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AFRICAN DEVELOPMENT BANK GROUP

PROJECT: MULTINATIONAL – CGIAR PROJECT: "SUPPORT TO AGRICULTURAL RESEARCH FOR DEVELOPMENT OF STRATEGIC CROPS IN AFRICA (SARD-SC)"

APPRAISAL REPORT
Date: December 2011

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Currency Equivalents

September 2011

1 UA	=	1.61 US$
1 UA	=	1.11 EURO

Fiscal Year

01 January – 31 December

Weights and Measures

1 metric ton	=	2204 pounds (lbs)
1 kilogram (kg)	=	2.200 lbs
1 meter (m)	=	3.28 feet (ft)
1 millimeter (mm)	=	0.03937 inch (“)
1 kilometer (km)	=	0.62 mile
1 hectare (ha)	=	2.471 acres

Acronyms and Abbreviations

ADF	African Development Fund
AfDB	African Development Bank
AfricaRice	Africa Rice Center (formerly known as WARDA)
AR4D	Agricultural Research for Development
ASARECA	Association for Strengthening Agricultural Research in Eastern & Central Africa
CAADP	Comprehensive Africa Agricultural Development Programme
CCAFS	Climate Change, Agriculture and Food Security
CGIAR	Consultative Group on International Agricultural Research
CORAF	Conseil Ouest et Central Africain pour la Recherche et le Développement Agricoles
CRP	CGIAR Research Program
ECOWAS	Economic Community of West African States
EIRR	Economic Internal Rate of Return
ESMP	Environmental and Social Management Plan
FM	Financial Management
FIRR	Financial Internal Rate of Return
GCARD	Global Conference on Agricultural Research for Development
GDP	Gross Domestic Product
GFAR	Global Forum for Agricultural Research
GRiSP	Global Rice Science Partnership
IARCs	International Agricultural Research Centers
ICARDA	International Center for Agricultural Research in the Dry Areas
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
IPG	International Public Goods
IPM	Integrated Pest Management
ISPC	Independent Science and Partnership Council
MDG	Millennium Development Goal
MTS	Medium Term Strategy
NARES	National Agricultural Research and Extension Systems
NEPAD	New Partnership for Africa’s Development
NGO	Non-Governmental Organization
PAFFO	Pan-African Farmers’ Forum
PCT	Project Coordination Team
PSC	Project Steering Committee
PSTAD	Promotion of Science and Technology for Agricultural Development
RAILS	Regional Agricultural Information and Learning System
RMCs	Regional Member Countries
RPG	Regional Public Goods
SADC-FANR	Southern African Development Community
SARD-SC	Support to Agricultural Research for Development on Strategic Commodities in Africa
SRO	Sub-Regional Organization
UNDP	United Nations Development Programme
WARDA	West African Rice Development Association
WECARD	West & Central African Council for Agricultural Research & Development

Grant information

Client's information	Selected Africa-Based CGIAR participating centers
RECEIVER:	Four participating CGIAR Centers (IITA, ICARDA, AfricaRice, IFPRI)
EXECUTING AGENCY:	IITA

Financing plan

Source	**Amount (million UA)**	**Instrument**
ADF	39.90	Grant, ADF XII
Countries counterpart		
Rice	1.80	In kind contribution
Cassava	3.50	In kind contribution
Maize	4.30	In kind contribution
Wheat	4.30	In kind contribution
Total countries counterpart	13.90	In kind contribution
TOTAL PROJECT COST	53.90	

ADF's key financing information (overall commodities)

Grant currency : UA

	Across	Cassava	Maize	Rice	Wheat
FIRR (base case)%	38.0	34.0	31.0	60.0	45.0
NPV (US $ M)	873.8	161	141	467	296
EIRR (base case)%	31.0	25.0	21.0	53.0	39.0

Timeframe - Main Milestones (expected)

Concept Note approval	June, 2011
Project Appraisal	August, 2011
Project approval	October, 2011
Effectiveness	December, 2011
Last Disbursement	December, 2016
Completion	June, 2016

Project Summary

1. The 2009 AfDB/IFAD Joint Evaluation Report on Agricultural Policies and Operations in Africa recommended that, while remaining engaged in the agricultural sector, the Bank should be more focused, selective, and innovative with the primary objective of building a purposeful partnerships based on comparative advantage and strategic goals. This approach is clearly adopted in the Bank's recently approved Agricultural Sector Strategy (AgSS): 2010-2014, which although focuses on agricultural infrastructure development and renewable natural resources management, emphasizes the importance of purposeful and strategic partnerships in order to meet other agricultural development needs such as those in the areas of science, technology, and policy. To be selective, the new AgSS provided for the Bank to partner with international centres of excellence, regional, multilateral and bilateral organizations in meeting the broad range of the agriculture sector development needs. The Multinational Consultative Group on International Agricultural Research (CGIAR)–Support to Agricultural Research for Development on Strategic Commodities in Africa (SARD-SC) was identified within this context. It is a research, science and technology development project targeted at cassava, maize, rice and wheat. These are four of the six commodities that African Heads of States have, via the Comprehensive African Agricultural Development Programme (CAADP), defined as strategic crops for Africa.

2. The overall objective of the "Multinational – CGIAR: Support to Agricultural Research-for-Development on Strategic Commodities in Africa" (SARD-SC) is to enhance food and nutrition security and contribute to poverty reduction in Bank's low income Regional Member Countries (RMCs). Its specific objective is to enhance the productivity and income of four CAADP's priority value chains (cassava, maize, rice, and wheat) on a sustainable basis. The project has four components: Agricultural Technologies and Innovations Generation; Agricultural Technologies and Innovations Dissemination; Capacity Building; and Project Management. It will be implemented by three Africa-Based CGIAR Centers, namely AfricaRice, International Center for Agricultural Research in the Dry Areas (ICARDA), and International Institute of Tropical Agriculture (IITA). The key project outcomes are: (i) 20% yield increase in cassava, maize, rice and wheat; (ii) average annual household cash income of $600 ($370 presently); and (iii) 20% increase in food security (84% from present 73%) at end of project.

3. This project will be implemented by AfricaRice, ICARDA, and IITA (which is also the Executing Agency). The International Food Policy Research Institute (IFPRI), a specialized technical agency, will support the other three Centers (AfricaRice, ICARDA, and IITA) for projects' activities dealing with the strengthening of the technical and commercial capacities of farmers organizations. The project will be implemented within a period of five years (2012 - 2016) with a total cost of UA 53.80 million (US$ 86.94 million) out of which UA 39.90 million comes from ADF (regional operation envelope) and an estimated UA 13.90 million from the countries through their NARES as in kind contributions.

4. Individual farmers and consumers, farmers' groups including youth and women, policy makers, private sector operators, marketers/traders, transporters, small-scale agricultural machinery manufacturers, and institutions (NARES, CGIAR, NGOs) from low income Bank's RMCs (Benin Republic, Cote d'Ivoire, DR Congo, Eritrea, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe) are the project direct beneficiaries. However, it should be noted that SARD-SC will produce Regional Public Goods (RPGs) of public interest; no one can be excluded from it. The new crop varieties, crop management practices,

knowledge and other products from the CGIAR's research work are indeed RPGs made widely available to individuals and organizations working for sustainable agricultural development in the world. The project impacts on direct beneficiaries are: (i) increase of productivity, production and income across the selected value-chains; (ii) enhancement of food security; (iii) creation of employment opportunities; (iv) improved marketing and competition in the market place; (v) innovative partnership between CGIAR, NARES and other stakeholders to expand and accelerate the pace and adoption of innovations; (vi) improvement of nutritional status with positive implications on the socio-economic context and people's well-being; and (vii) contribution to agricultural GDP.

5. The SARD-SC Project is coming at a time when food security and nutrition are high on the national agenda of all the RMCs, as rising food prices push millions of people into extreme poverty. The SARD-SC project is expected to contribute towards addressing the current shortfall in food supply in the low-income RMCs and beyond. Its approach works across the full value chain of each crop addressing both food costs and employment creation. Through its value chain approach, SARD-SC will contribute to crop livestock integration based on the use of the commodities' by-products. More importantly, the SARD-SC allows, for the first time in a single project, a continental coverage of the food security challenges in Africa. The well tested research for development model adopted in this project shall deliver satisfactory results. Most of the proven technologies, successful models, manpower and knowledge to be mobilized for the success of SARD-SC are available.

