (i) the technical and administrative management of the Project; (ii) the necessary updates to SDA’s management information system, including the design, development and implementation of a monitoring and impact evaluation module to track progress on results indicators; (iii) the development and implementation of a training program for technicians, Project Beneficiaries and stakeholders; (iv) the development and implementation of a communication plan to disseminate information on the Project; and (v) institutional strengthening of State Court of Accounts (TCE-CE) for the carrying out of audits under the Project.

Revised Components. The project was restructured four times. Across these, several smaller activities were dropped because of better alternatives, decreased priority and/or non-viability. Also, Component 2 was expanded to respond specifically to rural families’ demand for water services under severe drought conditions. Changes were as follows:
Component 1. (i) The Restructuring of 2014 resulted in downsizing of Component 1 by reallocating US$17.0 million to Component 2 Water Services to respond to increased demand of water services. The reallocation also caused targeted productive investments to be cut from 440 (or 18,000 targeted beneficiaries) to 280 (or an estimated 11,480 targeted beneficiaries); (ii) the Restructuring of 2015 eliminated environmental services sub-projects; and (iii) the Restructuring of 2018 modified activities in Part 1.a.(ii) of the Loan Agreement from construction of warehouse facilities (to collect, process and distribute farm products) to the financing of large-scale investments, as defined in the PAD.
Component 2. As a result of increased financing approved during the Restructuring of 2014, the targeted number of new piped household water connections was increased from 10,000 (or 40,000 beneficiaries in the PAD) to 22,000 (or an estimated 88,000 beneficiaries).

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost. The total project cost at appraisal was expected to reach US$150 million. Actual cost reported in the ICR (p. ii) was US$138.79 million. The difference was because the borrower contribution fell short of meeting the expected amount of counterpart funding (see below for more details).

Financing. The project was financed through a Specific Investment Loan (SIL) in the amount of US$100 million. According to the ICR (p. ii) the actual amount disbursed was US$100 million. The loan was 100% disbursed.

Borrower Contribution. The Borrower was expected to contribute US$50 million of counterpart funds. The actual amount according to the ICR (p. ii) was US$38.79 million or 77.5% of the appraisal estimate.

Dates. The project was approved on April 5, 2012 and became effective eight months later on December 6, 2012. The Mid-Term Review was conducted on November 10, 2014, no date was provided in the PAD. The project closed on April 30, 2019 compared to an original closing date on October 31, 2016 (30 months beyond the original closing date). According to the ICR (para 14) this 30 month extension was needed to
provide enough time to overcome management issues, and to cope with the complexity and protracted implementation of project investments under Components 1 and 2." The project was restructured four times, all of which were Level 2.

The first Restructuring was on April 25, 2014, when the amount disbursed was US$10 million, in order to change the Results Framework, change in components; and cost reallocation between disbursement categories.

The second Restructuring was on October 11, 2015, when the amount disbursed was US$21.06 million, in order to change the Results Framework, change in components, cost reallocation between disbursement categories, change in Legal Covenants; and change in institutional arrangements.

The third Restructuring was on May 16, 2016, when the amount disbursed was US$57.17 million, in order to extend the Loan closing date by 18 months from October 31, 2016 to April 30, 2018.

The fourth Restructuring was on April 30, 2018, when the amount disbursed was US$87.62 million, in order to change the Results Framework, extend the Loan closing date by 12 months from April 30, 2018 to April 30, 2019, and change the implementation schedule.

3. Relevance of Objectives

Rationale

Context at Appraisal. Agriculture is a major sector of the Brazilian economy and is key for economic growth and foreign exchange. Agriculture accounts for about 6% of GDP (25% with agribusiness) and 36% of Brazilian exports. The State of Ceará faces significant challenges with high poverty levels where 13% of its population living below the regional extreme poverty line and almost 31% below the regional poverty line. Fostering development, stimulating economic growth and improving agricultural productivity will help the rural poor by directly increasing their income and competitiveness. Agriculture in Ceará faces three key challenges: low technological innovation; poor access to capital to boost smallholder asset accumulation; and a disconnect between technical assistance and the needs of farmers, both for meeting market demands and reducing vulnerability through climate change adaptation.

At project appraisal objectives were in-line with the State of Ceará strategic plan which sought to increase regional and rural development and productivity. Objectives were also in line with the State’s Multiyear Development Plan (Plano Plurianual 2012-2015, PPA). The PPA emphasized the goals of equitable, inclusive and efficient growth. The project would support priority programs selected from the PPA and from the State Strategic Plan including: promoting inclusive growth; universalizing potable water supply; and modernizing and strengthening public institutions. Objectives were also in line with the focal points of the Bank’s Agriculture Action Plan (FY10–12). These focal points include: raising agricultural productivity, linking farmers to markets and strengthening value added, reducing risk and vulnerability, facilitating agricultural entry and exit and rural non-farm income, and enhancing environmental services and climate-smart agriculture. Also, objectives were in line with the Bank’s Country Partnership Strategy (CPS, 2012-2015). The project would support two key challenges outlined in the CPS under agriculture and natural resource management (NRM): first to seize opportunities for innovative and integrated approaches to climate-smart, inclusive economic growth, focusing on rural productivity; and second to address the
competitiveness issues that Brazil faces in agriculture and NRM. The proposed project would also support two CPS pillars by contributing to an Equitable Brazil by targeting rural access to basic infrastructure and services for human capital development, and to a Sustainable Brazil through the promotion of sustainable production systems, including the piloting of incentive schemes for innovations and technologies.

