



1. Project Data

Project ID

P122065

Project Name

West Africa Agric Prod Progrm (WAAPP-1C)

Country

Western Africa

Practice Area(Lead)

Agriculture and Food

L/C/TF Number(s)

IDA-48770,IDA-48830,IDA-59520,IDA-59530,IDA-59540,IDA-59550,IDA-H6490,IDA-H6510,IDA-H6520,IDA-H6540,TF-10826,TF-99510,TF-99511,TF-99557,TF-99674

Closing Date (Original)

30-Jun-2016

Total Project Cost (USD)

184,464,010.86

Bank Approval Date

24-Mar-2011

Closing Date (Actual)

31-Dec-2019

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	83,800,000.00	40,000,000.00
Revised Commitment	190,078,194.13	39,691,452.28
Actual	184,636,036.43	39,691,451.87

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2. Project Objectives and Components

a. Objectives

The West Africa Agricultural Productivity Program (WAAPP) was a two-phase, ten-year, horizontal and vertical APL to support the implementation of the Economic Community of West African States Regional Agricultural Policy (ECOWAP) through implementation of the Comprehensive Africa Agricultural Development



Program's (CAADP) fourth pillar. The APL followed a horizontal or a multi-country approach that started in 2007 (WAAPP-1A) with IDA financing to three countries (Ghana, Mali, and Senegal) followed in 2010 (WAAPP-1B) by an IDA financing for additional three other countries (Cote d'Ivoire, Burkina Faso and Nigeria). The project WAAPP-1C expanded the program's geographic coverage to all candidate Economic Community of West African States (ECOWAS) countries (Benin, Cote D'Ivoire, Guinea, Liberia, Niger, Sierra Leone, Togo and The Gambia).

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

"generate and accelerate the adoption of improved technologies in the participating countries' top agricultural commodity priority areas that are aligned with the sub-region's top agricultural commodity priorities, as outlined in the Regional Agricultural Policy for West Africa (ECOWAP)."

The project had Financing Agreements (FAs) with above-mentioned beneficiary countries. The PDO stated in all FAs was virtually identical to the one stated in the PAD. For example, the PDO stated in the Togo FA (page 6) was to:

"generate and accelerate adoption of improved technologies in the Participating Countries' top agricultural commodity priority areas that are aligned with the sub-region's top agricultural commodity priorities as outlined in the Regional Agricultural Policy for West Africa (ECOWAP)."

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

No

c. Will a split evaluation be undertaken?

No

d. Components

The PDO was supported by the following four components:

1. Enabling Conditions for Sub-Regional Cooperation in the Generation, Dissemination, and Adoption of Agricultural Technologies (appraisal cost: US\$9.26 million, actual cost: US\$11.98 million). This component aimed to allow ECOWAS member countries to benefit from those technologies. In the specific context of the Mano River Union (MRU) countries, this component aimed also at strengthening the institutional mechanisms and procedures for integration of regional rice markets and cross-border/national dissemination of technologies.

2. Strengthening National Centers of Specialization/Strengthening of the Research System (appraisal cost: US\$38.30 million, actual cost: US\$48.35 million). This component will support the strengthening of NCOS in Niger for livestock, Benin for maize, and Sierra Leone for mangrove rice, while for countries including Togo, Liberia, and The Gambia it will only focus on strengthening capacities for adaptive research and technology transfer.



3. Funding of Demand-Driven Technology Generation and Adoption (appraisal cost: US\$50.33 million, actual cost: US\$83.13 million). This component would finance priority-focused agricultural research and advisory services within participating countries and complementing core program activities financed under Component 2.

4. Project Coordination, Management, Monitoring and Evaluation (appraisal cost: US\$15.00 million, actual cost: US\$40.73 million). This component would finance activities that aimed to ensure an effective and efficient management and coordination of the Project at national and regional levels.

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

Project Cost. The total project cost was expected to be US\$120.69 million. The actual disbursed amount according to the ICR (page ii) was US\$184.66 million. The difference between appraisal and actual amounts was due to additional financing (AF) and co-financing to the project (see below for more details).

Financing. The project was financed through an International Development Association (IDA) Credit worth US\$83.80 million, with a maturity of 40 years, including 10 years of grace period. Co-financing totaled US\$23.00 million, and included US\$18.0 million from Japan's Policy and Human Resources Development (PHRD) and US\$5.00 million from the Food Price Crisis Response - Multi-Donors Trust Fund-Core. Additional Financing totaled US\$68.00 million as IDA Credit. Additional co-financing was US\$17.00 million from Japan's Policy and Human Resources Development. Total financing to the project was US\$190.00 million. The actual disbursed amount was US\$184.66 million (ICR, page ii). This included US\$144.87 million of IDA Credit, US\$4.91 million from the Food Price Crisis Response - Multi-Donors Trust Fund-Core, and US\$34.78 million from Japan's Policy and Human Resources Development.

Borrower Contribution. The Borrower countries were expected to contribute a total of US\$13.90 million of counterpart funding. The ICR reported that Borrower countries did not provide any counterpart funds. No reason was given for this shortfall.

Dates. The project was approved on March 24, 2011 and became effective on August 1, 2011. No date was provided on the Mid-Term Review (MTR). The project closed on December 31, 2019 compared to an original closing date on June 30, 2016. The ICR (paragraph 23) stated that extending the closing date from March 31, 2017 to December 31, 2019 was to allow implementation of the AF activities. However, no reason(s) were provided for the other stated closing date extensions.

The project was restructured ten times, all of which were Level 2, as follows:

1. On September 27, 2012, when the amount disbursed was US\$9.69 million, in order to change the Loan Closing Date(s) and change the financing plan.
2. On October 7, 2014, when the amount disbursed was US\$72.77 million, in order to reallocate funds between disbursement categories.



3. On December 23, 2014, when the amount disbursed was US\$83.10 million. The ICR did not report a reason for this restructuring.
4. On May 25, 2015, when the amount disbursed was US\$91.57 million, in order to change the Loan(s) closing dates.
5. On November 18, 2015, when the amount disbursed was US\$103.02 million, in order to revise the Results Framework and reallocate funds between disbursement categories.
6. On December 7, 2015, when the amount disbursed was US\$103.40 million, in order to revise the Results Framework and reallocate funds between disbursement categories.
7. On May 24, 2016, when the amount disbursed was US\$112.61 million, in order to extend the closing dates from June 30, 2016 to December 31, 2016.
8. On December 1, 2016, when the amount disbursed was US\$118.17, in order to extend closing dates from December 31, 2016 to March 31, 2017.
9. On December 8, 2016, when the amount disbursed was US\$118.17, in order to extend the closing date from March 31, 2017 to December 31, 2019.
10. On January 11, 2017, when the amount disbursed was US\$118.64, in order to approve Additional Financing to the project.