6. Besides its alignment with CAADP's four pillars (details in Annex A of Vol. II) and the Bank's mid-term (2008-12) and Regional Integration (2009-12) strategies, SARD-SC will contribute to achieving: (i) the Bank's Agricultural Sector Strategy (AgSS) (2010-2014) and the Bank's Higher Education Science and Technology (HEST) Strategy (2008-2012); (ii) the MDGs 1 and 7 (details in Annex B of Vol. II); and (iii) the pan-African vision and strategy of CAADP on food. This Bank's commitment to the value chain development of the four commodities in its RMCs is well aligned with the CGIAR's global research programs (CRPs) on Maize, Rice, Wheat and Cassava, (details in Annex C of Vol. II).

7. Over the years, the Bank has gained valuable experience in supporting agricultural research for development (including research, capacity building and technology dissemination activities) across Africa (see Annex O in Vol. 2). The present operation will draw on the experience gained and lessons learnt by the Bank. The financial internal rate (FIRR) of returns of the project is estimated at 38%, with an economic internal rate of return (EIRR) of 31%. The sensitivity analyses show that the results are quite robust to yield, adoption and discount rate changes.

Title: Multinational – CGIAR project: "Support to Agricultural Research for Development of Strategic Crops in Africa (SARD-SC)"
Objective: To enhance food and nutrition security and contribute to poverty reduction in Bank's low income Regional Member Countries (RMCs)

Table 1: Result-Based Logical Framework (RBLF)

Results chain		Performance indicators			Means of verification	Risk/Mitigation Measures
		Indicators (including CSI)	Baseline (2011)	Target (end of project)		
IMPACT *		Agricultural GDP Food secure households	US$ 56.9 bn rice 73%	+ 6% 84%	National agricultural statistics, surveys; Government reports; CAADP reports; Development agencies reports; Project impact study reports.	**Risk:** Lack of necessary macro-economic reforms **Mitigation:** Policy advocacy with policy makers
OUTCOMES**	1	Productivity (t/ha)	1.8 2.45 7.5 2.3	+20% rice +20% wheat +25% cassava +15% maize	Project Impact Survey; National statistical report; National agricultural statistics; Project reports; NGO's reports.	**Risk**: Lack of commitments of NARES and/or CGIAR staff and/or other Value-chain stakeholders in project activities **Mitigation:** Active involvement of all stakeholders from inception through effective participatory approach to define clearly the role and expectations for each value-chain actor involved in the project implementation
	2	Annual household cash incomes for farmers	US$ 360	US$ 600		
COMPONENT 1: Generation of agricultural technologies and innovations						
OUTPUTS ***		*Performance indicators* *Indicators (including CSI)*	*Baseline*	*Target* (end of project)	*Means of verification*	*Risk/Mitigation Measures*
	OUTPUT 1.1: *Technologies (varieties and crop management options) developed*	*Number and/or types of identified research needs* *Number of technologies (i.e. crop varieties and crop management options) developed.*	*NA* *NA*	*At least 3 per value chain* *More than 55 additional new varieties with multiple tolerance to stresses developed and tested*	*Project surveys and reports;* *Regional trial results;* *On-farm trial results.*	**Risk**: Management of a complex multinational project **Mitigation**: The CGIAR centers' wide experience in managing complex projects with multi-stakeholders and multi-disciplinary partnerships will be leveraged by the NARES. **Risk**: Mismatch between commodity supply and demand due to the intervention. **Mitigation**: The comprehensive value chain approach adopted in the project implies that all necessary linkages to ensure a full absorption of all the produce at different points in the chain and at competitive prices.
	OUTPUT 1.2: *Best-fit agricultural technologies and innovations validated on-station and on-farm*	*Number of technologies evaluated on-station and on-farm* *Number and/or types of entries tested and registered*	*20 popular cultivars of each crop in each country* *2 existing management practices in project countries*	*More than 20 promising varieties and hybrids extensively tested in on-station and on-farm trials* *More than 3 additional new crop and natural resource management practices that increase crop productivity by more than 15% developed and tested*		

COMPONENT 2: Sustainable dissemination and adoption of agricultural technologies & innovations across the value chain						
OUTPUTS ***		***Performance indicators***			***Means of verification***	***Risk/Mitigation Measures***
		Indicators (+CSI)	***Baseline***	***Target* (end of project)**		
	Output 2.1: *Biophysical, social, institutional and policy contexts of the four value-chains analyzed, allowing improved and gender-balanced collective action and governance*	*Number of institutional and policy constraints and options identified*	*0*	*One base-line report per value chain*	*Project surveys & reports*	**Risk**: Lack of capacity in NARES and other partners **Mitigation**: Careful selection and capacity building of partners and strategic backstopping and mentoring by CGIAR centers will minimize the risk of weak capacity in institutions and markets.
	Output 2.2: *Best-fit agricultural innovations disseminated*	*Number of best-fit agricultural options identified and promoted for adoption*	*0*	*More than 25 promising crop varieties tested in more than 4500 demonstration trials*		As above.
	Output 2.3: *Value-chain innovations promoted*	*Number of value chain innovations identified and promoted*	*0*	*More than 240 innovation platform) established*		
	Output 2.4: *Post Harvest losses reduced*	*% of post-harvest losses by crop*	*NA*	*2% reduction*	*Project surveys & reports*	*As above.*
COMPONENT 3: Sustainable capacity strengthening of project stakeholders						
OUTPUTS ***		***Performance indicators***			***Means of verification***	***Risk/Mitigation Measures***
		Indicators (including CSI)	***Baseline***	***Target* (end of project)**		
	Output 3 *Human capacity strengthened and/or developed*	*Number of NARES scientists actively involved in regional research networks established for each crop commodity*	*NA*	*At least 20 per value chain*	*Project surveys & reports*	**Risk**: Lack of incentives and motivation for training among NARES scientists. **Mitigation**: Focus more on on-the-job training; link trainees with potential employers and job opportunities.
		Number of PhD and MSc fellows trained	*NA*	*4 PhDs &8 MScs trained per value chain*		
		Number of NARES scientists and technical staff trained	*NA*	*30 technical staff trained per value chain*		
		Number of development agents trained to become trainers in crop-specific management and value chain issues	*NA*	*More than 250 additional development agents trained*		
		Number of females included in each of the categories above	*NA*	*At least30% of those trained*		

COMPONENT 4: Efficient management of the project					
OUTPUTS ***		*Performance indicators*		*Means of verification*	*Risk/Mitigation Measures*
		Indicators (including CSI)	*Baseline*	*Target* (end of project)	
	Output 4 *Project efficiently managed*	*Project procurement follows Bank's rules*	*0*	*Procurement plan followed 100%*	*Project reports*	**Risk**: Cumbersome procurement procedures will slow disbursement. **Mitigation:** The procurement procedures should be simplified to ensure swift disbursements.
		Project disbursement follows Bank's rules	*0*	*5% in yr1; 28% yr2;58% yr3; 88% in yr4; 100% in yr5*		
		Quarterly activity and audit reports submitted in time	*0*	*All reports submitted in time*		
		Project implementation schedule is followed	*0*	*All project activities carried out as scheduled*		
KEY ACTIVITIES	**Component 1:** Agricultural technologies and innovation generation	**Inputs/Activities** 1.1. Develop knowledge and technologies; 1.2. Test knowledge and technologies; 1.3. Evaluate knowledge and technologies				
	Component 2: Agricultural technologies and innovations dissemination	2.1. Support value chain development; 2.2. Sustainably supply high quality farm inputs for agricultural production; 2.3. Introduce and disseminate knowledge and technologies for agricultural production, harvest and postharvest activities;				
	Component 3: Capacity strengthening of project stakeholders	3.1. Conduct degree training courses (national and regional); 3.2. Conduct non-degree training courses (methodologies, agronomic practices) national and regional; 3.3. Propose and implement national and regional agricultural infrastructure and equipment plan to prioritize needs while aiming at regional integration; 3.4. Review available technologies and define their recommendation domains (agro-ecological zones, cropping systems, reach, etc.); 3.5.Conduct national and regional meetings and workshops				
	Component 4: Project management	4.1. Recruit project staff; 4.2. Implement project activities; 4.3. Conduct annual project planning meetings involving key project stakeholders; 4.4. Establish Project Steering Committee (PSC); 4.5. Conduct annual Monitoring and Evaluation of project activities in each country; 4.6. Conduct baseline, adoption and impact assessment studies; 4.7. Organize external mid-term and final project reviews.				

