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Report No: 1870

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON PROPOSED GRANTS

IN THE AMOUNT OF SDR 4.50 MILLION (US\$6.25 MILLION EQUIVALENT) TO BURKINA FASO  
IN THE AMOUNT OF SDR 17.70 MILLION (US\$25 MILLION EQUIVALENT) TO REPUBLIC OF CHAD  
IN THE AMOUNT OF SDR 5.90 MILLION (US\$8.33 MILLION EQUIVALENT) TO REPUBLIC OF MALI  
IN THE AMOUNT OF SDR 17.70 MILLION (US\$25 MILLION EQUIVALENT) TO ISLAMIC REPUBLIC OF MAURITANIA  
IN THE AMOUNT OF SDR 4.50 MILLION (US\$6.25 MILLION EQUIVALENT) TO REPUBLIC OF NIGER  
IN THE AMOUNT OF SDR 14.20 MILLION (US\$20 MILLION EQUIVALENT) TO PERMANENT INTERSTATE  
COMMITTEE FOR DROUGHT CONTROL IN THE SAHEL

PROPOSED CREDITS

IN THE AMOUNT EUR 15.90 MILLION (US\$18.75 MILLION EQUIVALENT) TO BURKINA FASO  
IN THE AMOUNT OF EUR 14.20 MILLION (US\$16.67 MILLION EQUIVALENT) TO REPUBLIC OF MALI  
IN THE AMOUNT OF EUR 15.90 MILLION (US\$18.75 MILLION EQUIVALENT) TO REPUBLIC OF NIGER  
IN THE AMOUNT OF EUR 21.20 MILLION (US\$25 MILLION EQUIVALENT) TO REPUBLIC OF SENEGAL

AND A PROPOSED GLOBAL PARTNERSHIP FOR OUTPUT BASED AID GRANT  
IN THE AMOUNT OF US\$5.85 MILLION TO BURKINA FASO

FOR THE

SAHEL IRRIGATION INITIATIVE SUPPORT PROJECT

NOVEMBER 10, 2017

Water Global Practice and Agriculture Global Practice  
Africa Region

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CURRENCY EQUIVALENTS  
(Exchange Rate Effective as of September 30, 2017)

Currency Unit	=	CFA Francs (CFAF)
CFAF 555	=	US\$1
SDR 0.70756386	=	US\$1
EURO 0.84656085	=	US\$1

FISCAL YEAR  
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

2iS	<i>Initiative pour l'Irrigation au Sahel</i> (Sahel Irrigation Initiative)
AFD	<i>Agence Française de Développement</i> (French Development Agency)
AfDB	African Development Bank
AGIR	<i>Alliance Globale pour la Résilience</i> (Global Alliance for Resilience)
AGRHYMET	CILSS Regional Center for Agriculture, Hydrology and Meteorology
ANADER	<i>Agence Nationale pour le Développement Rural</i> (National Rural Development Agency)
ANIDA	<i>Agence Nationale d'Insertion et de Développement Agricole</i>
ARID	<i>Association Régionale pour l'Irrigation et le Drainage en Afrique de l'Ouest et du Centre</i> (West and Central Africa Irrigation and Drainage Association)
ATI	<i>Agence d'Aménagement des Terres et de Fourniture de l'Eau d'Irrigation</i> (Land Improvement and Irrigation Water Supply Agency)
AWM	Agricultural Water Management
AWP&B	Annual Work Plan and Budget
BP	Bank Policy
CAADP	Comprehensive African Agriculture Development Programme
CGER	<i>Centre de Gestion et d'Économie Rurale</i> (Rural Management and Economic Advisory Center)
CILSS	<i>Comité Permanent Inter-États de Lutte contre la Sécheresse au Sahel</i> (Permanent Interstate Committee for Drought Control in the Sahel)
CIRAD	<i>Centre international de Recherche Agricole pour le Développement</i> (International Agriculture Research Center for Development)
CONACILSS	<i>Comité National du CILSS</i> (National Committee of CILSS)
CORAF	<i>Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricole</i> (West and Central Africa Council for Research and Agricultural Development)
COSTEA	<i>Comité Scientifique et Technique Eau Agricole</i>
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CRA	<i>Chambre Régionale d'Agriculture</i> (Regional Chamber of Agriculture)
CRP	<i>Comité de Pilotage des Projets et Programmes du CILSS</i> (Regional Steering Committee for the CILSS Projects and Programs)
CRRA	<i>Centre Régional de Recherche Agricole</i> (Regional Agricultural Research Center)
CSO	Civil Society Organization
DA	Designated Account
DAA	<i>Direction de l'Aménagement Agricole</i> (Directorate for Agricultural Infrastructure)

DBRLA	<i>Direction des Bassins de Rétention et des Lacs Artificiels</i> (Directorate for Retention Reservoirs and Artificial Lakes)
DGAHDI	<i>Direction Générale des Aménagements Hydrauliques et du Développement de l'Irrigation</i> (General Directorate for Hydraulic Infrastructure and Irrigation Development)
DGGR	<i>Direction Générale du Génie Rural</i> (General Directorate for Rural Engineering)
DGGRHA	<i>Direction Générale du Génie Rural et de l'Hydraulique Agricole</i> (General Directorate for Rural Engineering and Agricultural Water)
DPF	Development Program Financing
DRA	<i>Direction Régionale de l'Agriculture</i> (Regional Directorate for Agriculture)
DRGR	<i>Direction Régionale du Génie Rural</i> (Regional Directorate for Rural Engineering)
ECOWAS	Economic Community of West African States
EFA	Economic and Financial Analysis
ESMF	Environmental and Social Management Framework
ESMS	Environmental and Social Management System
EU	European Union
EX-ACT	Ex Ante Carbon-balance Tool
FA	Financing Agreement
FAO	Food and Agriculture Organization of the United Nations
FISAN	<i>Fond d'Investissement pour la Sécurité Alimentaire et la Nutrition</i> (Investment Fund for Food Security and Nutrition)
FM	Financial Management
FY	Fiscal Year
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GPC	<i>Groupement de Producteurs de Coton</i> (Cotton Producers Group)
GPN	General Procurement Notice
GPOBA	Global Partnership on Output-Based Aid
GWI	Global Water Initiative
Ha	Hectares
ICB	International Competitive Bidding
ICT	Information and Communication Technology
IDA	International Development Association
IFAD	International Fund for Agriculture Development
IFC	International Finance Corporation
IFRs	Interim Financial Reports
IPF	Investment Program Financing
INSAH	<i>Institut du Sahel</i> (Sahel Institute)
IR	Intermediate Result
IRR	Internal Rate of Return
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
IWUO	Irrigation Water Users Organization
JIP	Joint Implementation Plan
JRIS	Joint Review and Implementation Support
KM	Knowledge Management
M&E	Monitoring and Evaluation