3. Relevance of Objectives

Rationale

Context at Appraisal. While agriculture is a dominant economic sector in the Economic Community of West African States (ECOWAS), its low productivity seriously erodes the competitiveness of African products on world and domestic markets. About 65% of the ECOWAS population lives in rural areas and most depend on agriculture, which contributes 35% of the regional Gross Domestic Product (GDP) and over 15% of exports. As a net importer of cereals and livestock products, West Africa is severely affected by the current rise in global food and fuel prices. Intra-regional agricultural trade is limited and its share of total world agricultural trade is minuscule. Further, climate change is an additional challenge to rural livelihoods in this natural-resource-dependent economy. The 15 ECOWAS members, which are all low-income countries, face an urgent need to improve agricultural productivity to satisfy the food needs of the growing and increasingly urbanized population, promote sustainable economic growth, and build a strong regional agricultural market. WAAPP is a part of a larger commitment by the World Bank to assist countries to enhance long-term food availability by providing a mix of support for short-term supply responses and sustainable medium and longer-term investments for increased agricultural productivity.

At appraisal, objectives were in line with the Country Assistance Strategies (CAS) of beneficiary countries. Benin's CAS (FY09-FY12) was structured around three main strategic objectives: (i) strengthening



competitiveness and accelerating private sector-led growth; (ii) improving access to basic services; and (iii) promoting better governance and strengthening institutional capacities. Cote d'Ivoire's CAS (FY10-FY13) focused on three strategic objectives: i) helping government stabilize the country and address key conflict factors; ii) assisting war affected populations; and iii) supporting economic recovery and reform. Guinea's Interim Strategy Note (FY11-FY12, paragraph 27) emphasized the importance of the agricultural sector and the need to "increasing agricultural productivity" to provide jobs and improve incomes. Liberia's CAS (FY09-FY12) featured agriculture as an important sector for pro-poor growth. Niger's CAS (FY08-11) pillar 1 was focused on accelerating sustainable growth that is equitably shared by maintaining macroeconomic stability and strengthening competitiveness, sustainable management of natural resource. Sierra Leone's Joint country assistance strategy (FY10-FY13) identified agriculture as one of three priority areas for growth. Togo's Interim Strategy Note (FY08-FY10) featured agriculture as an important sector for economic growth. The Gambia's Joint Assistance Strategy (FY08-FY11) featured fishing, horticulture, sesame and cashew nuts as promising areas of export diversification.

Objectives were also in line with the Bank's Regional Integration Assistance Strategy (RIAS) for West Africa and its Regional Action Plan for sub-Saharan Africa, where two main objectives are emphasized: first, to make agriculture more productive and sustainable to increase economic growth, improve food security, and reduce poverty; and second to support regional integration. Objectives were also in line with the ECOWAS regional agricultural policy (ECOWAP), which in turn were aligned with the Africa-wide initiatives of CAADP and New Partnership for Africa's Development (NEPAD).

At completion, objectives continued to be in line with the "National Agricultural Investment, Food and Nutrition Security Program of each participating country and their other agricultural development programs (ICR paragraph 28)." Objectives were in line with the Bank's Country Partnership Framework for each participating country, where fostering agricultural productivity was emphasized. Benin's Country partnership framework (FY19-FY23) featured agriculture as an important sector that would receive Bank support to be more export-oriented and to contribute more to the overall economic growth (CPF, paragraph 6). Cote d'Ivoire's Country partnership framework (FY2016-FY2019) first objective was to improve productivity in agriculture/agribusiness value chains. Guinea's Country Partnership Framework emphasized that "agriculture is the main source of employment in Guinea and is critical for poverty reduction and rural development (paragraph 23)." Liberia's Country Partnership Framework (FY19 - FY24) emphasized the importance of shifting the focus of the WBG program from being infrastructure intensive under the previous CPS toward a more balanced approach with greater attention to the agriculture sector, among others (paragraph 49). Niger's Country Partnership Framework (FY18-FY22) pointed out that "agriculture and the rural economy hold the key to extreme poverty reduction in Niger (paragraph 26)." Sierra Leone's Country Partnership Framework (FY21 - FY26) stated that "a diversified economy requires improved farm and firm productivity in agriculture and fisheries, as well as growth in the services sector (paragraph 39)." Togo's Country Partnership Framework (FY17-FY20) under focus area 1 called for the "transformation of agriculture toward more productive, higher value, and sustainable smallholder and commercial production (page 17)." The Gambia's Country Engagement Note (FY18-FY21) pointed out that "modernized agriculture, agribusiness, and fisheries (paragraph 46)" was a priority among seven others in the Government's National Development plan.

Objectives were also in line with the Bank's Africa Strategy: Supporting Africa's Transformation (2019–2023), which aimed to build the foundation for a resilient and sustainable Africa, including climate-smart agriculture. Objectives were also in line with the African Union's (AU) adoption of the Malabo Declaration on



Accelerated Agricultural Growth and Transformation in January 2014. The AU member states renewed their commitment to the CAADP goal of achieving a 10% target for public spending on agriculture, doubling agricultural productivity, and sustaining annual growth in the agricultural sector of at least 6%. Objectives were also in line with the second goal “to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture.” of the 17 Sustainable Development Goals adopted by the United Nations (UN) in September 2015. Further, objectives were in line with the fifth goal of the AU Agenda 2063 (2013–63), which emphasized the need for modern agriculture for increased productivity and production. Objectives were also in line with the aims of the African Continental Free Trade Area (AfCFTA-2019), which called for creating a single continental market for goods and services. Finally, objectives were also in line with the Forum for Agricultural Research in Africa Science Agenda for Agriculture in Africa and the African Development Bank’s (AfDB) initiative “Feed Africa: Strategy for Agricultural Transformation in Africa, 2016–2025,” and its initiative on Technologies for African Agricultural Transformation.

The statement of objectives was broad and lacked a connection to higher level objectives, namely, increasing agriculture productivity, improving food security, reducing poverty; and supporting regional integration.

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

Rating

Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

PDO: to generate and accelerate the adoption of improved technologies in the participating countries’ top agricultural commodity priority areas that are aligned with the sub-region’s top agricultural commodity priorities, as outlined in the Regional Agricultural Policy for West Africa (ECOWAP).

Rationale

Theory of Change (ToC). The project sought to support the eight beneficiary countries in addressing the constraints to agricultural productivity and development. To achieve the stated PDO, the project aimed to activate three key drivers of change, namely, generating, facilitating access to, and accelerating the adoption of improved agricultural technologies and innovations. The project would support developing common strategies to promote the use of improved technology and innovation. The project was expected to: promote positive and sustainable change in agricultural productivity (particularly yield increases) that would increase incomes, reduce periods of hunger, and improve regional food security and (ii) contribute to agricultural



regional integration. Further, the AF was expected to achieve additional positive outcomes in the form of improved nutrition, job creation, and higher incomes through support for private sector development.