At project completion, objectives were in line with the objectives of the Brazil Multi-year Development Plan (PPA-2016-2019). The PPA objectives aimed to expand technical assistance and rural extension services supporting small farmer innovation and sustainable production systems; improve weather and climate monitoring/forecasting systems; contribute to rural poverty reduction through the productive inclusion of family farmers; help to expand access of the rural poor to water for human consumption; disseminate sustainable production systems linked to natural resource conservation; and promote the organization of family agriculture, its insertion in public/private markets, and sustainable energy use. Objectives were also in line with State’s long-term Strategic Development Plan “Ceará 2050” which featured a strong focus on activities that generate income and on the provision of water supply. Objectives were also in line with the Bank’s Country Partnership Framework for Brazil (CPF, FY18-23). The CPF emphasized inclusion and sustainable development to promote the socio-economic development of small rural producers and vulnerable groups.

Overall the statement of objectives was clear, but it lacked a connection to higher level objectives, namely, rural poverty and equitable access to basic infrastructure and services. The PDO statement also could have benefited from clarifying the meaning of "rural production" because project activities were focused mainly on improving agricultural production. In a further communication, the project team explained that "the PAD (page 24, paragraph 11) clearly states that "Investments would involve both agricultural and non-agricultural rural production activities successfully developed in communities or with economic potential represented by successful past experiences, cultural characteristics, market opportunities or local demand."

Based on the above-mentioned information Relevance of Objectives is rated Substantial.

Rating
Substantial

4. Achievement of Objectives (Efficacy)

**OBJECTIVE 1**

**Objective**
PDO (i) to improve the sustainability of rural production and rural income generation

This PDO as stated includes two elements:

(a) to improve the sustainability of rural production, and

(b) to improve rural income generation.
Rationale

Theory of Change. The theory of change is the relationship between activities, outputs from those activities and the final outcome (to improve the sustainability of rural production and rural income generation). In this case change is facilitated by a number of critical elements including: strong institutional capacity to implement market-oriented approach, inter/intra agency collaboration, strong institutional capacity among producer organizations, and low implementation risks.

The project would finance the adoption of new technologies and provide training and technical assistance to increase agricultural productivity and improve market access. The project would also promote compliance with environmental laws and practices to improve sustainability. As a result of these activities, beneficiaries would adopt sustainable practices, protect water resources and improve soil management practices. Also, producer organizations would increase their production and income levels compared to non-participants. As a higher-level outcome, it was expected that the sustainability of beneficiaries' production systems to be improved.

The theory of change included clear links between the stated activities and expected outcomes. However, the project's support to developing disaster risk management plans and early warning systems was not clearly linked to the outcome.

(a) to improve the sustainability of rural production

Outputs

The information below is from Annex 1 in the ICR unless referenced otherwise.

- 197 productive investments were implemented and operational (target: 280, achievement rate: 70.25%).
- 32 rural producer organizations were supported by the project adopting environmentally sustainable technologies (target: 28, exceeded: 227% of target).
- 15,460 beneficiaries were trained in business management and environmentally sustainable practices (target: 10,000, exceeded: 154.6% of target).
- 92,970 total hours of technical assistance were provided to family production units (target: 70,000, exceeded: 132.8% of target).
- 49,448 total hours of technical assistance were provided to producer organizations (target: 45,000, exceeded: 110% of target).
- 267 business plans were adopted out of 335 that were drafted (no target).
- 5 structuring projects were implemented and operational (no target), these included: (i) milk processing plant; (ii) meat slaughtering and processing unit (sheep); (iii) cashew nut processing unit; (iv) Cassava Agro-industry; and (v) a Honey Warehouse.
- 14 knowledge transfers, 5 workshops, 8 caravans, 11 field events (no targets).
- 54 oceanographic buoys were acquired (no target).
- 6 agro-meteorological weather stations installed (no target).
- 7 municipal agricultural drought plans were prepared (no target).
- 25 irrigation projects were implemented (no target).
- 1,168 training courses and 75 seminars were delivered (no target).
• 28 technical missions were conducted (no target).

Outcome

The project implemented 267 productive sub-projects directly benefiting 7,398 people. While 197 productive sub-projects were operational at closing, 22 productive sub-projects were awaiting administrative equipment support (items such as computers, software and/or office furniture), and 48 sub-projects were in need of additional support. According to the ICR (para 21) the Bank agreed with the Borrower on a sustainability plan that would ensure completing sub-projects unfinished at closing and support post completion sub-project sustainability overall. Sustainability of the sub-projects was assessed through six criteria: (i) Business Plans implemented and operational (197); (ii) Minimum of 2 regular technical assistance visits per year (254); (iii) Functioning accounting system that included: management system reports, balance sheets, and spreadsheets (251); (iv) Operation and Maintenance Plan and reserve fund for financed investments (258); (v) POs trained in sustainable production practices and management (267); and, (vi) sales to at least one buyer (230). In a further communication, the project team explained that "from the 280 sub-projects to be financed by the project, the PDO indicator expected that 224 sub-projects (80% of 280) would have sustainable business initiatives by the end of project. At closing, 219 sub-projects have met the six criteria indicator (including: 197 sub-projects that met all the six criteria indicator and 22 sub-projects that were awaiting some administrative equipment support, however, were fully operational)."