MA	Ministry in Charge of Agriculture
MAAH	<i>Ministère de l'Agriculture et des Aménagements Hydrauliques</i> (Ministry of Agriculture and Hydraulic Schemes)
MAG/EL	<i>Ministère de l'Agriculture et de l'Élevage</i> (Ministry of Agriculture and Livestock)
MARE	<i>Ministère de l'Agriculture et de l'Équipement Rural</i> (Ministry of Agriculture and Rural Equipment)
MPIEA	<i>Ministère de la Production, de l'Irrigation et des Equipements Agricoles</i> (Ministry of Production, Irrigation and Agricultural Equipments)
MTR	Midterm Review
NAIP	National Agricultural Investment Program
NBA	Niger Basin Organization
NCB	National Competitive Bidding
NGO	Nongovernmental Organization
NPV	Net Present Value
O&M	Operation and Maintenance
OECD	Organisation for Economic Co-operation and Development
OFOR	<i>Office des Forages</i> (Drilling Office)
OLAG	<i>Office du Lac du Guiers</i> (Lake Guiers Development Office)
OMVS	<i>Organisation pour la Mise en Valeur du Sénégal</i> (Senegal River Basin Organization)
OP	Operational Policy
OSI	<i>Opérateurs de Solutions d'Irrigation</i> (Irrigation Solutions Operator)
PDIDAS	<i>Projet de Développement Inclusif et Durable de l'Agrobusiness au Sénégal</i> (Sustainable and Inclusive Agribusiness Development Project in Senegal)
PDO	Project Development Objective
PDSEC	<i>Plan de Développement Social, Économique et Culturel</i> (Social, Economic and Cultural Development Plan)
PGIRE	<i>Programme de Gestion Intégrée des Ressources en Eau et de Développement des Usages Multiples du Bassin du fleuve Sénégal</i> (River Basin Multi-Purpose Water Resources Development Project)
PIA	Project Intervention Area
PIM	Project Implementation Manual
PMP	Pest Management Plan
PMU	Project Management Unit
PNIP	<i>Programme National d'Irrigation de Proximité</i> (National Community Irrigation Program)
POAS	<i>Plan d'Occupation et d'Affectation des Sols</i> (Land Use and Allocation Plan)
PPA	Project Preparation Advance
PPP	Public-Private Partnership
PRA/ME	<i>Programme Régional d'Appui à la Maîtrise de l'Eau</i> (Regional Support Program for Water Management)
PRACTICA	Practica Foundation
PRAPS	<i>Projet Régional d'Appui au Pastoralisme au Sahel</i> (Regional Sahel Pastoralism Support Project)
RDR	<i>Régions de Développement Rural de l'ONDR</i> (Regional Rural Development Areas of the National Rural Development Agency)
RFP	Request for Proposal
RMI	Rural Microfinance Institution

ROPPA	<i>Réseau des Organisations Paysannes et des Producteurs Agricoles an Afrique de l'Ouest</i> (West Africa Network of Farmer Organisations and Agricultural Producers)
RPCU	Regional Project Coordination Unit
RPF	Resettlement Policy Framework
RTC	Regional Technical Committee
S2I-SF	Sahel Irrigation Initiative Strategic Framework
SAED	<i>Société d'Aménagement et d'Exploitation du Delta</i> (Delta Development and Management Company)
SAGI	<i>Société d'Aménagement et de Gestion de l'Irrigation</i> (Public Irrigation Authorities)
SCADD	<i>Stratégie de Croissance Accélérée pour le Développement Durable</i> (Strategy for Accelerated Growth and Sustainable Development)
SDR	Special Drawing Rights
SE-CILSS	Executive Secretariat of the CILSS
SG	Secretary General
SGRHA	<i>Sub Division du Génie Rural et de l'Hydraulique Agricole</i> (Sub-Division of Rural Engineering and Water in Agriculture)
SIIP	Sahel Irrigation Initiative Support Project
SODAGRI	<i>Société de Développement Agricole et Industriel</i> (Agricultural and industrial Development Company)
SOFITEX	<i>Société Burkinabèse des Fibres Textiles</i> (Burkina Faso Company for Textile Fibers)
SONADER	<i>Société Nationale pour le Développement et l'Équipement Rural</i> (National Company for Rural Development and Equipment)
SPs	Strategic Partners
SP-CONACILSS	<i>Secrétariat Permanent du Comité National du CILSS</i> (Permanent Secretariat for the CILSS National Committee)
SSA	Sub-Saharan Africa
SSS	Single Source Selection
ToR	Terms of Reference
TTL	Task Team Leader
UN	United Nations
UNDB	United Nations Development Business
USAID	United States Agency for International Development
VISA	<i>Valorisation de l'Irrigation pour la Souveraineté Alimentaire</i> (Irrigation Value Addition for Food Sovereignty)
WAAPP	West Africa Agricultural Productivity Program
WAEMU	West African Economic and Monetary Union
WB	World Bank
WBG	World Bank Group
WIP	With-Project
WOP	Without-Project

Regional Vice President:	Makhtar Diop
Country Directors:	Rachid Benmessaoud
Senior Global Practice Directors	Guang Zhe Chen, Juergen Voegele
Practice Manager	Alexander Bakalian
Task Team Leaders:	François Onimus, Pierrick Fraval, Elisée Ouedraogo, Amadou Ba, Brahim Sall, Sossena Tassew, Jean-Philippe Tré, Rajesh Advani (WB), Richard Colback (IFC)