The achievement of the PDO was underpinned by the following assumptions: 1. Beneficiary countries are willing to adopt harmonized ECOWAS agricultural input regulations, 2. Countries are willing to exchange improved technologies and innovations; and 3. Barriers to regional trade are removed to enable smooth exchange of technology and agricultural produce.

The stated activities were directly linked to the PDO and the assumptions were logical. However, the impact of supporting regional agricultural integration and its relation to the PDO was not clearly explained.

Outputs

The outputs below were reported in the ICR (Annex 1) unless referenced otherwise.

1. Conditions for Sub-Regional Cooperation in the Generation, Dissemination, and Adoption of Agricultural Technologies Created.

- 239 varieties of which 150 from WAAPP-1C published in ECOWAS-UEMOA-CILSS Regional Species and Plant Varieties Catalog and the Quarantine Pests List, to facilitate the development of an executive regulation for seed import/export.
- All data gathered, including lists of researchers and institutions, technologies generated, and training modules, were registered in the Market for Agricultural Innovations and Technologies (MITA) digital platform set up by CORAF.
- Except for Liberia, all participating countries and CORAF set up frequently visited web-based information systems. The sites received more than 12.4 million hits—0.4 million for country websites and 12 million for CORAF websites—versus a target of 550,000.
- 26 actions plan on communication, gender, climate change, and nutrition were developed and implemented, compared to 24 planned. In addition to CORAF regional actions plans, all countries made at least 3 actions plans per country as expected, except for Liberia, which could not complete the climate change plan.

2. National Centers of Specialization (NCoS) and Research System Strengthened.

- 70% of the criteria met for NCoS Livestock in Niger and Maize in Benin to upgrade to to Regional Centers of Specialization (RCoS).
- 53 technologies were generated/adapted by NCoS countries (Benin, Niger, and Sierra Leone) against a target of 41 (achievement rate:129%).
- 48 technologies tested in non-NCoS countries (Côte d'Ivoire, Guinea, Liberia, The Gambia, and Togo), compared to a target of 45 technologies (achievement rate: 112%). At country level, only Liberia did not reach the target (2 against 6).
- 28 technologies tested outside of country of origin against a target of 29. At the country level, while Benin, Niger, and Sierra Leone met their targets, Guinea did not (with 5 technologies tested outside, against a target of 10).



- 199,716 man-days of training against a target of 124,960 (achievement rate: 160%). Except for Benin, which came very close to achieving the target (92%), all of the other countries exceeded their targets by a wide margin.
- 126 scientific exchange visits organized as planned at the regional level, although Benin, Togo, and Guinea were slightly below the target with achievement rates of 96%, 90%, and 84%, respectively.
- 478 beneficiaries of the scholarship program, of which 351 MSc and 127 PhD (compared to the target of 449 beneficiaries, of which 333 MSc and 114 PhD).

3. Demand-driven Technology Generation, Dissemination and Adoption Supported.

- 134 national research proposals executed under national Competitive Agricultural Research Grant Scheme(s) (CARGS), compared to a target of 150 (achievement rate: 89%).
- 13 regional research proposals funded by CORAF under the regional CARGS, compared to an initial objective of 15 (achievement rate: 87%)
- 165 technologies generated under national and regional CARGS sub-projects were demonstrated across the region, compared to a target of 128 (achievement rate: 129%).
- 35 nutrition-sensitive or fortified technologies adopted by processors versus 32 planned (achievement rate: 109%).
- 7,298 demonstration plots established by the public and private extension services intervening in the project, compared to an end-target of 4,870 (achievement rate: 150%).
- 34,447 mt of certified, foundation, and breeder seed produced with project support: 30,953 mt of rice compared to a target of 8,568 mt (achievement rate: 361%) , 2,611 mt of maize compared to a target of 1,040 mt (achievement rate: 251%), and 883 mt of cowpea compared to a target of 1,200 mt (achievement rate: 74%).
- 125 publications released in regional/national magazines, compared to 133 planned (achievement rate: 94%).

Outcomes

The PDO is assessed through three elements: 1. Technology generation, 2. Access to technology, and 3. Dissemination and adoption of improved technology and innovation. These are measured by the level of achievement of the end-targets for the PDO indicators by each country and cumulatively for the eight participating countries.

1. Technology Generation. The project generated/adapted 81 technologies against a target of 60; the National Center of Specialization (NCoS) generated/adapted 53 technologies against a target of 41 (129% achievement rate). According to the ICR (paragraph 35), "all countries with NCoS met the target, generating and widely disseminating several improved high-yielding and climate-smart varieties and other productivity-enhancing technologies." However, none of the three NCoS supported under the project were upgraded to Regional Centers of Excellence (RCoE), but two (the livestock center in Niger and maize center in Benin) met 70% of the criteria to do so. While there was progress in rebuilding the devastated national research system in Sierra Leone, there was limited progress on mangrove rice. The ICR attributed this limited progress to the ending of the project in 2016, and not receiving benefits from the AF for Sierra Leone (ICR, paragraph 35). The project focused on research themes identified in national action plans (enhancing agricultural productivity-38 technologies, adapting to climate change-28 technologies, and developing



nutrition-sensitive-5 technologies, and gender-responsive technologies-13 technologies) related to the priority commodities of maize (20 technologies), livestock (13 technologies), rice (12 technologies), and cassava (8 technologies). The project featured a value chain approach that emphasized attention to on-farm (36 technologies) and post-harvest technologies (17 technologies), including processing. The project revitalized the agricultural research systems through "improved with new infrastructure, laboratory facilities, and stronger human capacity (ICR, paragraph 37)." The project-supported a scholarship program that benefited 478 individuals (351 MSc and 127 PhD students) compared to the targets of 447 total, including 333 MSc and 114 PhD recipients. The project also supported south-south cooperation through a total of 126 scientific exchange visits (regional target achieved) to Brazil, China, India, and Israel. However, individual country targets showed some variation with 96% rate of achievement for Benin 96% rate of achievement, 90% for Togo, and 84% for Guinea.

The National Competitive Agricultural Research Grant Scheme(s) (CARGs) funded the implementation of 134 research projects against a target of 150. Research projects covered both the production side (variety development, animal breeding) and other stages of the value chain (processing, conservation, storage). The ICR (paragraph 38) reported that "country level targets were met except for Liberia (where no CARGS was set up because of a lack of local capacity) and Sierra Leone (where only 2 of 18 proposals qualified for funding against a target of 5)." The regional CARGS-established by the West and Central African Council for Agricultural Research and Development (CORAF), supported the implementation of 13 regional projects against a target of 15 (an achievement rate of 87%). Regional projects included: dissemination of fruit fly control technologies and capacity building of stakeholders in West African fruit value chains; increased farmers' access to certified seed; dissemination of the System of Rice Intensification (SRI); training stakeholders to use climate information to enhance resilience in the agricultural sector; supporting soil fertility research; and responding to outbreaks of fall army worm. In total, 11 technologies (against a target of 11) were disseminated through regional projects on 12,000 hectares, reaching 53,000 direct beneficiaries (ICR paragraph 38). Countries without National Center of Specialization (NCoS) (Guinea, Liberia, The Gambia, and Togo) tested 48 technologies generated in other countries, against a target of 45 (107% rate of achievement).