* From the overall objective which is to enhance food and nutrition security and contribute to poverty reduction and enhanced food security in RMCs; ** From the specific objective which is to enhance the productivity of four CAADP's priority value chains (cassava, maize, rice, and wheat) on a sustainable basis and increase farmers' income; *** From outputs (Adapted agricultural knowledge and technologies are generated; Adapted agricultural knowledge and technologies are disseminated; Capacity of project stakeholders is sustainably built, and Project efficiently managed).

Table 2: Project Timeframe

Activity	2011				2012				2013				2014				2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Negotiations																								
Board approval																								
Grant protocol signature																								
Appointing Project Coordination Teams																								
Satisfaction of conditions for effectiveness and first disbursement																								
Project launching/training of Project Coordination Teams in FM and Procurement																								
Preparation and validation of procedures manuals																								
Conducting baseline studies																								
Preparation & signing of agreement/protocols with various implementing partners																								
Preparation, approval and floating of Bidding docs and contract awards for goods, works & services																								
Contracts execution for goods, works and services																								
Quarterly and annual reports submission																								
Project Work plans and Budgets																								
Steering committee meetings																								
Bank's supervision missions																								
Audit																								
Mid-term review																								
Project Completion Reporting																								

REPORT AND RECOMMENDATION OF THE MANAGEMENT OF THE ADB GROUP TO THE BOARD OF DIRECTORS ON A PROPOSED GRANT TO CGIAR SUPPORTED CENTERS (ICARDA, AFRICARICE AND IITA) FOR THE "MULTINATIONAL – CGIAR SUPPORT TO AGRICULTURAL RESEARCH FOR DEVELOPMENT OF STRATEGIC CROPS IN AFRICA (SARD-SC)"

1. STRATEGIC THRUST & RATIONALE

1.1. Project Linkages with Countries' Strategies and Objectives

1.1.1 The intervention targets four (cassava, maize, rice and wheat) out of the six strategic commodities approved by the African Union Heads of State within the framework of the Comprehensive African Agricultural Development Program (CAADP). This project will contribute to reduction in poverty, improvement in food and nutrition security, and increase in income by increasing productivity of and income from the four selected strategic commodities. SARD-SC project will contribute to the objectives of the MDGs1 (Eradicate extreme poverty & hunger) and 7 (Ensure environmental sustainability). It will also contribute to the Bank's Medium Term Strategy (2008-12), its Regional Integration Strategy (2009-12) and Higher Education, Science and Technology Strategy (Component C), and its Agriculture Sector Strategy (AgSS) 2010-14 (Components A, B & C). The project is consistent with the four pillars of CAADP (Sustainable Land & Water Management, Market Access, Food Supply and Hunger, and Agricultural Research) and will directly contribute to enhancing synergy with five CGIAR research programs (CRPs) (Roots, Tubers & Bananas; Maize; GRiSP/Rice; Wheat; and Policies, Institutions and Markets), and indirectly to optimizing four other CRPs (e.g., Water, Land and Ecosystems; Integrated Agricultural Production System for Dry Areas; and Integrated System for the Humid Tropics; Climate Change) as enunciated in the CGIAR global research reform.

1.1.2 Participating Bank's Regional Member Countries (RMCs) and centers of excellence recognized that they cannot and should not try to meet all the agriculture science needs alone. The diversity of the region's agricultural production environments is huge, and individual RMC's and CGIAR's resources are too small relative to the challenges to achieve this objective working alone. To have significant impact, RMCs require collaboration among themselves and with international research institutions both in technology generation and to adapt results to particular farming systems. It is also clear that the long-term needs for agricultural research in the region can ultimately only be met by a properly capacity strengthened RMCs and a strong collaboration among RMCs and CGIAR centers within the context of a regional agricultural research system.

1.1.3 The goal of RMCs and CGIAR collaboration is to achieve the most efficient means of generating and transferring improved agricultural technologies within the region as a whole. Because agro-ecological zones cut across political boundaries, technologies generated in any given location are applicable in similar agro-ecological zones elsewhere in the region. Broad similarities of production environments across RMCs, combined with varying strengths of research institutions, means that there are potential economies of scale to sharing research works along the lines of institutional comparative advantage. SARD-SC will produce Regional Public Goods (RPGs). Its benefits are "non-rival" (i.e. one country's consumption does not subtract from the amount available to other countries) and "non-excludable" (no country in the region can be excluded from benefiting, except at a prohibitive cost). The new crop varieties, crop management practices, knowledge and other products from the CGIAR's

research work are indeed RPGs made widely available to individuals and organizations working for sustainable agricultural development in the world.

1.2. Rationale for Bank's Involvement

1.2.1 The major reasons for the Bank's involvement are: (i) the high priority placed on food security by the governments of the Bank's RMCs, (ii) the great potential of SARD-SC in enhancing the role of agriculture as an engine of inclusive growth, attenuating rural–urban migration, minimizing social upheavals, and delivering the objectives of CAADP and the MDGs. Through a more productive agricultural sector, this intervention will leverage the Bank's large investments in infrastructure and higher education, science and technology. In the past, the Bank has directly financed agricultural research for development in Africa.

1.2.2 In Africa, public investments in agricultural research-for-development are so limited that no one country by itself can meet the investment needs for research that could lead to widespread and the desired transformational impacts aimed at under SARD-SC. By utilizing regional networks of NARES and building functional collaboration with CGIAR centers, SARD-SC will generate a global output that surpasses the summation of individual countries' stand-alone efforts. For any given commodity, regional critical mass of human and material resources needed for agricultural research-for-development will be mobilized to tackle country specific and regional issues. The infrastructure and equipment development envisioned in the project will be carried out with a regional integration perspective. Therefore, the Bank's support to the proposed intervention, with additional support from other partners through different CGIAR funding windows, is of great relevance to the Bank's core business.

1.2.3 It is for these reasons of public interest, non-rivalry in partaking in the benefits from SARD-SC, multi-country involvement, and non-excludability that SARD-SC was rated the best among projects seeking for support under the RPGs window of the ADF.

1.2.4 Productivity of staples in RMCs is low due to lack of adoption and retention of improved and adapted agricultural innovations due low capacity of individual NARES. Working together as a network of NARES with backstopping from CGIAR centers is an aspect of the solution.

1.3. Donors Coordination

1.3.1 The major global platform for agricultural research for development is the CGIAR. The CGIAR has recently concluded an extensive reform of its research agenda and has come out with 15 CGIAR research programs at the global, regional and sub-regional levels. Table 3 shows the total projected investment in research, development and dissemination for the four commodities targeted in the project for the next 3 – 5 years.

Table 3: CGIAR and SARD-SC Support to Agriculture (US$ million)

Commodity - CRP (all CRPs, except Rice (5yr), are 3 year programs)	**CGIAR CRPs Approved budgets**	**Share of budget in Africa**	**ADF: SARD-SC**

Cassava – CRP3.4 (Roots, Tubers and Bananas)	**182.80**	**18.05**	**15.81**
Maize – CRP3	**236.30**	**63.47**	**15.81**
Rice – GrisP CRP	**593.40**	**175.25**	**15.81**
Wheat – CRP3.1	**228.40**	**51.90**	**15.81**
Across commodity & CRPs	**1241.20**	**308.67**	**63.24**

2. PROJECT DESCRIPTION

2.1. Project Objectives

2.1.1 The sectorial objective of the project is to enhance food and nutrition security and contribute to poverty reduction in Bank's RMCs. The specific objective is to enhance the productivity of and income from four CAADP's priority value chains (cassava, maize, rice, and wheat) on a sustainable basis.