**WEST AFRICA**  
**Sahel Irrigation Initiative Support Project**

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**PAD DATA SHEET***Western Africa**Sahel Irrigation Initiative Support Project (P154482)***PROJECT APPRAISAL DOCUMENT***AFRICA*

Water Global Practice and Agriculture Global Practice

Report No.: PAD1870

<b>Basic Information</b>			
Project ID P154482	EA Category A - Full Assessment	Team Leader(s) Francois Onimus, Elisee Ouedraogo, Pierrick Fraval	
Financing Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ]		
	Financial Intermediaries [ ]		
	Series of Projects [ ]		
Project Implementation Start Date 06-Dec-2017	Project Implementation End Date 31-Dec-2023		
Expected Effectiveness Date 06-Apr-2018	Expected Closing Date 31-Mar-2024		
Joint IFC No			
Practice Manager/Manager Alexander E. Bakalian	Senior Global Practice Director Guang Zhe Chen	Country Director Rachid Benmessaoud	Regional Vice President Makhtar Diop
Borrower: Burkina Faso, Republic of Chad, Republic of Mali, Republic of Niger, Islamic Republic of Mauritania, Republic of Senegal, CILSS			
Responsible Agency: CILSS Interstate Committee for Drought Control in the Sahel			
Contact: Telephone No.:	Djime Adoum 226 5037-4125	Title: Email:	Executive Secretary djime.adoum@cilss.int

Project Financing Data(in US\$ Million)										
<input type="checkbox"/>	Loan	<input checked="" type="checkbox"/>	IDA Grant	<input type="checkbox"/>	Guarantee					
<input checked="" type="checkbox"/>	Credit	<input checked="" type="checkbox"/>	Grant	<input type="checkbox"/>	Other					
Total Project Cost:			198.25			Total Bank Financing:			170.00	
Financing Gap:			0.00							
Financing Source										Amount
BORROWER/RECIPIENT										10.70
International Development Association (IDA)										79.17
IDA Grant										90.83
Global Partnership on Output-based Aid										5.85
LOCAL BENEFICIARIES										10.70
Total										197.25
Expected Disbursements (in US\$ Million)										
Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	0000	0000
Annual	0.00	9.00	15.00	35.00	40.00	40.00	25.00	11.85	0.00	0.00
Cumulative	0.00	9.00	24.00	59.00	99.00	139.00	164.00	175.85	0.00	0.00
Institutional Data										
<b>Practice Area (Lead)</b>										
Water										
<b>Contributing Practice Areas</b>										
Agriculture, Environment & Natural Resources										
<b>Proposed Development Objective(s)</b>										
The Project Development Objectives are to improve stakeholders' capacity to develop and manage irrigation and to increase irrigated areas using a regional 'solutions' approach in participating countries across the Sahel.										
<b>Components</b>										
<b>Component Name</b>								<b>Cost (US\$ Millions)</b>		
Component A: Modernizing the institutional framework								19.60		
Component B: Financing irrigation investment solutions								141.20		
Component C: Knowledge management and coordination								37.50		

<b>Systematic Operations Risk- Rating Tool (SORT)</b>		
<b>Risk Category</b>	<b>Rating</b>	
1. Political and Governance	High	
2. Macroeconomic	Moderate	
3. Sector Strategies and Policies	Substantial	
4. Technical Design of Project or Program	Substantial	
5. Institutional Capacity for Implementation and Sustainability	High	
6. Fiduciary	Substantial	
7. Environment and Social	Substantial	
8. Stakeholders	Substantial	
9. Other (climate change)	High	
<b>OVERALL</b>	High	
<b>Compliance</b>		
<b>Policy</b>		
Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [ X ]
Does the project require any waivers of Bank policies?	Yes [ ]	No [ X ]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [ X ]
Does the project meet the Regional criteria for readiness for implementation?	Yes [ X ]	No [ ]
<b>Safeguard Policies Triggered by the Project</b>	<b>Yes</b>	<b>No</b>
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04	X	
Forests OP/BP 4.36		X
Pest Management OP 4.09	X	
Physical Cultural Resources OP/BP 4.11	X	
Indigenous Peoples OP/BP 4.10		X
Involuntary Resettlement OP/BP 4.12	X	
Safety of Dams OP/BP 4.37	X	
Projects on International Waterways OP/BP 7.50	X	
Projects in Disputed Areas OP/BP 7.60		X

<b>Legal Covenants</b>			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Internal auditor and accountant. CILSS Financing Agreement (FA) - Schedule 2, Section I.A.1 (c)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall not later than three (3) months after the Effective Date, appoint an internal auditor and an accountant in a manner and with experience and qualifications satisfactory to the Association.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
FM undertakings, computerized accounting system. CILSS FA – Schedule 2, Section I.F.2 (i)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall ensure that the RPCU, not later than three (3) months after the Effective Date , install a computerized system acceptable to the Association to support the accounting under the project and train its staff to effectively use said system.			
FM Undertakings, external auditor. CILSS FA – Schedule 2, Section I.F.2 (ii)		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall ensure that the RPCU, not later than six (6) months after the Effective Date , recruit an external auditor, under terms of reference and with qualifications and experience satisfactory to the Association, to oversee the accounting functions of the RPCU.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Staffing. Burkina Faso FA - Schedule 2, Section I.A.1 (c)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall, not later than three (3) months after the Effective Date , appoint an internal auditor, an accountant, a procurement specialist and environmental and a social safeguard specialist all in a manner satisfactory to the Association.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Staffing. Chad FA - Schedule 2, Section I.A.1 (c)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall not later than three (3) months after the Effective Date, appoint an internal auditor, an accountant, an assistant accountant, a procurement specialist, an environmental and social safeguards specialist, and a monitoring and evaluation specialist, all in a manner satisfactory to the Association.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>