2. Access to Technology. The project contributed to the adoption and implementation of harmonized regional regulations and guidelines facilitating access to cross-border technologies, establishing a regional strategy on communication and knowledge; management, publication of regional catalogs; and rebuilding country seed systems with seed multiplication programs to improve producers' access.

- The adoption and implementation of harmonized regional regulations and guidelines facilitating access to cross-border technologies. The WAAP in coordination with CORAF facilitated the adoption and implementation of region-wide regulations on genetic materials, pesticides, fertilizers, and veterinary products. Also, national seed committees were established and operational in all beneficiary countries.
- Regional strategy on communication and knowledge management. The communication for development (Com4Dev) strategy was supported by the project. The strategy was used by participating countries to create their respective communication action plans. According to the ICR (paragraph 42) communications improved at the national and regional levels with CORAF coordination. Such improvements were reflected in the availability of videos and newsletters on successful technologies generated by the NCoS on the national and CORAF websites, and promoted widely on social media (Twitter and Facebook). The project-supported Market for Agricultural Innovations and Technologies (MITA) digital platform helped producers and other value chain actors to learn about the availability of technologies in the region and how to obtain them.



- Publication of regional catalogs. The Regional Species and Plant Varieties catalog, which lists 239 registered varieties, including 129 from WAAPP-1C; was issued. A Quarantine Pests List was issued, which facilitated the development of an executive regulation for seed import and export. Also, a harmonized regulatory framework for sharing and using animal genetic material (including live animals, embryos, semen, and ova for breeding or improvement of animal species) was developed by CORAF for the ECOWAS region. According to the ICR (paragraph 43) the framework was validated and submitted to ECOWAS, with adoption still pending. In total, 125 articles on WAAPP research were published in regional and national journals compared to a target of 133 (94% achievement rate).
- The project supported rebuilding Country seed systems with seed multiplication programs to improve producers' access to improved seeds. Project efforts to increase production of foundation seeds included distributing fixed and mobile seed processing units to seed cooperatives, producer organizations, and individuals to promote emerging seed enterprises at the local level. Through project support, Benin produced 2,328 metric tons (mt) compared to total sub-regional production of 2,611 mt and Guinea was the top rice seed producer with 22,480 mt. The project also supported the multiplication and importation of certified seed throughout the region. For example, Togo imported and distributed 3,505 mt of certified seed of various improved varieties to over 263,000 beneficiaries on 198,156 hectares. Guinea distributed 3,876 mt of locally produced and imported improved certified seed for rice, maize, soybeans, and sesame to over 166,940 producers. Mali in partnership with China cultivated a new rice hybrid (Mayun 1), which was procured by Guinea (15 mt) and Niger (20 mt) and distributed to over 7,000 farmers (ICR paragraph 44).

3. Technology Dissemination and Adoption.

- 165 generated technologies were demonstrated across the region under the national and regional CARGS sub-projects, against a target of 128 (129% achievement rate). According to the ICR (paragraph 46) "all countries met their targets, except for Liberia and Sierra Leone (no technology was demonstrated)." Niger demonstrated 29 technologies under the CARGS compared to a target of 14 (207% achievement rate). 7,298 demonstration plots were established by public and private extension services under the project exceeding the 5,561 targeted (131% achievement rate). However, achievement rates varied significantly by country, ranging from 333% for Togo to 66% for Niger and 43% for Benin. The project also used national dissemination plans, extension workshops, stakeholder forums, e-extension, and the internet to speed dissemination of technologies (ICR, paragraph 46).
- The project strengthened national extension systems to support wider technology adoption. According to the ICR (paragraph 47), the project strengthened the agricultural advisory and extension services through renewed infrastructure, facilities, equipment, project funding, and digital technologies. Also, the links between research and extension were strengthened through joint research and technology transfer sub-projects funded through CARGs. In Niger, the reach of extension organizations benefited from the use of e-extension with call-in centers. This approach made the organizations respond to farmers' needs more effectively. In Guinea and Niger, targeting and transparency improved through using e-voucher platforms in the dissemination of improved technologies (improved seed, breeder stock, and machinery) and government-subsidized inputs.
- 35 nutrition-sensitive technologies that included a wide range of nutrient-rich and fortified alternatives were promoted and adopted by processors, compared to a target of 32. According to the ICR (paragraph 48), all the four countries that received AF met their targets, except for Togo (6 technologies against a target of 8).



- Investment proposals were prepared to promote private investment in technology adoption. 705 investment proposals were prepared, compared to a target of 38. According to the ICR paragraph 49) all countries exceeded targets except for Benin (where no investment proposals were prepared). Guinea offered training in business plan preparation and financial management and provided matching grants of 80–90% to 75 service enterprises, IPs, producer organizations, and economic interest groups. Investments implemented by these businesses created an estimated 2,849 jobs. Togo funded 12 investment proposals against a target of 8. While beneficiaries in Niger received technical and financial management training, none of the 618 investment proposals were implemented due to delays.
- A total of 13,672 jobs were created compared to a target of 18,000 planned (76% achievement rate). Guinea and Togo met their respective targets, but Benin and Niger fell short with 68% and 33% achievement rate respectively. The ICR (paragraph 50) attributed the under achievement to "delays in implementing investment proposals."
- South-South partnership formed for technology transfer, dissemination, and adoption. The program built South-South partnerships in Brazil with Embrapa, in China with the Chinese Academy of Agricultural Sciences (CAAS) and Hebei Academy of Agriculture and Forestry Sciences (HAAFS), and with India and Israel. Notable achievements of these partnerships included a joint rice research program in Mali that resulted in the release of 10 new hybrid rice varieties that were disseminated in Guinea and Niger (ICR, paragraph 51).
- Mitigation of adverse effects of the Ebola outbreak by prompt provision and adoption of improved varieties. The project in cooperation with the Ebola Emergency Seed Support Program worked on mitigating and dampening the negative impact of Ebola epidemic on agriculture. This was through the adoption of certified seed of improved varieties. In 2015, CORAF helped to mobilize 4,384 mt of rice, maize, and cowpea seed for 240,113 farm families (45% female-headed households). In 2016, the three impacted countries (Liberia, Sierra Leone, and Guinea) multiplied 8,400 mt of seed that benefited over 450,000 additional farm families. The ICR did not explain what kind of seed was multiplied.