By completion 82% of the financed 267 productive investments achieved operational status. The project also trained 15,460 beneficiaries of productive investments in business management practices, and sustainable farming practices including: fodder production, reforestation, and waste management. The project provided technical assistance to individual beneficiary family production units including: soil preparation, use and application of organic fertilizers and pesticides, seed storage and animal husbandry technologies. The project training enabled 32 producer organizations to formally adopt environmentally sustainable (original target: 44, formally revised target: 28), climate smart technologies adapted to semi-arid conditions. Environmentally sustainable technologies adopted included: solar panels, resistant crop varieties adapted to semi-arid conditions, drip irrigation systems, pasture improvement with less soil compaction, rotation of animal holding areas/corrals to reduce land clearing and loss of biodiversity, formation of reserves for feed cultivation (plantation of palms and soy for forage use); and, use of organic fertilizers. Also, 71 producer organizations (target: 25) participated in in environmental recovery activities. These activities included: planting drought resistant trees, shrubs and forage crops on farm lands and along watercourses and obtaining requisite environmental and sanitary licenses for agro-livestock and agro-industrial processing.

The project also initiated the establishment of a State Early Warning System. This would be instrumental to the State's efforts to mitigate and/or prevent climatic/natural disasters. The project financed the acquisition of oceanographic buoys and sensors. A total of 54 sensors were expected to be installed, with 27 sensors planned for end-2019 and another 27 in 2020. The project also financed the acquisition of six agrometeorological stations for installation, and Municipal Agricultural Drought Plans were prepared for seven municipalities. However, by project completion the system was not functional and the expectation that the State would be able to forecast and provide warnings in case of imminent adverse natural events did not materialize. The ICR noted that these activities would be completed under the follow-on project (ICR, page 9). In a further communication, the project team explained that "the project was committed to finance 'the provision of support to SDA for the development of a state-wide disaster risk management policy, contingency plans and early warning systems for the prevention of natural disasters’ and not committed to the delivery of the EWS."
While the project supported 25 irrigation projects, the impact of these investments on rural production and rural income generation was not documented in the ICR.

Therefore, and based on the above-mentioned assessment, the efficacy of this outcome is rated Substantial despite that the impact of the project investments on productivity and improving market access was captured through proxy indicators only. The project team also explained that the project areas experienced below average rainfall during the implementation years—which could have potentially depressed agricultural productivity.

Rating
Substantial

OBJECTIVE 2
Objective
To improve rural income generation.

Rationale

Outputs

- 68% rural producers supported by the project were selling products to institutional and private markets (target: 30%, target significantly exceeded).
- 267 sanitary and environmental certifications (no target).
- 258 Operation and Maintenance (O&M) plans were prepared to ensure their operational continuity post-project (no target).
- 251 accounting systems were implemented to track financial transactions (purchases, sales and liabilities) and improve decision-making (no target).
- 100% Financial analyses completed. (target achieved).
- The project financed 49,448 hours of capacity building technical assistance to POs (110% of target).

Outcome

The PDO outcome indicator "real revenue increase (inflation adjusted) of the beneficiary rural producers’ organizations" increased by 33% compared to a revised target of 5% and an original target of 20%. The ICR (para 23) noted that revenue indicator was measured through the project’s economic and financial analysis using 2017 as a base year and income generated in 2018. The analysis used a sample of 69 producer organizations that represented the type of sub-projects financed. However, this sample was not randomly chosen. The ICR reported that economic resilience was boosted for 230 beneficiary POs selling their product to at least one new buyer as a result of project technical and financial support.

While the reported results were encouraging, the methodology used raises concern. The non-random choice of the sub-projects raises the possibility of sample bias and skewed results. Also, the attribution of the results to the project activities was not clear in the ICR. The ICR (para 24) also acknowledged that the revenue...
indicator was not the best choice because "a reduction in the POs’ income flow could be experienced with an increase in revenue together with a more than proportional increase in expenses." Finally, the Bank’s Development Impact Evaluation unit (DIME) conducted an impact evaluation study of a representative sample of sub-projects where the study showed "no statistically significant effects on revenues between Treatment groups and Control group" (ICR, para 26).

Therefore, and based on the above-mentioned assessment, efficacy of this outcome is rated Modest.

Rating
Modest

OBJECTIVE 3
Objective
To contribute to the Borrower’s efforts to universalize access to Water Services.

Rationale
Theory of Change. The theory of change is the relationship between activities, outputs from those activities and the final outcome (to contribute to the Borrower’s efforts to universalize access to Water Services). In this case change is facilitated by a number of critical elements including: inter/intra agency collaboration, strong institutional capacity among producer organizations, and low implementation risks.