Staffing. Mali FA - Schedule 2, Section I.A.1 (c)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall not later than three (3) months after the Effective Date, appoint an internal auditor, an accountant, a procurement specialist and an environmental and social safeguards specialist, all in a manner satisfactory to the Association.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Staffing. Mauritania FA - Schedule 2, Section I.A.1 (c)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall not later than three (3) months after the Effective Date, appoint an internal auditor, an accountant, a procurement specialist and an environmental and social safeguards specialist, all in a manner satisfactory to the Association.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Staffing. Niger FA - Schedule 2, Section I.A.1 (c)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall, not later than three (3) months after the Effective Date appoint an internal auditor, an accountant, a procurement specialist and an environmental and social safeguards specialist, all in a manner satisfactory to the Association.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Staffing. Senegal FA - Schedule 2, Section I.A.1 (c)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall, not later than three (3) months after the Effective Date, appoint an internal auditor, an accountant, a procurement specialist and an environmental and social safeguards specialist, all in a manner satisfactory to the Association.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
FM undertakings, external auditor. Burkina Faso FA - Schedule II, Section I.H (ii)		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall, through the MAAH, ensure that the PMU: not later than six (6) months the after Effective Date , recruit an external auditor, under terms of reference and with qualifications and experience satisfactory to the Association, to oversee the accounting functions of the PMU.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
FM undertakings, external auditor. Chad FA - Schedule 2, Section I.H (ii)		06-Sep-2018	
<b>Description of Covenant</b>			

The Recipient shall, through the MPIAE, ensure that the PMU not later than six (6) months the after Effective Date, recruit external auditor, under terms of reference and with qualifications and experience satisfactory to the Association, to oversee the accounting functions of the PMU.

Name	Recurrent	Due Date	Frequency
FM undertakings, external auditor. Mali FA - Schedule 2, Section I.H (ii)		06-Sep-2018	

**Description of Covenant**

The Recipient shall, though the MA, ensure that the PMU not later than six (6) months the after Effective Date recruit an external auditor, under terms of reference and with qualifications and experience satisfactory to the Association, to oversee the accounting functions of the PMU.

Name	Recurrent	Due Date	Frequency
FM undertakings, external auditor. Mauritania FA - Schedule 2, Section 1.H (ii)		06-Sep-2018	

**Description of Covenant**

The Recipient shall through the MA, ensure that the PMU not later than six (6) months the after Effective Date recruit an external auditor, under terms of reference and with qualifications and experience satisfactory to the Association, to oversee the accounting functions of the PMU.

Name	Recurrent	Due Date	Frequency
FM undertakings, external auditor. Niger FA - Schedule 2, Section 1.H (ii)		06-Sep-2018	

**Description of Covenant**

The Recipient shall, through the MAGEL, ensure that the PMU not later than six (6) months the after Effective Date, recruit an external auditor, under terms of reference and with qualifications and experience satisfactory to the Association, to oversee the accounting functions of the PMU.

Name	Recurrent	Due Date	Frequency
FM undertakings, external auditor. Senegal FA - Schedule 2, Section I.H (ii)		06-Sep-2018	

**Description of Covenant**

The Recipient shall, through the MARE, ensure that the PMU not later than six (6) months the after Effective Date, recruit an external auditor, under terms of reference and with qualifications and experience satisfactory to the Association, to oversee the accounting functions of the PMU.

Name	Recurrent	Due Date	Frequency
FM undertakings, computerized accounting system. Burkina Faso FA - Schedule 2, Section I.H (i)		06-Jul-2018	

**Description of Covenant**

The Recipient shall, though the MAAH, ensure that the PMU not later than three (3) months after the Effective Date install a computerized accounting system acceptable to the Association to support the accounting under the project and train its staff to effectively use said system.

Name	Recurrent	Due Date	Frequency
FM undertakings, computerized accounting system. Chad FA - Schedule 2, Section I.H (i)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall through the MPIAE, ensure that the PMU not later than three (3) months after the Effective Date, install a computerized system acceptable to the Association to support the accounting under the project and train its staff to effectively use said system.			
Name	Recurrent	Due Date	Frequency
FM undertakings, computerized accounting system. Mali FA - Schedule 2, Section I.H (i)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall, though the MA, ensure that the PMU not later than three (3) months after the Effective Date install a computerized accounting system acceptable to the Association to support the accounting under the project and train its staff to effectively use said system.			
Name	Recurrent	Due Date	Frequency
FM undertakings, computerized accounting system. Mauritania FA - Schedule 2, Section I.H (i)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall through the MA, ensure that the PMU not later than three (3) months after the Effective Date, install a computerized system acceptable to the Association to support the accounting under the project and train its staff to effectively use said system.			
Name	Recurrent	Due Date	Frequency
FM undertakings, computerized accounting system. Niger FA - Schedule 2, Section I.H (i)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall, through the MAGEL, ensure that the PMU not later than three (3) months after the Effective Date, install a computerized accounting system acceptable to the Association to support the accounting under the project and train its staff to effectively use said system.			
Name	Recurrent	Due Date	Frequency
FM undertakings, computerized accounting system. Senegal FA - Schedule 2, Section I.H (i)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall, through the MARE, ensure that the PMU not later than three (3) months after the Effective Date install a computerized accounting system acceptable to the Association to support the accounting under the project and train its staff to effectively use said system.			