In summary, the technology generation, dissemination, and adoption efforts under the project resulted in 2,463,303 producers and processors using improved technologies (97% of the target) on 4,699,416 hectares (165% of the target). According to the ICR (paragraph 54) the adoption and implementation of those technologies raised agricultural productivity and incomes for beneficiaries across beneficiary countries. Notable achievements in beneficiary countries as reported by the ICR (Box 3):

- In Benin, dissemination of new maize varieties increased yields from less than 1 metric ton per hectare (t/ha) to 2.5–3.5 t/ha. Use of a new rice variety and the system of rice intensification (SRI) caused yields to increase from less than 2 t/ha up to 9 t/ha for beneficiaries. The use of polyethylene film to save labor and water in pineapple production doubled pineapple yields on average from 35 to 70 t/ha, and increased incomes from CFA F 2.2 million to CFA F 5 million (US \$3,700–8,300) per hectare.
- In Guinea, adoption of improved high yielding rice varieties with inbred tolerance to iron toxicity and pests increased yields of irrigated rice from 2 t/ha to 4 t/ha and yields of rain-fed rice from 1 t/ha to 3 t/ha. Producer income increased by 40 to 60% (US\$600 to US\$800) for irrigated rice and 30 to 40% for rain-fed rice (US\$500). For cassava, the adoption of improved varieties that were high yielding, early maturing (8–12 months against 18) and drought resistant raised yields from 15 t/ha to 25 t/ha.
- In Liberia, dissemination and adoption of improved rice varieties like NERICA 8 increased yields significantly from less than 1 t/ha to about 2.5 t/ha for upland rice and from 1.5 t/ha to about 4 t/ha in



lowland rice. Household income increased by an estimated 20%. Improved cassava varieties disseminated by the project had an average yield of 55 t/ha against 16 t/ha for traditional varieties.

- In Niger, the adoption of the Red Maradi goat breed on family farms has improved livelihoods, stimulated local economies, and made better nutrition more accessible. A typical litter is produced twice each year, consisting of two to three kids that reach reproductive age at six to seven months. Each female goat can produce 0.6 liters of milk per day for three to four months after each litter.
- In Sierra Leone., between 2012 (baseline) and 2016, rice yields increased by 65% and cassava yields by 48% for the treatment group versus the control group and by 97% and 60%, respectively, for the treatment group compared to baseline. Increased rice and cassava productivity caused household income from agriculture to increase by 77 to 122% on average.
- In The Gambia, according to the ICR of the Government rice yields increased from 2.5 t/ha in the conventional production system to over 9 t/ha with SRI technology.
- In Togo, the project M&E team estimated that dissemination and adoption of improved rice varieties and SRI increased yields from 1.5 t/ha to 4.5 t/ha in 2019. Income increased by 64% with the adoption of improved rice varieties and over 500% when they were used in combination with SRI technology.

Based on the above-mentioned assessment, Efficacy of achieving the PDO is rated Substantial despite some shortcomings.

Rating

Substantial

OVERALL EFFICACY

Rationale

Overall, the evidence provided in the ICR pointed to the success of the project in rebuilding the national and regional research systems by strengthening physical research infrastructure and building human and institutional research capacity. It also accelerated the process for generating, disseminating, and adopting new technologies and innovation in agriculture; and strengthened the capacity actors involved in the agricultural innovation system (R&D). Furthermore, the project fostered regional cooperation and facilitated South-South cooperation to enable technology transfer and adoption. In addition, the project succeeded in achieving or overachieving all end-targets for five out of six PDO indicators, except for the PDO 5 target for “beneficiaries who are using technology generated/released by other countries’ NCoS.” The rate of achievement of PDO indicators varied from country to country. For example, Guinea, Sierra Leone, and Togo achieved or overachieved all of their PDO indicator end-targets, while Benin, Gambia, Liberia, and Niger substantially achieved their targets. Achievement of indicators was as follows:

- PDO Indicator 1: Direct project beneficiaries: the project reached 4,037,495 direct beneficiaries of whom 48% were women, compared to an original target of 3,550,000 (an achievement rate of 114%).



- PDO Indicator 2: Number of generated/released technologies by the project with at least 15% productivity increase over the control. Overall, 81 improved technologies were generated and released, significantly surpassing the target of 60 (an achievement rate of 135%).
- PDO Indicator 3: Area under improved technologies disseminated under the project (hectare). Improved technologies disseminated by the project were used on 4,699,416 hectares compared with the target of 2,908,000 (an achievement rate of 165%).
- PDO Indicator 4: Processors/producers who adopted at least one new improved technology, made available by the project (number). The total achieved was 2,463,303 versus the target of 2,210,000.
- PDO Indicator 5: Beneficiaries who are using technology generated/released by other countries' NCoS (number). The overall achievement rate was 75% (451,479 against a target of 600,000). Guinea and Togo met their targets for this indicator, and Niger had an achievement rate of 82% percent. However, in Benin only 12,401 beneficiaries used transferred technologies, against a target of 150,000 (8% of target). This under achievement significantly reduced the overall achievement rate of the project, preventing it from meeting the regional target. According to the ICR (paragraph 32) "Benin's underachievement was related to poor planning and coordination, resulting in very late initiation of technology transfer from other countries in the region."
- PDO Indicator 6: Producers with knowledge of technologies generated/released by the project (percent). The survey of beneficiaries indicates that the target of 75% was overachieved in each country and across the region with a regional average of 82%.

The project also fully achieved 21 out of 26 intermediate outcome indicators and the remaining five indicators all had an achievement rate over 80%. The project contributed to rebuilding the national and regional research system by strengthening physical research infrastructure and building human and institutional research capacity; accelerated generating, disseminating, and adopting new technologies and innovations; facilitated regional cooperation to optimize the use of scarce financial and human resources for the benefit of all participating countries; and developed South-South cooperation to enable technology transfer and adoption (ICR, paragraph 60).

Based on the above-mentioned information, and the provided evidence in the ICR, the overall Efficacy is rated Substantial, despite some shortcomings.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic and Financial Efficiency

ex ante

- The economic and financial analysis at appraisal covered the following countries: Togo, Benin, Niger, Liberia, Sierra-Leone and The Gambia. The analysis focused on returns from the investments under Component 2 (NCoS) and Component 3 (Funding of Demand-Driven Technology Generation and



Adoption). The analysis did not provide an overall Economic Rate of Return or Financial Rate of Return for the entire project.