2.2. Project Components

2.2.1 The project components are presented in Table 4 below.

Table 4: Project components description

Component title	Cost (UA million)	Component description
COMPONENT 1: Generation of Agricultural technologies and innovations	Cassava=4.09 Maize = 2.73 Rice = 3.05 Wheat = 3.03 **Total = 12.92**	Component 1 is to support Agricultural Research for Development (AR4D) on the four selected strategic commodity value-chains. The CGIAR implementing Centers and their relevant National Agricultural Research and Extension Systems will work using a participatory approach to: (i) develop optimal synergy on national/regional priority research areas; (ii) generate prototype agricultural innovations and; (iii) evaluate and validate best-fit agricultural innovations on-farm and on-station. Agricultural innovations generated in Component 1 will be used in Component 2.
COMPONENT 2: Sustainable dissemination and adoption of agricultural technologies and innovations across the value chain	Cassava=2.56 Maize=3.11 Rice = 4.29 Wheat = 3.17 **Total = 13.14**	Component 2 will focus on promoting dissemination and adoption of (ready-to-go) improved agricultural technologies across each value chain. Value chain development will be done at representative sites and will involve working with clusters of farmers, development projects and agencies, national research and extension systems, the private sector, and other relevant value-chain actors. Extension workers will be engaged in technical and methodological aspects of value chain development. Out-scaling of innovations will be done through farmer-to-farmer exchange and strengthened extension systems, and mass-communication. Particular attention will be paid to farmer organizations and their role as a bridge to reach out to a critical mass of smallholders.
COMPONENT 3: Sustainable capacity strengthening of project stakeholders	Cassava=2.56 Maize = 2.85 Rice = 1.84 Wheat = 2.93 **Total = 10.18**	Component 3 is to promote sustainable capacity enhancement of stakeholders along the value-chains of the four target commodities. In particular, the technical and commercial capacities of farmer organizations will be strengthened to facilitate technology adoption and greater market access (CAADP Pillar 2) by smallholder farmers. This is with a view to promoting agricultural innovations adaptation, adoption and utilization. This component has five activities: conduct degree training, conduct non-degree training, propose and implement national and regional agricultural infrastructure and equipment plan, review available technologies and define their recommendation domains, and conduct meetings and workshops.

Component title	Cost (UA million)	Component description
Component 4: Efficient project management	Cassava = 0.70 Maize = 0.74 Rice = 0.73 Wheat = 0.74 **Total = 2.92**	Under Component 4, the project will coordinate the implementation, monitoring and evaluation and timely reporting of the project progress and impacts. This component is articulated around seven activities: recruit project staff, implement project activities, conduct planning meetings, establish Project Steering Committee, conduct M&E, conduct baseline, adoption and impact studies, and organize external mid-term and final project reviews.
GRAND TOTAL = 39.90		

2.3. Technical Solutions Retained and Other Alternatives Explored

2.3.1 While the project will be implemented by the three CGIAR centers (located in various places in Africa), relevant stakeholders will be closely involved in order to speed up implementation, amplify reach and ensure ownership while building the institutional capacity of the NARES involved. The project will build on the existing relations between the CGIAR, NARES and regional institutions, and leverage the global agriculture research competence of the CGIAR with the Bank's comparative advantage in development projects in Africa.

2.3.2 Considerations of the mandate agro-ecological regions and commodities as well as the relevant cross cutting areas of the different participating CGIAR centers also favour their direct funding. This direct funding will be realized through contributions to the window 3 of the CGIAR Fund, targeted to the Africa-based implementing centers. Alternative ways to support research for development were considered. The reasons for rejecting the alternatives are presented in Table 5.

***Table 5:** Rejected alternatives of Bank support to research for development*

Alternative solution	Brief description	Reasons for rejection
Directly support the RMC's NARES.	The Bank directly finances the NARES.	• Generally limited physical and human resources capacity in the NARES. • Difficulties in addressing research needs of regional interests.
Support existing agricultural research fora at the regional and sub-regional levels.	The Bank continues to support FARA and the sub-regional organizations such as ASARECA, CORAF/WECARD, and SADC-FANR.	• The fora have only research coordination role. Actual research works are done by NARS and CGIAR centers.
Using Window 1 or 2 of the CGIAR Funding channels.	The Bank provides funding to CGIAR global fund (Window 1) or to CRPs (Window 2).	• Targeting Bank's low income RMCs, the project's direct beneficiaries – to meet ADF requirements would not be possible.
Support only extension	The Bank funds only the dissemination of available technologies.	• The necessity to fine-tune and adapt available technologies. • Poor anticipation of upcoming agricultural and environmental challenges and research for the future.
Limit support to upstream research.	The Bank only supports technology generation.	• Limited impact of low rate adoption of technologies. • Benefits from market driven technology generation and adoption are not considered. • It constrains the use of the full value chain approach. •

2.4. Project Type

2.4.1 The project is a multinational grant investment operation funded through ADF XII. Although experimentation shall be in selected locations, the project outputs are expected to be benefitted from by all the Banks RMCs. The project is funded with RPG resources.

2.5. Project Cost and Financing Arrangements

2.5.1 The total project cost is estimated at UA 53.90 million net of taxes and customs duties.

This cost is broken down into UA 39.1 million (or 72.5%) in foreign exchange and UA 14.8 million (or 18.5%) in local currency. Tables 6 and 7 show the project cost by component and category, respectively (details by commodity are presented in Annex D and E, respectively, of the Implementation Document).

Table 6: Summary of Project Cost by Components

Components	US$ million			UA million			% FE
	LC	FE	Total	LC	FE	Total	
Component 1	3.466	16.367	19.833	2.19	10.32	12.51	82.5
Component 2	4.458	15.371	19.829	2.81	9.69	12.50	77.5
Component 3	4.772	10.168	14.940	3.01	6.41	9.42	68.1
Component 4	1.055	3.834	4.889	0.67	2.42	3.08	78.4
Base cost	13.751	45.740	59.491	8.67	28.84	37.51	76.9
Physical contingencies	0.302	0.929	1.231	0.19	0.59	0.78	75.5
Price contingencies	1.059	1.444	2.502	0.67	0.91	1.58	57.7
TOTAL	15.111	48.113	63.224	9.53	30.34	39.86	76.1

Component 1: Generation of Agricultural technologies and innovations; **Component 2:** Dissemination and adoption of agricultural technologies and innovations; **Component 3:** Sustainable capacity strengthening of project stakeholders; **Component 4:** Efficient management of the project.

2.5.2 The costs were estimated on the basis of prevailing August 2011 prices in selected RMCs. The costs include a physical contingency of 10% on the works and equipment. A price contingency of 7% on the local currency costs and of 3% on the foreign exchange cost was applied on all the components.

Table 7: Summary of the Project Cost by Category of Expenditure

Categories	US$ million			UA million			%
	LC	FE	Total	LC	FE	Total	FE
Works	0.211	3.014	3.224	0.133	1.900	2.033	93.5
Goods	0.595	7.340	7.935	0.375	4.628	5.003	92.5
Services	6.767	22.227	28.993	4.266	14.014	18.281	76.7
Personnel	2.746	9.020	11.766	1.731	5.687	7.419	76.7
Recurring expenditure	3.443	4.149	7.592	2.171	2.616	4.787	54.6
Base cost	13.762	45.749	59.511	8.677	28.845	37.522	76.9
Physical contingencies	0.302	0.929	1.231	0.190	0.586	0.776	75.5
Price contingencies	1.059	1.444	2.502	0.667	0.910	1.578	57.7
TOTAL	15.122	48.122	63.244	9.535	30.341	39.876	76.1

2.5.3 **Sources of Financing:** The project is jointly financed by the ADF and the participating low-income RMCs (see Table 8). The CGIAR Centers are unable to make in-kind or other co-contributions due to the new CGIAR's policy of full cost recovery. However the project will draw on a wealth of technologies and innovations derived from earlier research investments by the CGIAR Centers. Participating low-income RMCs' counterpart

funding will be contributed through national staff salaries, part of the operating cost, rental value of the office space offered, laboratory infrastructure and experimental land and the loss in fiscal receipts due to tax and custom duty exemption of different project procurements. In kind beneficiaries' contributions comprise additional work associated with the adoption of SARD-SC derived technologies and innovations during the testing phase, the rental value of land used for on-farm trials and community works to mitigate the negative impact of some project activities on the environment. The ADF will cover 74.2% of the total project cost or UA 27.06 million (70.7%) in foreign exchange and UA11.22 million (29.3%) in local currency. The expenditure schedule for the project is summarized in Table 9.