The project would support the preparation and implementation of potable water and basic sanitation and infrastructure investments. It would also support scaling up existing water distribution and management system models. These activities would result in sustainable operation of basic sanitation investments and the implementation of the water use pilot projects. Beneficiaries would also be trained in water service system management. The expected outcome is that the State of Ceara would reduce the gap in access to water services and basic sanitation. The higher level outcome was expected to be a more resilient water services system.

The theory of change included clear links between the stated activities and expected outcomes.

Outputs

- 211 basic sanitation investments were implemented and sustainably operated (target: 210, achieved).
- 15 water reuse pilot projects implemented with project support (target: 13, exceeded).
- 424 beneficiaries trained in water services systems management (target: 420, slightly exceeded).
- 144 training sessions were provided to governmental staff and strategic partners according to the project capacity building plan (target: 80, significantly exceeded).
- 57 wells were drilled (no target).
- 2 ultrasonic flow meters, 212 macro meters, 8 well level gauges, 2 solar panel kits and 15 solar panels were purchased and installed (no targets).

Outcome
As a result of the project supported activities, the number of new piped water connections reached 26,198 households, substantially exceeding the revised target of 22,000 households and the original target of 10,000 households. According to the ICR (para 25 and footnote 21) the project investments in water and sanitation services (WSS) benefited 110,055 water insecure people of which 70,393 beneficiaries received piped water connections; and 39,662 beneficiaries received sanitary modules representing 9,973 households (target achieved). A Perception Survey sampled three cohorts totaling 168 people of which 91 were men and 77 women: community leaders (statistically significant sample with 90% confidence); health agents; and some families benefiting from project-financed WSS (not statistically representative and only included to cross refer data) found that: 97% of respondents reported changes stemming from water connection, including: continuous access to water, better quality of life, and time savings for other activities. Also, 61% of associations, 31.4% of families and 84.6% of health agents reported that access to water reduced the costs of capturing/acquiring water; and 78.3% of associations, 80% of families, and 100% of health agents, reported that improved access to water services resulted in reduced incidence of diarrhea, allergies and vermin, and better personal and spatial hygiene. The impact of improved water services on agri-business activity was not documented in the ICR due to lack of relevant indicators. While the ICR (para 27) emphasized that the lack of water and sanitation services represented a significant limitation on agri-business development in general and especially for food processing, the impact of the project investments in water and sanitation services on improving agri-business was not captured. In a further communication, the project team explained that "the impact on project agri-business activities was not intended to be measured. Consequently, the project design did not need to add an indicator or operationally interlink Component 1 and Component 2."

Based on the above-mentioned assessment, efficacy of this outcome is rated High based on the over achievement of outcome targets.

Rating
High

OVERALL EFFICACY

Rationale
Overall efficacy is rated Substantial. The evidence provided points to the success of the project in supporting the borrower to universalize access to Water Services (third objective) through supporting investments in water and sanitation services. The first objective (to improve the sustainability of rural production) was rated Substantial because the project significantly achieved its outcome target. However, more time was needed to assess the full impact of sub-projects on productivity as the majority were implemented over the last two years of the project. The second objective (improving rural income generation) was rated Modest due to concerns about the revenue calculation methodology, which should have relied more on the producer organization accounting system data to provide a more realistic assessment.

Overall Efficacy Rating
5. Efficiency
Economic and Financial Efficiency

**ex ante**

- A detailed economic and financial analysis was not carried out at appraisal due to the demand driven nature of the project supported activities.
- To determine the financial soundness of investments likely to be supported by Component 1, indicative production models were constructed using primary and secondary information collected during project preparation. Indicative models of productive projects include: production and marketing of irrigated (fruit and vegetable) crops, honey production and marketing, milk processing and marketing, and fish farming, processing and marketing.
- The estimated rates of return (IRRs) for the indicative models ranged from 47% for milk activities, 48% for honey and fish farming and 75% for fruits and vegetables.
- A sensitivity analysis showed that, in general, the projects were robust with respect to the variability of running costs and output prices. Fish farming and honey production were the most sensitive models with respect to changes in output prices. The most sensitive model with respect to running costs is for milk.
- The benefit/cost ratio and the economic rate of return were estimated for Component 2 based on cases drawn from the Implementation Completion and Results (ICR) report for the Rural Poverty Reduction Project of Ceará (December 2009), a precursor to this project.
- The economic analysis of potable water supply projects under the third objective showed positive results, yielding an economic IRR of 18% and a benefit/cost ratio of 1.48, meaning that for every R$100.00 invested the project would return R$148.00.
- A sensitivity analysis showed that even when assuming a cost increase of 10% from the base scenario and a simultaneous 10% decrease in revenues, the economic IRR remains above the discount rate, at 11%.