- To harmonize methodologies between the different series of the first phase of the WAAPP program, the ex-ante economic and financial analysis for the WAAPP-1C utilizes the same framework and methodology as the analysis in the Project Appraisal Document (PAD) of the WAAPP-1B.
- Expected benefits were due to: (i) the generation, diffusion, and adoption of new or improved technologies, (ii) enhanced technology spillovers between ECOWAS countries arising from an integrated policy environment with regard to agricultural cooperation; and (iii) sound communications and dissemination approaches to enhance the Project's visibility, transparency, and effectiveness.
- The analysis included six main points: 1. a summary of general issues for economic analysis of agricultural research and extension (R&E) projects; 2. a review of returns to past investments in agricultural R&E projects in West Africa; 3. a discussion on spillovers in West Africa; 4. an overview of the economic importance of the main commodities supported by WAAPP-1C; 5. a presentation of the methodology and the basic assumptions supporting it; and 6. the outcomes of the analysis.
- Return on research and extension investments. An estimated aggregate Internal Rate of Return (IRR) of 55% was generally in agreement with past evidence on the returns to agricultural research and extension in the developing world in general and in sub-Saharan Africa in particular.
- From the appraisal of the AF for Benin, Guinea, Niger, and Togo in 2017, the EFA estimated an Economic Internal Rate of Return (EIRR) on the order of 29% for a 20-year period.

ex post

- The EIRR of the project was estimated at 22%, the net present value (NPV) at US\$431 million, and the benefit-cost ratio at 2.8, over a 20-year period, with a social discount rate of 6% against the project expenditure of US\$176 million.
- The financial analysis was based on 14 models representative of farming and processing systems in the participating countries, including 8 crop models (rice, maize, cassava, cashew, pineapple, sorghum, millet, and cowpeas), 3 livestock models (milk production from camels and cows, and production of mono-sex tilapia fry), and 3 agro-processing activities (production of meat jerky, rice processing, and parboiled rice).
- Sensitivity Analysis. The robustness of the models was tested under different scenarios. EIRRs remained relatively high and NPVs remained positive under various adverse scenarios over a 20-year time horizon. This included an extreme reduction in benefits due to declining yields or output prices and rising costs. For example, a cost overrun by 10% reduced the EIRR to 21% from a baseline of 22%, while a cost overrun by 50% reduced the EIRR to 16% from a baseline of 22%. Also, a decrease in benefits by 10% reduced the EIRR to 21%, while a decrease in benefits by 50% reduced the EIRR to 11%.
- The ex post analysis did not cover the economic impacts of the AF.

Administrative and Institutional Efficiency



The project closed on December 31, 2019 compared to an original closing date on June 30, 2016. The ICR (paragraph 23) stated that extending the closing date from March 31, 2017 to December 31, 2019 was to allow implementation of the AF activities. However, no reason(s) were provided for other closing date extensions. There were implementation delays in Niger that prevented the implementation of investment proposals. There were also delays in the implementation of the procurement plans in Benin, Togo and Niger, beneficiaries of the additional financing. The ICR (paragraph 80) reported that "procurement was challenging and, in some cases, delayed implementation." Also, infrastructure work in Benin was cancelled due to a delayed start (ICR, paragraph 90).

Overall, Efficiency is rated Substantial as the estimated project ex post EIRR exceeded the discount rate, even though the EIRR was somewhat less than the partial ex ante EIRR (22% vs. 29%, respectively). Moreover, the project achieved its objectives within its expected budget.

Efficiency Rating

Substantial

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:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal		0	0 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	22.00	0 <input checked="" type="checkbox"/> Not Applicable

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

6. Outcome

Relevance of Objectives was rated Substantial. Overall Efficacy was rated Substantial. The evidence provided in the ICR point to the success of the project in accelerating the process for generating, dissemination, and adoption of new technologies and innovation in agriculture. The project also strengthened the capacity actors involved in the agricultural innovation system (R&D) and fostered regional cooperation and facilitated South-South cooperation to enable technology transfer and adoption. Efficiency was rated Substantial as the estimated ex post EIRR exceeded the discount rate and the project achieved its objectives within its expected budget.

Based on a Substantial rating for all three criteria (Relevance of Objectives, Efficacy and Efficiency), Outcome is rated Satisfactory.



a. Outcome Rating

Satisfactory

7. Risk to Development Outcome

The ICR raised the following concerns that could potentially impact the Development Outcome:

- Government and stakeholder ownership and commitment post completion. According to the ICR (paragraph 95) the governments, participating institutions, stakeholders and beneficiaries showed commitment to the project. While such commitment could positively impact the sustainability of the project's achievements post completion, the cancellation of the follow-up West Africa Agricultural Transformation Program (WAATP) was a disappointment. As an example of post completion commitment, the Governments of Benin and Togo agreed to use their own financial resources to complete unfinished project infrastructure.
- Regional and sectoral institutional risk. By project completion, CORAF was an established institution with capacity to oversee regional coordination. CORAF played a central role in regional research planning and implementation. The ability of CORAF to mobilize regional political support for the R&D achievements is key to sustain the momentum established under the project. That said, CORAF continues to contribute to the sustainability of the project outcomes through engaging international donors including the USAID and the European Union (EU) to fund various activities post completion, for example, upgrading the MITA digital platform, and funding Research in Agriculture 2020 initiative. However, for CORAF to continue its role, strong financial support is essential to maintain its current institutional standing and keep serving the innovation system of West and Central Africa (ICR, paragraph 96).
- Country-level institutional risk. The project strengthened research infrastructure and capacity. This enabled innovation systems to generate and disseminate improved technologies and innovations (T&I) and develop effective networks with other national, regional, and international research systems, including the Consultative Group on International Agricultural Research (CGIAR) (ICR, paragraph 97). However, for this momentum to continue local research institutions must be provided sufficient financial resources to fund their operations.
- Financial risk. The lack of financial resources to fund activities and programs is a significant risk that would hinder country research institutions, including NCOs and RCOs, from continuing their work. To sustain achievements under the project, the governments need to increase their investment in the agricultural sector by allocating at least 1% of the public budget to agricultural innovation, as specified by CAADP. There is also a concern that dependency on donor funding would influence the agenda of local research institutions and might cause them to deviate from their core specializations (ICR, paragraph 99).
- Political risk. Political stability is critical for fostering future agricultural cooperation in the ECOWAS countries. Also, political will is key to sustain important reforms initiated under the project.
- COVID-19 and its widespread disruption of economic activities. The pandemic disrupted economic activity and impacted food and agricultural value chains. Governments had to focus resources on countering the pandemic, which would make sustaining the full spectrum of investments under the project challenging (ICR, paragraph 100).