***Table 8:* Sources of Finance (UA million)**

Sources	US $ million			UA million			% FE
	L.C.	**F.E.**	**Total**	**L.C.**	**F.E.**	**Total**	
ADF Grant	18.78	44.46	63.24	11.62	28.25	39.88	70.9
Governments	22.41	0.00	22.41	13.95	0.0	13.95	0.0

***Table 9:* Expenditure Schedule by Component (UA million)**

Component	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**
Component 1	4.07	2.28	2.03	2.03	2.05	12.45
Component 2	3.19	2.40	2.34	2.33	2.38	12.65
Component 3	4.04	1.76	1.60	1.35	1.08	9.82
Component 4	0.44	0.43	0.47	0.45	0.49	2.27
Contingencies	0.73	0.52	0.49	0.32	0.31	1.45
Total across crops	**12.46**	**7.38**	**6.93**	**6.64**	**6.47**	**39.88**

2.6. Project's Beneficiaries

2.6.1 Individual farmers and consumers, farmers' groups including youth and women, policy makers, private sector operators, marketers/traders, transporters, small-scale agricultural machinery manufacturers, and institutions (NARES, CGIAR, NGOs) from low income Bank's RMCs (Benin Republic, Cote d'Ivoire, DR Congo, Eritrea, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe) are the project direct beneficiaries (see Annex Q of Vol. 2). However, it should be noted that SARD-SC will produce Regional Public Goods (RPGs) of public interest; no one can be excluded from these. The new crop varieties, crop management practices, knowledge and other products from the CGIAR's research work are "international public goods" (IPGs), made widely available to individuals and organizations working for sustainable agricultural development in the world.

2.6.2 National researchers, in particular, will acquire new skills through participation in workshops on research methodologies and interaction with CGIAR international scientists. The adoption of higher yielding varieties and application of new farming practices and knowledge will enhance and stabilize agricultural productivity, production and income, thus contributing to food security and poverty reduction in participating RMCs. The national economies of the beneficiary RMCs will be improved as a result of an increase in domestic production of the products of the target value chains and an overall increased access to staple food. There will also be a reduction in foreign exchange spent on food imports. Within its

lifespan, it is estimated that project benefits will directly reach more than 827 000 beneficiaries (more than 19 000 for rice; 522 000 for cassava, 268 000 for maize, and more than 17 800 for wheat).

2.6.3 About 5.2 million other stakeholders (1,474,505 for rice; 2,488,800 for cassava, 952,771 for maize, and 280,300 for wheat) will be reached indirectly through farmer-to-farmer exchange, strengthened extension services and innovative communication tools, such as rural radio and video to out-scale value chain innovations. All these are possible given the numerous possible outcomes and benefits (as identified in Annex H of Vol. II) from the SARD-SC project coupled with the increased efficiency in research and delivery through effective collaboration among the CGIAR centers and between them and the NARES. The thematic research for development networks planned for in the project will speed the transfer, and adoption of innovations.

2.7. Participatory Process for Project Identification, Design and Implementation, including Active Participation of the Private Sector and Civil Society

2.7.1 At all stages of the SARD-SC project formulation, including identification, preparation and appraisal, the Bank and participating CGIAR centers adopted a fully participatory approach. Both the identification and the preparation phases included workshops attended by relevant stakeholders (participating CGIAR centers, NARES, civil society organizations, Regional Research bodies, farmers' representatives, etc.). On the CGIAR side, a long and extensive participatory and consultation process started since 2009 and involved the Global Forum on Agricultural Research (GFAR) and several Research and Development stakeholders. The consultations included the Global Conference on Agricultural Research for Development (GCARD) in Montpelier in 2010 and the CAADP's Multi-donor Trust Fund (MDTF) meetings in Brussels and Dublin in 2011. Building on the outcomes of that consultative process the CGIAR articulated four system level outcomes in its Strategy and Results Framework (SRF) – reduced rural poverty, stronger food security, better nutrition and health, and sustainable natural resource management. To operationalize the SRF, the CGIAR designed global research programs (CRPs), which were developed using a bottom-up, consultative approach, with technical review provided by an independent science and partnership council, and final approval by the CGIAR Fund Council.

2.7.2 The four value chains in this intervention are aligned with the respective CRPs and will allow for focused attention on the key objectives for Africa. In shaping the research and development agenda of the CGIAR, FARA consolidated and presented the concerns of the sub-Regional Research Organizations (ASARECA for East & Central Africa, CORAF/WECARD for West & Central Africa, and SADC-FANR for Southern Africa), civil society organizations, and the African private sector. This participatory process involved regional research reviews, e-consultations, and face-to-face meetings. This participatory approach used during project formulation will continue during its implementation.

2.8. Bank Group Experience, Lessons Reflected in Project Design

2.8.1 Through several operations focusing on agricultural research, agricultural extension, and capacity building, the Bank has supported the generation and transfer of agricultural innovations in its RMCs over the years. Five of these operations, namely the West Africa Rice Development Association (AfricaRice) Research Project, Multinational NERICA Dissemination Project, Multinational FARA Research Project, Cameroon Agricultural

Research & Extension Project, and Tanzania Agricultural Research & Extension Project were standalone agricultural research interventions with a total funding of about UA 80 million funded by the Bank. In addition, the Bank provided several small research and institutional development grants to several international agricultural research centres including those of the CGIAR, and regional organisations.

2.8.2 These operations were reviewed during implementation and at completion. The evaluations, which concluded that the projects contributed significantly to agricultural productivity, production and income enhancement, food security and poverty reduction in Africa, also provided useful operational lessons. Overall assessment of past investments shows that alignment of the grantees with development objectives and the strategy of the Bank Group and that of the RMCs was satisfactory. Grant resources were used for the intended purposes. However, compliance with reporting format and timeliness was not systematic. While past experience has also shown that the Centers are transparent and accountable in the managing of funds from different donors, they will still need to get more acquainted with Bank's rules and procedures, in particular these related to fiduciary aspects. Other key lessons from past operations include: (i) the need to build a regional research system promoting effective partnership between national, regional and international research organizations; (ii) the need to allocate roles for research works of regional interest on the basis of complementarity and comparatives advantage of partners; (iii) the paramount importance of capacity building for national partners for ownership and sustainability of projects and their impacts; (iv) the need to adopt a value chain approach in technology generation and transfer; (v) the need for a lean project implementation team for its efficient management; and (vi) the need for training project implementation teams in rules and procedures related to Bank's fiduciary aspects.

2.8.3 To ensure the expected project outputs, outcomes and impact results, in particular, new crops varieties, farming practices, agricultural knowledge, higher yields, production and income, and enhanced institutional capacity for NARES, are achieved, the above-cited lessons guided the project design. Greater use of Field Offices in project supervision, the good track record and experience in project implementation of participating CGIAR centres, and the use of proven value chain development models are additional guarantees that expected project impacts will be achieved.

2.8.4 The review of the Bank's support to Research confirmed the finding of the numerous evaluations of the CGIAR impacts, which were generally very positive. To mention few CGIAR research impacts in Africa confirmed by recent studies, the following are presented:

(i) More than 50 CGIAR new varieties of maize with drought tolerance have been adopted on about one million hectares across eastern and southern Africa, giving an average extra yield of 20-30 percent. A 2010 study projects that further adoption of these maize varieties could boost harvests by 10-34%, in 13 African countries generating up to US$ 1.5 billion in benefits for producers and consumers.

(ii) The estimated rates of return on the CGIAR's investment in all crop improvement research range from 39 percent in Latin America to more than 100 percent in Asia, the Middle East and North Africa.

(iii) A recent study reported that for every US$ 1 invested in CGIAR research, US$ 9 worth of additional food is produced in developing countries.

(iv) The CGIAR has made significant contribution to the developing of the capacity of national partners through formal and informal training as well as other learning activities. An estimated 80,000 agricultural professionals have been trained through the CGIAR collaborative programmes.

(v) In the late 1980s, Africa witnessed one of the CGIAR's most spectacular research achievements since the Green Revolution – biological control of two devastating insect pests of the tropical root crop cassava. The economic returns – reaching a current value of US$ 9 billion for research on just one of the pests, the cassava mealy bug – far exceed the CGIAR's total investment in Africa since 1971.

(vi) As a result of maize improvement in West and Central Africa from 1971 to 2005, farmers are planting improved varieties, derived mostly from CGIAR research, on about 60 percent of the total maize area, with economic benefits estimated at US$ 2.9 billion annually.

(vii) New Rice for Africa, or NERECA, which combines the high yields of Asian rice with African rice's resistance to local pests and diseases, has spread to about 800,000 hectares, helping to reduce national rice import bills and generating higher incomes in rural communities. Average yield for farmers using NERICA varieties rose from about 1.0 to 2.5 tons per hectare. As a result of the increase in domestic production with use of NERICA, rice importations have decreased in RMCs participating to the Multinational NERICA Project. For example, in The Gambia, the rice import substitution was estimated at USD 15.0 million in 2009 as against an expected USD 5.4 million at the end of the project (2010).