Name	Recurrent	Due Date	Frequency
FM undertakings. CILSS FA - Schedule 2, Section I.F.4		06-Jul-2018	
<b>Description of Covenant</b>			
<p>The Recipient shall, not later than three months after the Effective Date:</p> <p>(a) prepare and furnish to the Association its institutional financial statement covering the Fiscal Years 2010-2016 audited by an external auditor acceptable to the Association;</p> <p>(b) submit evidence, satisfactory to the Association, that the Recipient has taken all action required to: (i) reconcile its fixed asset register to its general ledger; and (ii) review the accounts receivable and accounts payable balances such that they are accurate and complete;</p> <p>(c) finalize the carrying out of a risk mapping exercise, satisfactory to the Association, which shall in the future facilitate risk based internal auditing;</p> <p>(d) approve, through its Council of Ministers, and thereafter promptly adopt for its operations, an updated internal audit charter and internal audit manual consistent with applicable international standards, both satisfactory to the Association;</p> <p>(e) approve, through its Council of Ministers, an audit committee charter, and thereafter promptly set up a functional audit committee that ensures audit issues are addressed by the Recipient's management and that the Recipient maintains records of its meetings documented in minutes;</p> <p>(f) adopt an institutional risk management policy and anti-fraud policy and procedures aimed to improve governance arrangements, both satisfactory to the Association, and promptly thereafter establish suitable associated monitoring mechanisms therefor; and</p> <p>(g) strengthen its Internal Audit and Finance and Accounting Departments in a manner acceptable to the Association.</p>			
Name	Recurrent	Due Date	Frequency
Staffing. Burkina FA - Schedule 2, Section I.A.1 (b)		06-Jul-2018	
<b>Description of Covenant</b>			
<p>The Recipient shall, through MAAH, not later than three (3) months after the Effective Date, establish, under terms of reference and with qualified and experience staff in adequate number, all satisfactory to the Association, and thereafter maintain throughout Project implementation, the National Steering Committee vested with the duties of a governing body responsible for policy guidance for the Project and oversight of the Project Management Unit during Project implementation.</p>			
Name	Recurrent	Due Date	Frequency
National Steering Committee. Mali FA - Schedule 2, Section I.A.1 (b)		06-Jul-2018	
<b>Description of Covenant</b>			
<p>The Recipient shall, through the MA, not later than three (3) months after the Effective Date, establish, under terms of reference and with qualified and experienced staff in adequate number, all satisfactory to the Association, and thereafter maintain throughout project implementation, the National Steering Committee vested with the duties of a governing body responsible for policy guidance for the project and oversight of the Project Management Unit during Project implementation.</p>			
Name	Recurrent	Due Date	Frequency



Regional Technical Committee. CILSS FA - Schedule 2, Section I.A.1 (b)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall establish, not later than three (3) months after the Effective Date, and thereafter maintain, the Regional Technical Committee within the CILSS' Secretariat based in Ouagadougou.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Computerized accounting system. Burkina Faso GPOBA Grant Agreement - Schedule 2, Section 2.B.4 (i)		06-Jul-2018	
<b>Description of Covenant</b>			
The Recipient shall ensure that SOFITEX not later than three (3) months after the Effective Date, install a computerized system acceptable to the World Bank to support the accounting under the project and train its staff to effectively use said system.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
External auditor. Burkina Faso GPOBA Grant Agreement - Schedule 2, Section II.B.4 (ii)		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall ensure that SOFITEX (ii) not later than six (6) months the after Effective Date, recruit an external auditor, under terms of reference and with qualifications and experience satisfactory to the World Bank, to audit the project's accounts.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Complaint handling mechanism. Burkina Faso GPOBA Grant Agreement - Schedule 2, Section I.D (g)		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall cause SOFITEX to establish, not later than six (6) months after the Effective Date, and thereafter maintain and operate, a functional complaint handling mechanism for the Project, with adequate staffing and processes for registering complaints and acceptable to the World Bank.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
External auditor. Burkina Faso Project Agreement with SOFITEX - Schedule, Section II.B.3 (ii)		06-Sep-2018	
<b>Description of Covenant</b>			
SOFITEX shall recruit, not later than six (6) months after the Effective Date, an external auditor under terms of reference and with qualifications and experience satisfactory to the World Bank, to audit the project's accounts.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>

Complaint handling mechanism. Burkina Faso FA - Schedule 2, Section I.A.4		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall take all action required on its behalf to establish, not later than six (6) months after the Effective Date, and thereafter maintain and operate, a functional complaint handling mechanism for the project, with adequate staffing and processes for registering complaints and acceptable to the Association, thereby ensuring the ongoing improvement on service delivery under the project.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Complaint handling mechanism. Chad FA - Schedule 2, Section I.A.4		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall take an action required on its behalf to establish, not later than six (6) months after the Effective Date, and thereafter maintain and operate, a functional complaint handling mechanism for the project.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Complaint handling mechanism Mali FA - Schedule 2, Section I.A.4		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall take all action required on its behalf to establish, not later than six (6) months after the Effective Date, and thereafter maintain and operate, a functional complaint handling mechanism for the project.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Complaint handling mechanism. Mauritania FA - Schedule 2, Section 1.A.4		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall take all action required on its behalf to establish, not later than six (6) months after the Effective Date, and thereafter maintain and operate, a functional complaint handling mechanism for the project.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Complaint handling mechanism. Niger FA - Schedule 2, Section I.A.4		06-Sep-2018	
<b>Description of Covenant</b>			
The Recipient shall take all action required on its behalf to establish, not later than six (6) months after the Effective Date, and thereafter maintain and operate, a functional complaint handling mechanism for the project.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Complaint handling mechanism. Senegal FA - Schedule 2, Section I.A.4		06-Sep-2018	

<b>Description of Covenant</b>			
The Recipient shall take all action required on its behalf to establish, not later than six (6) months after the Effective Date, and thereafter maintain and operate, a functional complaint handling mechanism for the project.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Computerized accounting system. Burkina Faso Project Agreement with SOFITEX - Schedule, Section II.B.3 (i)		06-Jul-2018	
<b>Description of Covenant</b>			
SOFITEX shall: install, not later than three (3) months after the Effective Date, a computerized system acceptable to the World Bank to support the accounting under the project and train its staff to effectively use said system.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Complaint handling mechanism. Burkina Faso Project Agreement with SOFITEX - Schedule, Section I.C (g)		06-Sep-2018	
<b>Description of Covenant</b>			
SOFITEX shall establish, not later than six (6) months after the Effective Date, and thereafter maintain and operate, a functional complaint handling mechanism for the Project, with adequate staffing and processes for registering complaints and acceptable to the World Bank, thereby ensuring the ongoing improvement on service delivery under the project.			
<b>Conditions</b>			
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>	
IDA	CILSS FA – Article V, 5.01	Effectiveness	
<b>Description of Condition</b>			
Adoption of a PIM in form and substance satisfactory to the Association.			
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>	
IDA	Burkina Faso FA - Article V, 5.01(a)	Effectiveness	
<b>Description of Condition</b>			
Adoption of a PIM, through MAAH, in form and substance satisfactory to the Association.			
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>	
IDA	Chad FA - Article V, 5.01 (a)	Effectiveness	
<b>Description of Condition</b>			
Through MPIAE, adoption of a PIM in form and substance satisfactory to the Association.			
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>	
IDA	Mali FA - Article V, 5.01 (a)	Effectiveness	
<b>Description of Condition</b>			