**ex post**

- The overall Economic Rate of Return (ERR) for the project was estimated at 13.78% with an economic net present value (NPV) of US$15.1 million. For Component 1, the result was a break even with an NPV of US$0.68 million and an IRR of 10.4%. For Component 2, the EIRR was 16.19%, with an ENPV of US$14.5 million. A 10% discount rate was used, and benefits were estimated over a twenty year period.
- The financial and economic assessment for component 1 was conducted on 69 participating organization representing 1,870 farmer families. These represented participants in various types of value chains (dairy production, goat meat production, tubers, fruit (including cashew nut), bee keeping, fish farming, and handicrafts) supported by the project.
- The analysis focused on incremental net benefits at market and social prices based on data collected from each of the sampled sub-projects under the scenarios “with-project” and “without-project”. Key indicators of financial performance included Net Present Value (NPV) over a 15-year period and Internal Rate of Return (IRR) for the same period. The financial analysis used a discount rate of 10% (the same rate used at the appraisal stage).
The Internal Rates of Return at completion were: 7% (fish), 16% (fruit), 18% (honey), and 25% (milk). While these IRRs were modest when compared to the appraisal estimates, the ICR (para 31) noted that "many sub-projects still need to achieve their expected productivity or production levels, to ensure sustainable profitability."

For Component 2, the analysis focused on the economic benefits to beneficiary families that resulted from increased access to improved water (reduced time spent fetching water), and improved sanitation (reduced prevalence of water borne disease, and related reduction in Disability-Adjusted Life Years).

Improved access to water and sanitation services and related reduction in Disability-Adjusted Life Years (DALY), was converted to an economic benefit by using health economics parameters, as calculated for Ceará State and applying them to the cumulative annual number of beneficiaries under Component 2. The economic value of savings in time spent fetching water was calculated assuming that families (including working adults) previously spent up to two and a half hours daily on this task, and valuing part of this time using the shadow wage rate. A social discount rate of 10 percent was used, consistent with the economic analysis rate used at appraisal. The EIRR for component 2 was estimated at 16.19% with an economic NPV of US$14.5 million.

The ex post EFA was robust and provided a convincing case for investments in water and sanitation activities, but less so for investments in productive sub-projects.

Administrative and Institutional Efficiency

The project closed on April 30, 2019 compared to an original closing date on October 31, 2016 (30 months beyond the original closing date). The project experienced start-up delays, and inefficiencies during implementation (ICR, para 35). Despite a 30 months extension, 18% of all productive investments were yet to be completed. Limited supervision capacity at the PMU and its Project Territorial Management Units led to problems with contractors, which consequently delayed the execution of works related to low cost water systems (ICR, page 21). The lack of a chronogram of project activities contributed to implementation delays as the implementation proceeded across a broad front "with institutional teams and POs learning by doing (ICR, p. 21)." There were also delays caused by the adoption of two different software programs to assess the feasibility of POs business plans. The first software was too complex and was substituted by a another one. However, this resulted in business plans of uneven quality. This situation combined with many plans lacking marketing strategies and economic and financial analysis resulted in 31% funding rate for 870 plans submitted between 2013-and 2015- time frame (ICR, page 22). Delays also resulted from the devaluation of the Brazilian Riyal against the US Dollar as costs budgeted for works required adjustments. This in turn contributed to delays in both the tendering and procurement process, and initiation of works (ICR, page 23). Finally, the decentralized procurement approach contributed to implementation delays because according to the ICR (p. 65) "each farmer organization is responsible for procuring what is in its business plan, several years can pass between the preparation of a sub-project, its financing, and its implementation, including procurement of works, goods and services." This arrangement combined with domestic inflation resulted in insufficient budget to complete works at times and additional financing was required. The ICR (p. 65) reported that "in several cases, works ended up consuming a larger share of the budget, or works get partially done." However, it was not clear in the ICR how extensive this problem was.

Overall, Efficiency is rated Modest. While the overall ERR at project closure was estimated at 13.78% (above the 10% discount rate), investments under component 1 were at a break even with an IRR of 10.4%. There were also administrative and institutional weaknesses, including start-up delays, procurement-related delays, among others. Finally, by project closure 18% of the productive investments were still not completed.
Efficiency Rating
Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

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* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

Relevance of Objectives is rated Substantial. Overall Efficacy is rated Substantial. The evidence provided point to the success of the project in supporting the borrower to universalize access to Water Services (third objective-rated Substantial) through supporting investments in water and sanitation services. The first objective (to improve the sustainability of rural production) was rated Substantial because the project significantly achieved its outcome target. However, more time was needed to assess the full impact of sub-projects on productivity as the majority were implemented over the last two years of the project. The second objective (improving rural income generation) was rated Modest due to concerns about the revenue calculation methodology, which should have relied more on the producer organization accounting system data to provide a more realistic assessment. Efficiency is rated Modest due to a low ex post IRR for investments under the first objective (component 1), and substantial administrative and institutional weaknesses.

Based on a Substantial rating for both Relevance of Objectives and Efficacy and a Modest rating for Efficiency, the Outcome rating is rated Moderately Satisfactory.

a. Outcome Rating
Moderately Satisfactory

7. Risk to Development Outcome

The ICR (para 55) stated several issues that could potentially impact the development outcome. These include:

- At the State and Federal levels, the policy environment continues to be supportive to sustainable small farmer economic inclusion. A Bank-funded follow-on project under SDA convenes other agencies and will foster closer intersection between the productive inclusion and water sectors. Also, to safeguard their achievements and income improvements, producer organizations are expected to
continue the application in an organized way of improved water and soil technologies, and basic, sound business practices. Based on the sound policy environment, this risk is modest.