2.9. Project's Performance Indicators

2.9.1 The Results Based Logical Framework (RBLF) contains indicators pertaining to impact, outcomes and outputs. A baseline study is a high priority activity in this project. It should be conducted at the onset of project implementation and will provide the basis for a reality check on progress with each performance indicator as project implementation advances. Efforts toward achieving project impacts, outcomes and outputs will be checked against targets set in the RBLF. The annual and quarterly reports will provide information on the progress made in outputs. The mid-term review and end-of-project reports will address progress made towards achieving the expected project outcomes. An impact assessment study at the end of the project will focus on project achievements and issues of sustainability. The four M&E specialists in the different value chains will be responsible for setting up a system to collect, manage and report on project data and progress being made. An impact assessment of the project can be conducted across the four value chains. The M&E specialists shall meet, discuss, and set up an appropriate and gender sensitive M&E framework and data management system that will enable easy comparison of project progress and impact achievements. All related reports will be shared with project stakeholders, the project steering committee (PSC), and the Bank. Success in this project will additionally be measured through increases in the productivity and production of cassava, maize, rice and wheat; rural poverty reduction with a total of 473,000 persons estimated to be lifted out of poverty (see section 3.2.5 on Socio-economics); reduction in food prices; and contribution to the attainment of MDG1 (Eradicate Extreme Poverty & Hunger) and MDG7 (Ensure Environmental Sustainability).

3. PROJECT FEASIBILITY

3.1. Economic and Financial Performance

3.1.1 Economic and Financial analyses were carried out for each value chain using the econometric counterfactual approach for rice and the economic surplus approach for cassava, maize, and wheat. The benefits (due to increase in productivity and resilient cropping systems because of SARD-SC, effective extension and training, and conducive policies for access to inputs and products markets) were measured based on a parallel downward shift (linear) in the supply curve due to research and market development. The annual flows of gross economic benefits from crop improvement and value chains were estimated and aggregated, with the aggregate benefits and costs (per value chain) finally discounted to derive the present value (in 2011) of total net benefits from the intervention. The benefits and costs were later aggregated across the four (4) value chains to calculate the aggregate financial and economic impacts. Details of the methodologies and results are contained in Vol. 2, Annex I (a, b).

3.1.2 The consolidated Net Present Value (NPV) of the Financial Net Benefits was USD 873.8 million with an internal rate of return (FIRR) of 38%. Using World Prices (to correct for domestic distortions, taxes, and subsidies), the NPV of net economic benefits was calculated at USD 567 million with an internal rate of return (EIRR) of 31%.

3.1.3 The results are quite robust to yield, adoption and discount rate changes. For example, a scenario of 10% adoption, 10% yield increase, and 10% discount rate across the four value chains still gave an aggregate NPV of USD 588 million and an EIRR of 24%. This proves succinctly the economic profitability of the SARD-SC project.

3.2. Environmental and Social Impacts

3.2.1 **Environmental Impact:** SARD-SC is classified as Category 3 under the Bank's Environmental and Social Assessment procedures. According to the Bank's policy, no Environment and Social Management Plan (ESMP) is required during the implementation of the project. Overall, the increase in productivity of the four crops will imply less marginal land encroachment, less deforestation and less destruction of fragile ecosystems. The evaluation of the environmental and social implications of the SARD-SC project was looked at for each of the four value chains. The proven environmentally friendly agronomic packages promoted by the project (drought tolerant germplasm, integrated pest management (IPM), disease resistant germplasm, rational mineral fertilisation, irrigation optimisation, minimum tillage, etc.) will rationalize the use of inputs such as irrigation water, agrochemicals and even fossil energy leading to good yields with less pollution, more water savings, and less greenhouse gas emissions while sustainably improving food security, food safety, and farmers income.

3.2.2 **Climate Change:** The CGIAR Research Program on Climate Change, Agriculture and Food Security (CRP 7) will benefit SARD-SC project through purposeful collaboration based on comparative advantage. Rationalizing the utilisation of production inputs and their optimal combinations, as promoted by the project, will help construct climate-resilient production systems for the four strategic crops ensuring stable and sustainable food production. The use of crop germplasm with a wide range of adaptation to rainfall and irrigation patterns will help famers and their households cope with inter- and intra-annual climatic variations. The project will also enhance research capacity to predict emerging climate change challenges including

new virulence of major crop pests and diseases and risks of enhanced drought and/or flooding. SARD-SC is designed to provide climate change-proof varieties of the target commodities to millions of farmers in project areas.

3.2.3 **Gender:** Women are heavily involved in both the production and the processing phases of the target crops. They often retain related important traditional knowledge which will be documented during the baseline study and valued during implementation. There is no foreseen negative impact of SARD-SC on women during and after the implementation phase. Rather, the value chain approach of the project will open up more income generating opportunities for women. The design of the project includes structured and on-the-job training (technical, organizational, entrepreneurial) to empower women to equitably capture various project benefits. Because women play a crucial role in most of the target value chains, they will also be empowered in terms of access to resources and technologies, to capacity strengthening and to decision-making. In order to follow up on the benefits gained by the women, project data will be disaggregated by sex in the baseline survey, during reporting on project implementation progress particularly during mid-term review and at project closing. It is expected that the empowerment of women along the value chain by the project will allow them to get a better share of the revenues generated and therefore reduce their poverty level.

3.2.4 The foregoing notwithstanding, across the different value chains, a gender-based constraints identification will guide project staff and partners in the choice of existing technologies for men and women and in the development of appropriate gender sensitive technologies. Smallholder farmers will be central in technology development and evaluation and in value chain development. Based on constraints identification, the project will ensure that smallholder farmers and particularly women will benefit, through their active involvement, working with women's groups, and by targeting project interventions specifically to smallholder farmers. As an overall strategy, the implementation of the project will ensure that at least 30% of farmers and other stakeholders involved in technology evaluation activities and training will be women. At the minimum, one-third of the outside members of the Project Steering Committee (PSC) will be women. Extension workers (from NGOs or national extension services) that will benefit from capacity building will include at least 30% women.

3.2.5 **Socio-economic:** Apart from being a project in support of research with broad sectorial and/or economy-wide objectives, the social impact of this intervention is significant. This is underscored by the all-inclusive nature of the project beneficiaries: farmers, farmers' groups, youth, private sector, policy makers, marketers and traders, transporters, fabricators, NARES, NGOs/CBOs [details in Annex J (a, b, c, d) of Vol. 2]. The poverty reduction impact of the project is also very impressive. The potential number of people that can be lifted out of poverty by the different constituent value chains consisted of about 183,000 for cassava, 78,000 for maize, 141,000 for rice, and 71,000 for wheat, making a grand total of 463,000 (details in Annex Ib. of Vol. 2).

3.2.6 Women and the youth will receive special attention in this intervention. They will benefit from increased productivity, improved value-addition, and enhanced competitiveness in local and regional markets. All these will help to attenuate youth unemployment and rural–urban migration. The potential improvement expected on the processing and marketing of the four commodities value chain is expected to benefit mostly women who are the primary entrepreneurs in this segment. Agricultural machinery manufacturers will benefit from

increased markets for locally made machines. The participating CGIAR centers will provide necessary technical and scientific backstopping in the four value chains.

3.2.7 The use of cost effective agricultural packages and the associated increased yields and reduced post-harvest losses will enable farmers to obtain more income from the four strategic commodities. More competitive production systems and value chains will provide more affordable basic staples for domestic consumption and reduce food imports. Both national economies and population's nutrition and health will be enhanced as less food will be imported and more food from domestic sources will be available. The use of less agro-chemicals and bio-fortification options of some commodities (wheat, rice) will provide safer and more nutritious diets to the consumers.

3.2.8 **Involuntary Resettlement:** Not applicable.

4. IMPLEMENTATION

4.1. Implementation Arrangements

4.1.1 **Institutional Arrangements, Coordination, Capacity and Constraints:** The three centers will be the implementing agencies for the four commodity sub-projects: AfricaRice and ICARDA for the rice and wheat sub-projects, respectively; and IITA for the cassava and maize sub-projects. IFPRI will be a specialized technical agency to support the other three Centers in the implementation of the sub-projects' activities dealing with the strengthening of the technical and commercial capacities of farmers organizations. The acquisition of special services from IFPRI will be done through single source selection with justification acceptable to the Bank. The costs of the activities to be implemented by IFPRI are imbedded in the costing of the four sub-projects. IITA as Executing Agency will sign MoUs with each of the three centers (AfricaRice, ICARDA, and IFPRI). The NARES (NARS, Universities, etc.), the private sector and civil society organizations will play active roles in the implementation of the project (details are in Operational Plans in Annex Q of Vol. 2).