Through the MA, adoption of a PIM in form and substance satisfactory to the Association.		
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>
IDA	Mauritania FA - Article V, 5.01 (a)	Effectiveness
<b>Description of Condition</b>		
Through the MA, adoption of a PIM in form and substance satisfactory to the Association.		
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>
IDA	Niger FA - Article V, 5.01 (a)	Effectiveness
<b>Description of Condition</b>		
Through the MAGEL, adoption of a PIM in form and substance satisfactory to the Association.		
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>
IDA	Senegal FA - Article V, 5.01 (a)	Effectiveness
<b>Description of Condition</b>		
Through the MARE, adoption of a PIM in form and substance satisfactory to the Association		
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>
IDA	Burkina Faso FA - Article V, 5.01 (b)	Effectiveness
<b>Description of Condition</b>		
Through MAAH, appointment of the National Project Coordinator and Financial Management Specialist to the PMU, both under terms of reference and with qualifications and experience satisfactory to the Association.		
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>
IDA	Mali FA - Article V, 5.01 (b) (ii)	Effectiveness
<b>Description of Condition</b>		
Through the MA, appointment of the National Project Coordinator and the financial management specialist to the PMU, both under terms of reference and with qualifications and experience satisfactory to the Association		
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>
IDA	Senegal FA - Article V, 5.01 (b)	Effectiveness
<b>Description of Condition</b>		
Through the MARE, appointment of the National Project Coordinator and the financial management specialist to the PMU, both under terms of reference and with qualifications and experience satisfactory to the Association		
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>
GPOBA	Burkina Faso GPOBA Grant Agreement – Article V, 5.01 (c)	Effectiveness
<b>Description of Condition</b>		
Execution of a Subsidiary Grant Agreement between Burkina Faso and SOFITEX.		

Source Of Fund	Name	Type
GPOBA	Burkina Faso GPOBA Grant Agreement – Article V, 5.01 (a)	Effectiveness
<b>Description of Condition</b>		
The execution and delivery of the Grant Agreement, on behalf of Burkina Faso, and the Project Agreement, on behalf of SOFITEX, have been duly authorized or ratified by all necessary governmental and corporate action.		
Source Of Fund	Name	Type
GPOBA	Burkina Faso GPOBA Grant Agreement - Article V, 5.01 (e)	Effectiveness
<b>Description of Condition</b>		
SOFITEX shall have appointed to its structure a Project accountant under terms of reference and with qualifications and experience satisfactory to the World Bank.		
Source Of Fund	Name	Type
IDA	Burkina Faso FA - Article V, 5.01 (b)	Effectiveness
<b>Description of Condition</b>		
Through MAAH, establishment of the Project Management Unit under terms of reference and with a composition satisfactory to the Association.		
Source Of Fund	Name	Type
IDA	Mauritania FA - Article V, 5.01 (b)	Effectiveness
<b>Description of Condition</b>		
Through the MA, appointment of a financial management specialist to the PMU under terms of reference and with qualifications and experience satisfactory to the Association.		
Source Of Fund	Name	Type
IDA	Niger FA - Article V, 5.01 (b)	Effectiveness
<b>Description of Condition</b>		
Through the MAGEL, appointment of a financial management specialist to the PMU under terms of reference and with qualifications and experience satisfactory to the Association.		
Source Of Fund	Name	Type
IDA	Chad FA - Article V, 5.01 (b)	Effectiveness
<b>Description of Condition</b>		
Through the MPIAE, recruitment of a financial management specialist to the PMU under terms of reference and with qualifications and experience satisfactory to the Association.		
Source Of Fund	Name	Type
GPOBA	Burkina Faso GPOBA Grant Agreement - Article 5.01 (d)	Effectiveness
<b>Description of Condition</b>		

SOFITEX shall have adopted the Project Implementation Manual in form and substance satisfactory to the World Bank.

Source Of Fund	Name	Type
IDA	Mali FA - Article V, 5.01 (b) (i)	Effectiveness

**Description of Condition**

Through the MA, establishment of the Project Management Unit under terms of reference and with a composition satisfactory to the Association.

Source Of Fund	Name	Type
GPOBA	Burkina Faso Project Agreement - Article III, 3.01	Effectiveness

**Description of Condition**

The Project Agreement shall become effective on the date as of which: (i) it has been executed by all parties hereto; (ii) the Grant Agreement has become effective in accordance with its terms; and (iii) the World Bank dispatches to SOFITEX notice thereof.

**Team Composition**

**Bank Staff**

Name	Role	Title	Specialization	Unit
Francois Onimus	Team Leader (ADM Responsible)	Sr Water Resources Specialist	Irrigation	GWA05
Elisee Ouedraogo	Team Leader	Senior Agriculture Economist	Agriculture, Co-TTL for Burkina Faso	GFA01
Pierrick Fraval	Team Leader	Senior Water Resources Mgmt. Specialist	Irrigation, Co-TTL for Mali	GWA07
Mohamed El Hafedh Hendah	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist		GGO07
Brahim Hamed	Procurement Specialist	Senior Procurement Specialist		GGO07
Aissatou Diallo	Financial Management Specialist	Senior Finance Officer		WFALN
Aissatou Eugenie Sow	Team Member	Portfolio Officer	Private Sector	CASRS
Amadou Ba	Team Member	Senior Agriculture Economist	Agriculture, Co-TTL for Niger	GFA01
Benjamin Billard	Team Member	Operations Officer	Operations	GFA01
Berthe Tayelim	Team Member	Program Assistant	Team Assistant	AFMTD