- Producer organizations can not diversify access to new markets as they are legally restricted to selling to programs that have traditionally benefited family farmers. To overcome this situation, producer organizations either work with cooperatives or modify their legal status and become a cooperative. Cooperatives have greater financial flexibility compared to producer organizations. Since POs have the option to change their status to cooperatives, this risk is modest.

- The productive sub-projects that were initiated late in the project will continue to receive support from the State Rural Extension and Technical Assistance Company. Overall, additional support will be focused on management, production planning, marketing and organization. This risk is modest in light of the continued support from the State Rural Extension and Technical Assistance Company.

- The operational sustainability of water service investments working under a community-based service model, and supported through federations and the state water supply company, relies on the active participation of stakeholders. The tariffs are designed to recover operational costs, labor costs for SISAR technical assistance agents, maintenance costs, and short-life-span assets. Given this characteristic as well as the design of tariffs this risk is modest.

- The State of Ceará is a drought-prone region. Organized beneficiaries need the support of the state government to mitigate the impact of climate shocks. Investments in climate mitigation and adaptation measures would reduce vulnerability and improve capacity of beneficiaries to recover from shocks. Depending on the effectiveness of the climate mitigation measures, this risk could be either modest if measures are effective or substantial if measures are ineffective.

8. Assessment of Bank Performance

a. Quality-at-Entry

The Bank identified an operation that was consistent with the State's strategic plan (see section 3). The project design benefited from the experience of other projects implemented in the State and the Country. Notable lessons reflected in the design included: supporting partnerships with social organizations, supporting the poor rural producers, which must be underpinned by verifiable market opportunities, and supporting competitive clusters to reach sufficient critical mass to acquire and develop state-level or national visibility. Design featured a transition from traditional Community Driven Development (CDD) to a market-oriented model that relied on business plans with economic analysis. However, the project retained aspects of the CDD approach due to the heterogeneity of the beneficiary pool (ICR, para 44). Design was ambitious and complex with two parallel components that did not "intersect operationally" (ICR, para 44).

There were notable design shortcomings, first, the four-year implementation period was too short to implement a complex project- when comparable similar projects in Brazil and the wider Latin America region were five to six years or longer; second, the multi-sector approach and associated technical requirements were challenging for the capacity of both the implementing institutions and the targeted beneficiaries; third, the market-oriented approach was not the best option for a heterogeneous set of beneficiaries with uneven technical and organizational capacities and “distinct cultural and legal characteristics and landholding situations” (ICR, para 44); fourth, the technical capabilities of producer organizations and the infra-structure required for implementation were both not assessed at appraisal-
which resulted in significant implementation delays (ICR, para 53), for example, the lack of internet connectivity prevented/delayed beneficiary groups under Component 1 from completing their environmental licensing approval after effectiveness; and fifth, implementation arrangements featured thirteen implementation units, but without assessing whether "the professionals in each unit met the minimum requirements to fill the technical and administrative positions needed for comprehensive project execution (ICR, para 53)."

While the risk analysis in the PAD stated seven likely challenges, it was "brief and incomplete (ICR, para 44)". At appraisal, the overall implementation risk was rated Moderate based on the Bank’s long-term partnership and familiarity with the State. This Review is in agreement with the ICR that Risk ratings were understated and the customary PAD risk matrix was not used. The PAD included several risk mitigation measures that were customary to projects in Brazil. However, risks associated with design, diverse and vulnerable beneficiaries, a two-pronged multi-sector approach and the associated technical sophistication were overlooked (ICR, para 44).

M&E design and implementation had weaknesses and limitations (see section 9 for more details).

Overall, Quality at Entry suffered from major shortcomings, notably several design weaknesses and overlooked risks. Therefore, Quality at Entry is rated Moderately Unsatisfactory.

Quality-at-Entry Rating
Moderately Unsatisfactory

b. Quality of supervision
The ICR (para 53) reported that supervision missions included an adequate skill mix and provided timely guidance to implementation. However, limited attention was given to sub-project marketing aspects despite the presence of agribusiness specialists among the Bank team (ICR, para 53). The ICR did not report on the number of supervision missions that supported the project. The project implementation benefited form the action plans that were put in place through a combined effort between the Bank and the project implementation unit. While the Bank provided necessary procurement support, the procurement mechanism—which was built around POs, continued to be problematic due to limited capacity of POs. The Bank team worked with the Borrower on several restructurings to introduce relevant changes to the project design, among others. The project was also extended by a total of thirty months to compensate for slow implementation, slow disbursement rate, and a notably short implementation time-frame in the original design. Financial management and procurement both benefited from the Bank's technical support.

The Bank could have used the project restructurings to strengthen the RF. Also, more attention could have been given to M&E activities to address design weaknesses, strengthen data collection and analysis. Also, more attention should have been given to adapting training sessions to match the skills and technical capabilities of beneficiaries.

Based on the above-mentioned assessment, Quality of Supervision is rated Moderately Satisfactory due to moderate shortcomings.
Overall, the Bank Performance is rated Moderately Satisfactory because the outcome of the project was in the satisfactory range.