4.1.2 A lean, swift and effective project management mode is necessary. This, however, should not be at the expense of efficiency, economy, accountability, and transparency. While the day to day execution and management of commodities sub-projects is left to the centers (IITA: maize and cassava, AfricaRice: rice, ICARDA: wheat), the overall coordination of the Bank's support is under the responsibility of IITA who will have the role of the Executing Agency of the project. Each center will be strengthened with human, equipment and budget resources to oversee the implementation and reporting of project activities. Staff involved in project implementation will receive sufficient training on Bank's rules and procedures for financial management, disbursement and procurement, at early stage of the project. Training will also be given by relevant Bank's units to familiarise them with the required reporting formats for the Bank of the needed reports (quarterly and annual progress reports, annual work plan and budget, audit report, and evaluation reports of bids). Project resources will also be used to hire consultant's services to prepare Project Implementation and Financial Management Manuals that will be uniform across all commodities.

4.1.3 During appraisal, the mission conducted a capacity assessment in terms of financial management and procurement of the three centers (AfricaRice, ICARDA, and IITA). The assessment showed that all centers have many years of experience with the implementation and management of donors' funded projects with a good track record of accountability and

results delivery. All centers have adequate and functional IT equipment and telecommunication tools at their disposal.

4.1.4 A Project Steering Committee (PSC) will be set up to provide policy guidance, review project progress, approve Annual Workplan & Budget, resolve inter-centers issues and undertake overall supervision of the project. The composition of the PSC (of which one-third of non-CGIAR sourced members should be women) is as follows: the Director General of AfricaRice or his designated representative; the Director General of ICARDA or his designated representative; the Director General of IITA or his designated representative; the Executive Director of FARA or his designated representative; a representative of the Pan-African Farmers' Forum (PAFFO) (appointed by peers); two representative of the NARES (appointed by peers); and two representatives of the Private sector (appointed by peers). Project managers at the respective centers will attend PSC for consultative purposes. The PSC is expected to meet at least once a year on a rotating basis (IITA first). Being the Forum for Agricultural Research in Africa, leading CAADP's Pillar IV (Agricultural Research), the Executive Director of FARA will chair the PSC. The secretariat of the PSC is located at the Executing Agency (IITA). The modalities of nomination and the terms of reference are detailed in Annex L of Vol. 2.

4.1.5 Project Management teams (PMT) will: (i) Oversee day-to-day implementation of project activities; (ii) Prepare and submit Program of work and budget (PWB); (iii) Facilitate the transfer of project resources to relevant national stakeholders; (iv) Prepare and submit mandatory project reports for own commodity value chain; (v) Elaborate and implement an administrative and financial management manual to be used across implementing centers; (vi) Establish and implement a common M&E system across implementing centers; (vii) Organize annual technical and coordination meetings (involving NARES, CGIAR, and other stakeholders) to present results, annual work plans and budgets. The team will be (i) Project managers from the three implementing institution (4); (ii) Commodity specialists (4); (iii) Accountant for each implementing institution (3); (iv) Procurement specialist for each implementing institution (3); (v) M&E specialist for each value chain (4); and (vi) Support staff team for each implementing institution.

4.1.6 As an executing agency, IITA will be the intermediate entity between the Bank and the different participating centers (implementing agencies). All project funds will be channeled to the participating CGIAR centers through IITA at no service charge as agreed on during project negotiations. At the beginning of the project a stakeholder workshop will be held for each commodity, to introduce the project objectives, content and implementation strategy. Along with their respective NARES' partners, the Centers shall also be co-responsible for the adoption of SARD-SC derived agricultural innovations by producers and other relevant stakeholders. They are, therefore, expected to arrange purposeful partnerships with relevant institutions (e.g., other CGIAR Centers, CGIAR Research Program on CCAFS, Universities, and National Policy Groups) based on comparative advantage. Through the direct support of these participating Centers (AfricaRice, ICARDA, and IITA) the SARD-SC project will operate within the CGIAR-Strategic Results Framework (SRF) and more specifically contribute to the implementation of global CRPs in Africa.

4.1.7 Moreover, Centers are responsible for the financial execution and follow up of the budget, the internal monitoring and evaluation, the internal and external audit and all activities related to procurement. Funding requests along with the justifications for used funds are to be prepared by the Management Units at the Centers according to Bank's rules and procedures.

Requests of No Objection, including those related to procurement, will be directly submitted to the Bank and copied to IITA, the EA.

Procurement Arrangements

4.1.8 The procurement of goods, works and acquisition of consulting services will be in accordance with the Bank's Rules and Procedures: "Rules and Procedures for Procurement of Goods and Works", dated May 2008; and "Rules and Procedures for the Use of Consultants", dated May 2008. The procurement arrangements are summarized in Annex M of Vol. 2.

4.1.9 The Project Management Team (PMT) in each of the three project implementing institutions will be responsible for the procurement of goods, works and services for their respective centers. A Tender Evaluation Committee (TEC) composed of appropriate technical staff designated by the implementing institutions will participate in tender evaluations. The Tender Evaluation Report (TER) and the recommendation of the TEC for procurement and award of contract must be communicated to the Bank for 'No Objection'.

4.1.10 The procurement arrangements are summarized in Annex M of Vol. 2. The draft procurement plan for the first 18 months will be updated at least annually or as required to reflect project implementation needs.

Disbursement Arrangements

4.1.11 The Special Account and Direct Payment Methods will be used for the disbursement of the grant resources in line with the disbursement procedures indicated in the Disbursement Handbook of the Bank. The three Centers will maintain two Special Accounts each; one in foreign currency for the receipt of the grant funds and the other in local currency. The accounts will be opened at banks acceptable to the Fund.

4.1.12 The Fund will disburse upon submission by the participating Centers of a disbursement request supported by the justification of 50% of the previous advance to replenish the special account. Funds to AfricaRice and ICARDA will be disbursed through IITA which will maintain separate records at all times for all disbursements made by the Bank. Justifications of expenditure by the two Centers should also be sent to the Bank through IITA.

Audit arrangements

4.1.13 The CGIAR Centers maintain high internal audit standards and norms in line with the CGIAR Financial Guidelines No. 3, Auditing Guidelines. Internal audits are carried out by each Center's internal auditors. As a result, the Fund will share from the audit report presented to other donors. Such reports must, however, clearly indicate how the SARD-SC project funds are used. The Centers' annual Audit reports must be submitted to the Bank no later than six months after the audited fiscal year closing. Lack of compliance will lead to suspension of disbursements.

4.1.14 All Centers are responsible for ensuring the maintenance, at all times, of satisfactory and professionally acceptable accounting records and asset registers in accordance with Bank guidelines. They should also ensure that adequate internal control systems are maintained.

Financial Management

4.1.15 The audit opinions on the financial statements prepared by the CGIAR Centers for the last three years were deemed clean and unqualified.

4.1.16 In summary, financial management risk in the project is low (details in Annex P of Vol.2). The financial management arrangements of the implementing units meet the Bank's requirement under the Guidelines for Financial Management and Financial Analysis of Projects (2007 - African Development Bank) and are adequate to provide, with reasonable assurance, accurate and timely information on the project as required by the Bank.

4.2. Monitoring & Evaluation

4.2.1 The baseline study to be conducted at the onset of the project will be instrumental to the monitoring of project achievements against planned targets as articulated in the Objectively Verifiable Indicators (OVIs) in the RBLF. Progress in project implementation will be documented in the quarterly and annual reports of the project and in the Bank's supervision mission reports. The CGIAR's Independent Science and Partnership Council (ISPC) will review and endorse SARD-SC research programs, prior to the approval of the projects annual work program and budget by the PSC. A mid-term review and an end of project report will document project achievements at project half-life and at its completion. An impact assessment of the project will also be carried out. All of the above studies were budgeted for in the project. The reports generated must be shared with relevant stakeholders and the PSC. Being responsible for the internal M&E system, the M&E specialists will be in charge of maintaining, collecting and managing the database pertaining to project implementation and will monitor progress towards project targets. With the assistance of a hired consultancy service, the M&E specialists in the three Centers will jointly design an appropriate M&E system that should be robust and sensitive enough to track the implementation of project activities. During the Design of the M&E system the specialists will receive on the job training from the consultant. A draft M&E template by the CGIAR Consortium for the CGIAR Research Programs (CRPs) is included in Vol. 2 (Annex N). The project implementation schedule is Vol. 2 (Annex R).