Bleoue Nicaise Ehoue	Team Member	Senior Agriculture Economist	Agriculture	GFAGE
Brahim Sall	Team Member	Senior Rural Development Specialist	Agriculture, Co-TTL for Mauritania	GFA01
Caroline Plancon	Team Member	Consultant	Land Tenure	GWA07
Claudia M. Pardinás Ocana	Counsel	Senior Counsel		LEGAM
Dahlia Lotayef	Environmental Safeguards Specialist	Lead Environmental Specialist	Environment	GEN07
David Ivanovic	Team Member	Senior Private Sector Specialist	Private Sector	GTCA1
El Hadj Adama Toure	Team Member	Lead Agriculture Economist	Agriculture	GFA01
Eric Mabushi	Team Member	Senior Operations Officer	Private Sector	CAFCS
Faly Diallo	Team Member	Finance Officer	Disbursement	WFALA
Fatou Fall Samba	Team Member	Senior Financial Management Specialist	Financial Management	GGO26
Gabriella Izzi	Team Member	Senior Irrigation Specialist	Irrigation	GWA05
Georges Comair	Team Member	Water Resources Mgmt. Spec.	Irrigation	GWA07
Guy Tchakounte Tchabo	Team Member	Senior Program Assistant		GWA07
Gwladys Nadine Isabelle Kinda	Team Member	Program Assistant	Team Assistant	AFMBF
Hadidia Diallo Djimba	Team Member	Program Assistant	Team Assistant	AFMNE
Haoussia Tchaoussala	Team Member	Senior Procurement Specialist	Procurement	GGO07
Hawanty Page	Team Member	Senior Program Assistant		GFA13
IJsbrand Harko de Jong	Team Member	Lead Water Resource Management Specialist	Irrigation	GWA06

Jane C. Hopkins	Team Member	Senior Agriculture Economist	Agriculture	GFA01
Jean Charles Amon Kra	Team Member	Senior Financial Management Specialist	Financial Management	GGO26
Jean-Philippe Tre	Team Member	Senior Agriculture Economist	Agriculture, Co-TTL for Senegal	GFA01
Joop Stoutjesdijk	Peer Reviewer	Lead Irrigation Engineer	Irrigation	GWA02
Josue Akre	Team Member	Financial Management Specialist	Financial Management	GGO26
Juan David Casanova Anoll	Team Member	Sr Water Resources Mgmt. Spec.	Irrigation	GWA03
Kabirou Souleymane Ali Sale	Team Member	Consultant		GGO13
Kazuhiro Yoshida	Team Member	Senior Irrigation Specialist	Irrigation	GWA09
Madio Fall	Team Member	Senior Water & Sanitation Spec.	Water	GWA07
Mahamadou Bambo Sissoko	Team Member	Senior Procurement Specialist	Procurement	GGO07
Malick Fall	Team Member	Investment Officer	Private Sector	CAFML
Moussa Fode Sidibe	Team Member	Program Assistant	Team Assistant	AFCW3
Ngor Sene	Team Member		Financial Management	GGO26
Patrick Piker Umah Tete	Team Member	Senior Financial Management Specialist		GGO21
Paulette C.E. Aida Thioune Zoua	Team Member	Program Assistant	Procurement	AFMTD
Philippe Eric Dardel	Team Member	Senior Environmental Specialist	Natural Resources Management	GEN01
Rajesh K. Advani	Team Member	Senior Infrastructure Specialist	Infrastructure	GSUOA
Regassa Ensermu Namara	Team Member	Senior Water Resources Econ.	Water Resources	GWA08



Rehana Vally	Team Member	Consultant	Agribusiness	GWA07
Richard Charles Henri Colback	Team Member	Senior Operations Officer	Private Sector	CMGSB
Rita E. Cestti	Team Member	Practice Manager	Irrigation	GWA04
Salam Hailou	Team Member	Program Assistant	Team Assistant	GFA01
Salamata Bal	Social Safeguards Specialist	Senior Social Development Specialist	Social Development	GSU01
Sofia De Abreu Ferreira	Team Member	Senior Counsel		LEGEN
Sossena Tassew	Team Member	Operations Analyst	Operations, Co-TTL for Chad	GFA01
Steven N. Schonberger	Team Member	Practice Manager	Irrigation	GWA05
Sylvestre Bea	Team Member	Infrastructure Specialist	Infrastructure	GSUOA
Sylvie Ngo-Bodog	Team Member	Senior Program Assistant	Team Assistant	GWA09
Tahirou Kalam	Team Member	Financial Management Specialist	Financial Management	GGO26
Vikas Choudhary	Peer Reviewer	Senior Agricultural Spec.	Economist	GFA13
Yoro Sidibe	Team Member	Young Professional	Irrigation	GWA07

#### Extended Team

Name	Title	Office Phone	Location
Annick Huyghe	Institutional Development Specialist	annick.huyghe.mauro@orange.fr	
Christophe Rigourd	Irrigation Specialist		
Frans Goossens	Agro-Economist		Rome
Lazare Hoton	Rural Finance Specialist		Rome
Philippe Deygout	Rural Development Specialist		

#### Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Chad	Salamat	Salamat Region	X		
Chad	Ouadai	Ouaddai Region	X		

Chad	Wadi Fira	Wadi Fira Region	<b>X</b>		
Senegal	Saint-Louis	Saint-Louis	<b>X</b>		
Senegal	Kolda	Kolda	<b>X</b>		
Mauritania	Trarza	Wilaya du Trarza	<b>X</b>		
Mauritania	Tagant	Tagant	<b>X</b>		
Mauritania	Hodh El Gharbi	Hodh El Gharbi	<b>X</b>		
Mauritania	Hodh ech Chargui	Hodh ech Chargui	<b>X</b>		
Mauritania	Guidimaka	Guidimaka	<b>X</b>		
Mauritania	Gorgol	Gorgol	<b>X</b>		
Mauritania	Brakna	Brakna	<b>X</b>		
Mauritania	Assaba	Assaba	<b>X</b>		
Mauritania	Adrar	Adrar	<b>X</b>		
Chad	Tandjile	Tandjile Region	<b>X</b>		
Chad	Mayo-Kebbi Est	Mayo-Kebbi East Region	<b>X</b>		
Chad	Logone Oriental	Logone Oriental Region	<b>X</b>		
Chad	Logone Occidental	Logone Occidental Region	<b>X</b>		
Chad	Guera	Guera Region	<b>X</b>		
Chad	Chari-Baguirmi	Chari-Baguirmi Region	<b>X</b>		
Niger	Tahoua	Tahoua	<b>X</b>		
Niger	Dosso	Dosso Region	<b>X</b>		
Niger	Agadez	Agadez	<b>X</b>		
Mali	Segou	Segou Region	<b>X</b>		
Mali	Koulikoro	Koulikoro Region	<b>X</b>		
Niger	Tillaberi	Tillaberi Region	<b>X</b>		
Burkina Faso	Boucle du Mouhoun	Boucle du Mouhoun	<b>X</b>		
Burkina Faso	Centre	Centre	<b>X</b>		
Burkina Faso	Centre-Ouest	Centre-Ouest	<b>X</b>		
Burkina Faso	Hauts-Bassins	Hauts-Bassins	<b>X</b>		
Burkina Faso	Nord	Nord	<b>X</b>		