**Quality of Supervision Rating**
Moderately Satisfactory

**Overall Bank Performance Rating**
Moderately Satisfactory

### 9. M&E Design, Implementation, & Utilization

#### a. M&E Design

The PAD did not include an explicit theory of change (ToC) which was not a requirement at the time of appraisal. Nonetheless, the ICR (p. 2) included a ToC that laid out the relation between project activities, outputs/intermediate outcomes and outcomes and higher level outcomes. The project would be monitored and evaluated through the existing Management Information System (MIS) and databases developed by Ceará State Secretariat of Water Resources in the context of previous Bank-supported operations. An impact evaluation would be conducted to determine whether and to what extent the interventions under Components 1 (first objective) and 3 (third objective) lead to improved outcomes for producers' organizations and the families in those organizations (PAD, para 31).

The PDO was to be assessed through four outcome indicators: 1. Real revenue increase (inflation adjusted) of beneficiary rural producers' organizations, 2. New piped household water connections that result from project intervention, 3. Number of people in rural areas with access to improved sanitation under the project, and 4. Increased number of beneficiary organizations participating in environmental recovery activities. While these indicators were linked to the PDO, three indicators (2, 3, and 4) were outputs rather than outcome indicators, and all indicators lacked a baseline (ICR, p. 20). The Borrower Completion Report (BCR, 2019) noted that "indicators were overly sophisticated for the context" and were "not generated through a consultative process" (ICR, p. 20). The assessment of the PDO could have benefited from the inclusion of indicators to assess increments in productivity, and improvements in market access in project areas.

The Results Framework include fourteen intermediate outcome indicators to assess different activities supported by the project. The ICR (p. 24) correctly pointed out that the wording of some intermediate outcome indicators was confusing, and some lacked clarity on what exactly needs to be measured. For example, the intermediate outcome indicator “25% of productive investments led by women” was not clear, and “Participating rural producers’ organizations successfully accessing formal markets” which assumed that small farmers would be more likely to market through such channels than private markets. Also, “Pilot payment for environmental services mechanism established and operational for sustainable land use practices” was later dropped due to design and indicator validity issues.

Overall, M&E design was weak, and the RF included poorly defined indicators, and the PAD lacked details on implementation arrangements.
b. M&E Implementation

Data was collected and analyzed by the project management unit (UGP). While the UGP M&E team were able to remotely access and upload data to the MIS system, the system was only partially developed due to the cancellation of a contract for MIS update. According to the ICR (para 45), UGP suffered from persistent weaknesses in specific aspects of M&E management. The project information management system (SIGPRO) was never fully functional due to technological issues. The planned impact evaluation of Component 2 (Water Services) was not implemented. A perception survey-conducted as part of the borrower completion report, applied to a statistically representative sample of community leaders and other relevant parties at closing partially compensated for the lack of the afore mentioned impact evaluation.

Revisions to the Results Framework. Through four restructurings that included two extensions the Bank worked with the Borrower to introduce changes to the RF including: adjusting the wording of indicators, adding new indicators to adequately capture project activities and the intent of the PDO, and dropping some indicators due to declining relevance. While these changes were relevant and needed, they did not fully address RF design weaknesses. Also, this review agrees with the ICR that the downward revision of the PDO revenue indicator target (from 20% to 5%) one year before closing was questionable.

Overall, implementation suffered from weaknesses and could have benefited from stronger Bank support through regular training and mentoring.

c. M&E Utilization

According to the ICR (para 43), the project implementation unit (UGP) coordinated the delivery of a strong borrower completion report that provided valuable insights to the ICR. UGP also disseminated key data sets, produced annual progress reports, coordinated planned studies and complied with fiduciary reporting requirements. M&E utilization was negatively impacted by weaknesses in technology installation and uptake combined with limited institutional capacity to coordinate and manage the system. That said, the ICR (para 44) emphasized that “the data available for the ICR and quality of analytical products facilitated the final assessment of performance and achievements.”

Overall, M&E is rated Modest due to design and implementation weaknesses. Utilization could have been better if technological and capacity issues were addressed earlier in the project, as these hindered management and coordination of the M&E system.

M&E Quality Rating
Modest

10. Other Issues
a. Safeguards

The project was classified as an environmental Category B. It triggered eight safeguard policies at appraisal: Environmental Assessment OP/BP 4.01, Natural Habitats OP/BP 4.04, Forests OP/BP 4.36, Pest Management OP 4.09, Physical Cultural Resources OP/BP 4.11, Indigenous Peoples OP/BP 4.10, Involuntary Resettlement OP/BP 4.12, and Safety of Dams OP/BP 4.37. The project was not expected to entail any potential large-scale, significant and/or irreversible negative impacts. The supported activities were expected to be small-scale, market-oriented/driven investments. These investments would not cause significant adverse environmental impacts. "Potential adverse impacts from projects were expected to be limited, site-specific, largely reversible, and readily and reliably mitigated through known methods" (PAD, para 54).