8. Assessment of Bank Performance

a. Quality-at-Entry

This project (WAAPP-1C) differed with its predecessors (WAAPP-1A and WAAPP-1B) in two main respects: first, the project supported four fragile states (Côte d'Ivoire, Guinea, Liberia and Sierra Leone) of the Mano River Union (MRU) to rebuild their adaptive research and technology transfer capacities, and second, under Component 2, some countries would not have their own centers of specialization (NCoS). The project design benefited from the participation of beneficiary countries in preparation, definition of indicators and the setting of targets. The design also benefited from lessons and implementation experience from WAAPP-1A and 1B. The project design improvements reflected emerging priorities such as nutrition, youth employment, and private sector participation (ICR, paragraph 76). Also, beneficiary countries benefited from the support of WAAPP-1A and 1B countries, particularly, where capacity was low as the case in Liberia and Sierra Leone, and Togo. According to the ICR (paragraph 91) such peer support "was valuable in filling gaps in human capacity, building cross-regional relationships and trust." A notable feature embedded in the design was its flexibility which enabled the project to adapt continuously and address key emerging issues. For example, digital technologies were used to support start-ups; support suppliers of T&I, especially small and medium enterprises (SMEs); and e-vouchers were used to promote the adoption of T&I as well as to distribute government agricultural subsidies to small-scale producers and processors, especially youth and women. Implementation arrangements were effective as the West and Central African Council for Agricultural Research and Development (CORAF), which was also involved with the previous two phases, acted as the regional coordinating body for the project and oversaw regional implementation. Design also featured gender specific activities that catered to women farmers including gender-sensitive technologies and scholarships for female researchers. At appraisal nine risks were identified. A major risk was weak capacity among an aging cohort of research and extension staff in many of the participating countries. To mitigate this risk, the project would support each country in implementing a capacity-building action plan that will include on-the job and academic training for young researchers. The ICR did not discuss which risks materialized during implementation and whether the suggested mitigation measures worked. M&E included a comprehensive Results Framework that was built on the arrangements for WAAPP-1A and WAAPP-1B. However, the RF included numerous indicators which according to the ICR (paragraph 83) made M&E activities "resource intensive" (see section 9 for more details).

Overall, Quality at Entry is rated Satisfactory. This rating reflects a well-designed project that was relevant technically, economically, politically, strategically, and "fulfilled World Bank fiduciary and safeguard requirements (ICR, paragraph 91)."

Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

According to the ICR (paragraph 92) "implementation support missions were conducted regularly in each country." In total, the Bank conducted 14 implementation support missions (ICR, paragraph 77). CORAF



oversaw regional implementation and coordinated with the Bank arranging regional wrap-up missions. These missions provided the opportunity for the co-TTLs to share experiences across countries, while the CORAF team shared regional perspectives. The team ensured that research results were disseminated and adopted within countries and across national borders. While there were procurement challenges under the AF, the project's fiduciary aspects were monitored effectively. Over the last six months of implementation, the Bank team conducted weekly meetings and closely reviewed implementation and budget in order to improve disbursement of the AF in Benin, Niger, and Togo. While this intense effort improved disbursement rates, the team could have intervened earlier to address disbursement bottlenecks.

Quality of supervision is rated Satisfactory. This rating reflects the success of the supervision team in addressing implementation problems promptly and ensuring that the project would achieve the stated development outcomes.

Based on a Satisfactory rating for both criteria, the Overall Bank Performance is rated Satisfactory.

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The PAD was prepared in February 2011, at which time a theory of change was not required. Nonetheless, the ICR included one that was developed retroactively based on information in the PAD and other project preparation documents (ICR, footnote # 4). CORAF had the primary responsibility for the Project's M&E. The project relied on a standard methodology that was developed under the first phase (WAAP-1A) for data collection and measurement of impacts at both the national and regional levels to allow comparability across countries. At the country level, each PCU was responsible for the overall M&E of project indicators and outcomes.

The PDO was assessed through the following five PDO level outcome indicators : 1. a total of 1.2 million beneficiaries (40%of whom were female); 2. at least 3 technologies released by each of the three targeted NCoS ; 3. 100% of the released technologies from the NCoS show an improvement in yield of at least 15% above that of the control technology; 4. a total area of 1.0 million hectares under improved technologies disseminated under the Project in the beneficiary countries; and 5. a total of 720,000 producers, in the participating countries, have adopted improved varieties made available under the project by beneficiary countries. These indicators were linked to the PDO and measurable. While indicator 1 was a core indicator, indicator 2 was an output indicator rather than an outcome indicator and indicator 3 was not clear. The indicator required refinement because according to the ICR (paragraph 83): "a higher number of



unspecified technologies that only a limited number of producers can use is not necessarily better than a smaller number of technologies that can have a greater national or regional impact."

The Results Framework included 18 intermediate outcome indicators to assess the different activities supported by the project. Most indicators were quantitative and measurable, but lacked baselines.

M&E design was comprehensive with a detailed Results Framework. A notable shortcoming was the lack of a PDO level indicator to assess improvement in agricultural productivity, an intended direct project outcome. Also, most indicators lacked baseline data.

b. M&E Implementation

M&E implementation benefited from the deployment of human and financial resources adequate to cover the comprehensive RF. M&E teams benefited from tailored capacity building activities provided during implementation. Data was collected by the project management units in each country. CORAF played a critical role in ensuring consistency among beneficiary countries through deploying M&E focal points. This ensured consistency in comparing and computing data. A regional web-based M&E platform was setup for countries to upload data to the RF to later be aggregated at the regional level. CORAF and the M&E teams used the M&E implementation manual to assess data quality and correct any double counting of beneficiaries. Indicators were reviewed during mid-term review (the ICR does not indicate when the MTR took place) to clarify definitions and harmonize concepts. To improve the accuracy of M&E data, "all indicators (PDO level and intermediate outcome level) were regularly compared in a transparent manner that required each country to justify the level of achievement (ICR, paragraph 85)." While CORAF's M&E specialist resigned a few months prior to closing, updating the regional results framework continued until completion. This was possible through backstopping efforts by the M&E specialist from Guinea. According to the ICR (paragraph 85), data on yield increases and income gains from the adoption of technologies disseminated by the project were collected by the M&E teams to document the project's development impact.

Revision of indicators with AF. The PDO indicators were revised with the AF by: (i) increasing the end-targets; (ii) combining two indicators in one; and (iii) adding two new indicators to better capture the regional integration and technology dissemination activities in the four countries that received the AF. The intermediate-level indicators were revised to increase the end-targets. Also, four new intermediate results indicators on employment, private sector participation, nutrition, and citizen engagement were added to the RF to cover the additional/new priorities under the AF and to measure their achievement. These revisions were logical and provided a comprehensive assessment of the outcomes-intermediate outcomes, and reflected scaling-up the project activities.

Overall, M&E implementation was successful and benefited from CORAF's coordination and from lessons learned from the previous two phases of the program.



c. M&E Utilization

The project results, technology success stories, and other achievements were featured on community radio, national radio, television, web-tv, and online (ICR, paragraph 85). CORAF coordinated with the country M&E teams to collect and upload data on the technologies disseminated by the project on the regional Market for Agricultural Innovations and Technologies (MITA) digital platform. According to the ICR (paragraph 85), M&E results were used by project management to take relevant corrective actions during implementation. While impact studies were conducted when the original financing came to an end, those studies were not updated at closing for countries benefiting from the AF.

Overall, M&E design was comprehensive and implementation benefited from CORAF's coordination. Also, the information provided in the ICR (paragraphs 85 and 86) reveals that project M&E data was used in management and was widely disseminated in beneficiary countries.