4.3. Governance

The implementation of the project requires good governance at all levels from CGIAR centers to NARES (i.e., more responsiveness, transparency, accountability and efficient use of resources). Hence, the proposed institutional arrangements are designed to ensure good governance as an instrument for achieving the project objectives.

4.4. Risks, Management and Mitigation measures

4.4.1 Difficulties may occur in the implementation of the key strategy of the project in developing links between value chain stakeholders, producers, processors and marketers. As a result, the project faces the following risks:

4.4.2 **Risk:** Lack of necessary macro-economic reforms.

4.4.3 **Mitigation:** Policy advocacy with policy makers.

4.4.4 **Risk:** Lack of commitments of NARES and/or CGIAR staff and/or other Value-chain stakeholders in project activities.

4.4.5 **Mitigation:** Active involvement of all stakeholders from inception through effective participatory approach to define clearly the role and expectations for each value-chain actor involved in the project implementation.

4.4.6 **Risk:** Lack of capacity and insufficient motivation in NARES and other partners.

4.4.7 **Mitigation:** Careful selection and capacity building of partners and strategic backstopping and mentoring by CGIAR centers will minimize the risk of weak capacity in institutions and markets. NARES will be fully involved in the design of project activities and will develop joint work plans and budgets with national partners with clear allocation of tasks and responsibilities; Extensive capacity building of stakeholders along the value chain.

4.4.8 **Risk:** Management of a complex multinational project.

4.4.9 **Mitigation:** The CGIAR centers' wide experience in managing complex projects with multi-stakeholders and multi-disciplinary partnerships will be leveraged by the NARES.

4.4.10 **Risk:** Mismatch between commodity supply and demand due to the intervention.

4.4.11 **Mitigation:** The comprehensive value chain approach adopted in the project implies that all necessary linkages to ensure a full absorption of all the produce at different points in the chain and at competitive prices.

4.4.12 **Risk:** The management of the project, particularly issues related to different systems of governance (fiduciary) and procurement systems in project countries or Regional centres.

4.3.13 **Mitigation:** Extensive capacity building, especially on the Bank's Procurement Rules and Procedures.

4.5. Sustainability

4.5.1 The sustainability of SARD-SC project is predicated on factors that have been built into its design to ensure sustainable development of project's outcomes beyond its lifetime, and that project activities are adapted to fit real priority needs. The governments of the target low-income RMCs shall make the requisite budget allocations. Reliance on the public institutions (NARES), CGIAR Centers (Source of IPGs research outputs) and the private sector will keep the recurrent cost at a reasonable level as salaries and cost of infrastructure, which are major items in the overall cost, will be picked up by the different parties.

4.6. Knowledge Building and Sharing

The value chain approach adopted by the Project will enhance fairness and equity in sharing the monetary benefits from the project. In addition, it will stimulate knowledge build-up and sharing among different actors (Policy makers, NARES, producers, agri-business, consumers). In this regard both traditional local knowledge and the ones generated by the

CGIAR Centers and the NARES are critical. Putting the different segments of the value chain would reveal new opportunities and challenges facing the target commodities and suggest research, institutional and policy based approaches to addressing them. With the technical and scientific backstopping from the CGIAR participating Centers, the technical, scientific, and managerial capacities of the NARES will be upgraded. Working across CGIAR Centers and in collaboration with several NARES will also create better synergies and knowledge sharing on continental issues pertaining to food security. Likewise, the outcome of the research and development engaged by the project will provide more evidence based policy and decision making by policy makers and planners in agriculture and allied sectors. This knowledge will also be diffused through thematic networks and meetings, websites of CGIAR, FARA, SROs, RECS and the Bank, and project web pages benefiting a large number of direct and indirect users. Most importantly, building of a regional research system through strong CGIAR/NARES partnership programmes and networks will provide unique opportunities for knowledge building and sharing.

5. LEGAL INSTRUMENTS AND AUTHORITY

5.1. Legal Instrument

5.1.1 ADF resources will be used to finance the SARD-SC project as a Grant. In Kind counterpart contributions from beneficiary low-income RMCs will also be used.

5.2. Conditions Associated with Bank Group Intervention

5.2.1 **Conditions Precedent to Entry into Force**: Shall be subject to fulfilment of the provisions of section 10.01 of the General Conditions Applicable to the Protocols of Agreements for the Grants of the Fund.

5.2. 2 **Conditions Precedent to First Disbursement**: The participating CGIAR Centers (AfricaRice, ICARDA, and IITA) must

- Provide evidence satisfactory to the Fund that it has opened a foreign currency Special Account (SA) and a local currency account (LCA) with bank acceptable to the Fund (Para 4.1.1);
- The signing of MoUs between the Executing Agency (IITA) and the implementing agencies (AfricaRice, ICARDA, and IFPRI) (Para 4.1.1).

5.2. 3 **Other Conditions:**

- The appointment by participating CGIAR centers of project key staff including a coordinator, an accountant, a monitoring & evaluation specialist, and a procurement specialist whose qualifications are satisfactory to the Fund (Para 4.1.1)
- The appointment of all the members of the Project Steering Committee (PSC) (Para 4.1.1).

5.3. Compliance with Bank Policies

This project complies with all applicable Bank policies.

6. RECOMMENDATION

Management recommends that the Board of Directors approve the proposed grant of UA 40 million to the CGIAR centers, namely IITA, AfricaRice, ICARDA and IFPRI for the purposes and subject to the conditions stipulated in this report.

Annex I: Summary of AfDB's on-going portfolio in Agricultural Research in Africa [details of past support are contained in Annex O of Vol. 2]

ONGOING SUPPORT

Title	Objective/Description	AMOUNT (UA)	Beneficiary	Signature	Status	Disb. Deadline
BANK SUPPORT FOR AFRICAN ECONOMIC RESEARCH CONSORTIUM (AERC)	The project has five components: (i) Thematic research: (ii) Collaborative research project on "Understanding the links between economic growth and poverty reduction"; (iii) Collaborative Masters; (iv) Collaborative PhD program; and (v) Research Innovations Endowment Fund (RIEF).	1.000.000,00	AERC	02.04.2009	On-going	31.12.2011
PROMOTION OF SCIENCE AND TECHNOLOGY FOR AGRICULTURAL DEVELOPMENT IN AFRICA (FARA)	Strengthen capacity of agricultural research in building endogenous innovation and information system in order to generate and sustain scientific and technological development in agriculture and natural resource management. The Project has three components as follows: (1) Knowledge and Information Management; (2) Technology Transfer and Good Agricultural Practices; and (3) Project Management.	15.581.000,00	REG. AND NTL AGRIC. RES INSTITUTES	18.12.2006	On-going	31.12.2013
NERICA RICE DISSEMINATION PROJECT (R&D GRANT– WARDA) AND R&D IN SEVEN COUNTRIES.	The grant is to finance The technology transfer component of the NERICA project being implemented in seven west African countries, with the objective to enhance rice production and import substitution. The project has the following components: a) Technology Transfer; b) Production Support; c) Capacity Building; and d) Project Coordination.	22.000.000,00	WEST AFRICA RICE DEVELOPMENT ASSOCIATION & NARS SCIENTISTS	27.10.2003	On-going	31.12.2010
SUPPORT TO THE ECONOMIC COMMISSION OF WEST AFRICAN STATES (ECOWAS) NETWORK OF REGIONAL AFRICAN INSTITUTIONS OF SCIENCE AND TECHNOLOGY (AUST & 2IE).	The purpose of the grant was to increase the number and improve the quality of qualified science and engineering graduates in order to provide a regional consolidated response to the needs for highly qualified personnel in science and engineering in the ECOWAS region. The creation of a center of excellence and a network of solid institutions will also participate in fostering a mobility of skills and regional integration.	12.000.000,00	ECOWAS	10.06.2009	On-going	31.12.2013
TOTAL FINANCING		**UA 50.581 MILLIONS (USD 78.4 MILLIONS)**				