Environmental Safeguards. According to the ICR (para 46) there was close cooperation between the Bank and the project to "devise and adjust environmental assessment tools for all investments." Funding for sub-projects was only released after environmental approval by the State Superintendence of the Environment. Implementation of environmental mitigation measures was supervised by an Environmental Coordinator and expert team in the Project Management Unit. Producer organizations and community associations benefited from training on the adoption of climate smart agriculture. According to the ICR (para 46) "no situations arose to trigger physical cultural resources or dam safety and these safeguards were assessed by the Bank specialist as being in compliance." The ICR did not provide an explicit statement of compliance with environmental safeguards.

Social Safeguards. An Indigenous Peoples Planning Frameworks (IPPF) and the Resettlement Policy Frameworks (RPF) were prepared and disseminated by the project. 485 families distributed in three indigenous groups, benefited from productive investments. According to the ICR (para 47) "land acquisition did not result in adverse impacts associated with involuntary resettlement." A multilevel feedback and GRM (grievance) mechanisms were established. The PMU technical staff benefited from social training to better serve vulnerable groups. According to the ICR (para 47) "overall compliance with social safeguards was Satisfactory and social risk was Low."

b. Fiduciary Compliance

Financial Management. According to the ICR (para 48) the borrower benefited from financial management training and demonstrated best-practice in managing fund transfers to local organizations. Despite receiving training in financial management, producer organizations and community associations experienced procurement and contract delays. Close monitoring by the Bank and the implementation of an action plan enabled financial management to establish the standards required by the Bank. The ICR did not report on audit reports. The project suffered from uneven flow of funds which according to the ICR (para 49) "penalized the implementation of project investments and acted as a disincentive to the involvement of a greater number of the producer organizations."

Procurement. Procurement suffered from lack of technical capacity at the PMU level and the local level. This contributed to contracting delays that negatively impacted implementation of activities. Also, the complex internal flow of funds contributed to further delays (ICR, para 50). Currency devaluation required re-costing of contracts which caused delays. To accelerate procurement processing at the sub-project
level, the Bank provided mentoring and training and the borrower hired consulting firms. Overall, procurement suffered from implementation inconsistencies, as indicated above (ICR, p. 28, footnote#43).

c. Unintended impacts (Positive or Negative)

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d. Other

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11. Ratings

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12. Lessons

The ICR included six lessons. The following two are emphasized with some adaptation of language:

- **To ensure efficient execution of economic inclusion projects, analytics requires sufficient preparation and dedicated resources to conduct a realistic assessment of target beneficiaries, the capacity of supporting institutions and the operational context.** The project's experience showed that rigorous selection criteria combined with technical expertise which hones in on building the organizational and business skills (and social cohesion) needed for PO growth and survival. Also, well programmed, tailored interventions that equalize to the extent possible, access to project opportunities and potential to succeed are needed for PO growth and survival. Agri-business marketing expertise in both the Bank and Borrower teams is also essential to provide necessary support during implementation.

- **To ensure capturing the expected outcomes, the M&E design needs focused attention on all key themes of the PDO.** PDO Indicators and Intermediate Results Indicators need to capture the breadth and depth of expected outcomes, be unambiguous and measurable, and set reasonable targets. While restructuring is an option in circumstances where an indicator loses relevance, a sound strategy for upstream design of M&E can avoid repeated efforts to re-design and calibrate the RF, and disagreement over measurement methodology.
13. Assessment Recommended?

Yes

Please Explain

Further assessment is required to verify the sustainability and profitability of the project supported productive investments, since the majority of these were completed towards the end of the implementation period-leaving limited time to demonstrate their performance.

14. Comments on Quality of ICR

Quality of Evidence. The ICR acknowledged that M&E design and implementation were both weak. The ICR alternatively relied on the Borrower Completion Report and the Participation Survey to triangulate evidence.

Quality of Analysis. The ICR provided clear linking between evidence and findings. However, the impact of project activities on productivity, market access and irrigation was not covered in detail due to the lack of relevant indicators.

Extent to which lessons are based on evidence and analysis. Lessons were based on the project experience although they could be tied more explicitly to project experience.

Results Orientation. The ICR included a good discussion on outcomes despite concerns on the accuracy of the M&E data. More weight could have been given to discussing the PDO and its different elements beyond the achievement of outcome indicators.

Internal Consistency. Various parts of the ICR were logically linked and integrated.

Consistency with guidelines. Most of the assigned ratings in the ICR were justified and backed by sound arguments, except for the first and second objectives -where the ratings were generous. The split assessment of outcome in the ICR was confusing as it used two periods: from effectiveness to April 30, 2018 as pre-restructuring and from May 1, 2018 to October 31, 2019 as the post restructuring period.

Conciseness. The ICR provided thorough coverage of the implementation experience and candidly reported on shortcomings. There was enough clarity in the report’s messaging. However, the performance story lacked details due to the poor design of the Results Framework. The ICR could have reported on the number of supervision missions and the risks identified at appraisal whether any materialized and efficacy of mitigation measures. Finally, the Theory of Change could have benefited from a brief discussion rather than only presenting it as a chart.

Overall, the ICR Quality is rated Substantial, despite minor shortcomings.

a. Quality of ICR Rating
Substantial