Based on the above-mentioned assessment the Quality of M&E is rated Substantial, despite some design and implementation shortcomings.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was classified as an environmental category B. Four Environmental safeguard policies were triggered at appraisal: Environmental and Social Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Pest Management (OP 4.09), and Involuntary Resettlement (OP/BP 4.12). The triggering of the Natural Habitats Policy applies specifically to Sierra Leone, where field research activities by Rockpur Agricultural Research Center (RARC), were located near mangrove areas. The project was expected to have a positive environmental impact through its support for agricultural technologies that promote better use of land and water resources. Potential environmental risks include point and non-point pollution of water sources, other issues associated with the use of agricultural chemicals, and negative environmental impacts associated with the rehabilitation of irrigation or small-scale civil works on research stations. West and Central African Council for Agriculture Research and Development (CORAF) prepared an Environmental and Social Management Framework (ESMF) and Pest Management Plan (PMP) which were reviewed during a stakeholder sub-regional workshop in Dakar in August 2010, consulted upon, reviewed by the Bank, and disclosed regionally by CORAF and at Bank InfoShop on December 13, 2010. The regional ESMF and PMP were updated to include The Gambia, reviewed by the Bank, and disclosed in by CORAF and at Bank Infoshop on January 20, 2011. The Resettlement Action Plan (RAP) for Togo and a Resettlement Policy



Framework for all other participating countries was consulted upon, revised by the Bank, and disclosed on January 20, 2011.

Environmental Safeguards Compliance. A social and environmental safeguard specialist in each country oversaw the implementation of social and environmental safeguards, identified problems, and followed up on the appropriate mitigation actions. The Bank social and environmental safeguard specialists supervised the safeguard measures during implementation. According to the ICR (paragraph 87) "integrated pest management practices were applied, and environmental impact assessments were performed for minor civil works." However, the implementation of sub-project Environmental and Social Management Plans in some countries faced difficulties in maintaining hygiene due to the absence of sanitary facilities for employees, health standards due to the low use of personal protective equipment , and safety standards due to absence of fire extinguishers, failure to register employees with the National Social Security Fund, and absence of medical first aid.

Social Safeguards. While the Bank's involuntary resettlement policy was triggered, no negative social impacts occurred. The research projects financed by the national and regional CARGS were mainly directed to the needs of smallholder farmers, including women.

While the ICR did not provide an explicit statement on compliance with the Bank's Safeguard policies, it stated that "effective overall implementation of social and environmental safeguards was reflected at the country and regional level through social and environmental screening of all competitive and commissioned sub-projects and by monitoring implementation of the ESMPs for competitive sub-projects (paragraph 87)."

b. Fiduciary Compliance

Financial Management (FM). CORAF and each country coordination unit included a staff of financial and procurement specialists. According to the ICR (paragraph 89) "arrangements in all beneficiary countries were adequate to meet the World Bank's minimum fiduciary requirements." While audit reports and interim financial reports from the various executing agencies were received, at times submission was with delays. The ICR did not report on the status of audit reports nor on corrections of any qualified findings.

Procurement. Annual procurement plans were established and regularly reviewed during project implementation support missions. The project faced procurement challenges during the implementation of the AF. This contributed to implementation delays in Benin, Niger, and Togo, and resulted in some infrastructure to remain unfinished. This included some laboratory facilities in Togo and Niger, and experimental farms for seed multiplication and poultry breeding in Benin. The ICR (paragraph 90) stated for Togo and Niger "the respective governments will complete these facilities." However, in Benin, the afore mentioned infrastructure works were cancelled following a delayed start.

c. Unintended impacts (Positive or Negative)



d. Other

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	
Bank Performance	Satisfactory	Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

The ICR included 18 lessons. The following three are emphasized with some adaptation of language:

- **A regional approach to agricultural development allows both rationalizing and optimizing the use of Africa’s scarce resources; and achieving development impacts more rapidly in individual countries.** Evidence from the WAAPP series shows that a regional approach can rationalize and optimize the use of Africa’s scarce resources to develop regionally relevant mechanisms and tools and achieve development impacts more rapidly in individual countries and throughout the region. The regional approach of the project was instrumental for successful collaboration in developing and sharing technologies and innovations (T&I) across borders, as well as for streamlining trade in agricultural inputs and outputs. The peer learning and bench marking of progress reinforced the commitment of each participating country to achieve the development outcomes. A regional approach allows harnessing the benefits of modern technologies, overcoming the limitations of innovation systems that are too small to produce meaningful results working alone, and increasing agricultural productivity for millions of farmers.
- **A well designed and streamlined Results Framework is critical to fully capture the outcomes of a regional project.** The WAAPP results framework was complex, with many indicators. Although the indicators were relevant, they were costly in terms of time and human and financial resources. For a regional project covering many countries, the results framework should be streamlined to include critical PDO and intermediate results indicators, which would ease data collection and analysis at the national and regional level.
- **A gender-responsive, gender-tagged regional project requires the development of a sound regional gender mainstreaming strategy, a gender screening tool, and national gender action plans.** The project's gender strategy and action plans made it possible for the project to definitively adopt a gender approach, and reach the target for 40% of beneficiaries to be female. The project developed a clear understanding of men’s and women’s activities in agricultural value chains, along with the gender constraints involved, to inform the research program and ensure that it would generate technologies addressing women’s and



men's specific constraints. The actors involved in implementation received training to build a gender-sensitive team. Consequently, the project was able to address gender-specific needs to improve productivity and income, close the gap in women's access to improved T&I, and enhance family welfare.

13. Assessment Recommended?

Yes

Please Explain

This project was the last phase in a three-phase program. Further assessment would provide an important opportunity to assess the value of the program as a whole with its three phases. It is also critical to know whether it is efficient and effective for the Bank to invest in regional programs compared to individual country interventions. Also, new lessons could be learned that would inform future regional programs.

14. Comments on Quality of ICR

Quality of Evidence. The ICR benefited from a well-developed M&E system. The project achievements were well documented and data was reported clearly on the various outcome indicators.

Quality of Analysis. The ICR provided clear linking between evidence and findings. However, the lack of analysis of the economic impacts of the AF was a weakness.

Lessons were generally based on evidence and analysis. They were based on the project experience. Lessons were clearly divided into relevant sub-sections, but could have benefited from some consolidation.

Results Orientation. The ICR included a good discussion on outcomes. However, the discussion was overly positive for such a challenging regional project that was implemented in eight countries, four of which were fragile.

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

Consistency with guidelines. The assigned ratings in the ICR were justified and backed by sound arguments. However, the outcome discussion could have benefited from more details regarding the challenges that faced the project.

Conciseness. The ICR provided thorough coverage of the implementation experience, but more details should have been provided on shortcomings. There was enough clarity in the report's messaging. The ICR could have provided more explicit statements on compliance with Bank's safeguard policies and the status of audit reports. Also, no explicit reason was provided for the first extension of the project closing date, no date was provided for the MTR, no reason was provided for the third project restructuring and no reason was given for the shortfall on borrower financing.



Overall, the ICR is well written and its Quality is rated Substantial, despite relatively minor shortcomings.

a. Quality of ICR Rating
Substantial