Senegal	Kaffrine	Region de Kaffrine	<b>X</b>		
Chad	Hadjer-Lamis	Hadjer-Lamis	<b>X</b>		
Chad	Mayo-Kebbi Ouest	Mayo-Kebbi West Region	<b>X</b>		
Chad	Sila	Sila	<b>X</b>		

## I. STRATEGIC CONTEXT

### A. Country and Regional Context

1. **The Sahel population<sup>1</sup> is exposed to a unique set of climatic and environmental risks.** The region experiences high and sustained population growth<sup>2</sup> leading to increased pressure on natural resources. Despite rapid urbanization, 64 percent of the Sahel population still lives in rural areas, relying mainly on rainfed agriculture and agro-pastoralism for livelihood. Precipitation in the region is characterized by high variability from one year to the next, with irregular, unpredictable, and short rainy seasons. Continuous erosion, deforestation, and unsustainable agricultural practices result in widespread land degradation and low crop yields. Rural populations regularly face food shortages,<sup>3</sup> and urban populations increasingly rely on food imports, exposing them to food price spikes. The 2008 food price crisis has been a wakeup call for the Sahelian Governments and their development partners. Additionally, climate change is expected to amplify the frequency and magnitude of droughts and floods with negative impacts for agricultural productivity, food security, and rural poverty in the region.

2. **Agriculture is a high-level priority for Sahelian countries and will remain the backbone of their economy, despite volatile performance.** The agricultural sector still represents a large proportion of the gross domestic product (GDP) in the Sahel,<sup>4</sup> and remains the main reservoir for job creation.<sup>5</sup> Improving agricultural performance is critical to increasing rural incomes, reducing inequalities between rural and urban areas, and consolidating Governments' fiscal position.<sup>6</sup> More importantly, agriculture is fundamental to ensuring food security and hedging against international food price fluctuations.

3. **Agricultural water management (AWM) is crucial for improved agricultural performance.** Despite erratic rainfalls, Sahel countries enjoy relatively abundant water resources. Current agricultural withdrawals for irrigation represent less than 6 percent of total renewable water resources, and groundwater withdrawals are about 6 percent of the annual recharge (see Box 1). Further, irrigated lands represent less than 5 percent of agricultural lands in the Sahel, as compared to about 20 percent worldwide. The availability of vast tracks of land suitable for agriculture along the major rivers and in inland valley areas (*bas-fonds*) is an additional opportunity for the Sahel. Moreover, the Sahel benefits from favorable ecological conditions for the production of high-yielding rice varieties and vegetables. Such agricultural products are in high

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<sup>1</sup> The Sahel region includes the national territories of Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal.

<sup>2</sup> Annual population growth rates for the Sahel countries were as follows: 2.4 percent in Mauritania, 2.8 percent in Burkina Faso, 2.9 percent in Senegal, 3.0 percent in Mali and Chad, and 3.9 percent in Niger.

<sup>3</sup> In 2012, approximately 17 million people in the Sahel out of 80 million faced food insecurity due to a combination of drought, poor accessibility to food, high grain prices, environmental degradation, displacement, and conflict.

<sup>4</sup> Agricultural GDP as share of total GDP in 2014: Mali: 40 percent; Chad: 53 percent; Niger: 37 percent; and Senegal: 16 percent. (World Bank).

<sup>5</sup> According to Losch (2012), for a medium-size country such as Senegal, almost 300,000 young people reach working age every year, or 5 million over 15 years (2.5 times the population of Dakar today). (Structural Transformation and Rural Change Revisited: Challenges for Late Developing Countries in a Globalizing World, World Bank – AFD, 2012).

<sup>6</sup> The agriculture sector value-added varies from 15 percent of the country GDP in Senegal and Mauritania to 40 percent in Mali.

demand on increasingly interconnected subregional markets and can help sustain the creation of well-paying jobs.<sup>7</sup>

**Box 1. Water Resources in the Sahel: Uneven Geographic Distribution and a High Cost of Mobilization**

The Sahel enjoys abundant water resources. Total renewable resources, accounting for both internal and transboundary water flows, is estimated at about 3,500 m<sup>3</sup> per capita, well above the water scarcity line of 1,000 m<sup>3</sup> per capita.<sup>8</sup> However, resources are unevenly distributed. The Sahel has less than 10 perennial rivers, lakes, or wetlands. Only a small fraction of the population lives near and benefits directly from these water bodies. Most of the Sahelian receives usually fewer than 20 short but heavy rainfall events over 3–4-month. While this contributes to the growth of rainfed crops, it also creates runoff leading to soil erosion and limited groundwater recharge. Still, groundwater is abundant in the Sahel, with potential from exploitable aquifers estimated at 47 BCM. In several areas, the aquifers are highly productive and accessible by affordable surface pumps. In Niger, a recent evaluation estimated that an area with a water table at a depth of less than 15 meters exceeds 5 million hectares (ha) (GeoConseil, Niger, 2015). The constraint to the productive use of the water is the economic cost of storage and abstraction. Experience shows that the cost can be significantly lowered when appropriate techniques and best design and construction practices are utilized. This applies to the more than 1,200 small earth dams scattered all over Burkina Faso; the numerous *wadis* in Chad, where sand dams<sup>9</sup>, when constructed, reduce erosion and provoke impressive groundwater recharge.

## **B. Sectoral and Institutional Context**

4. **The irrigation sector of the Sahelian countries has experienced different stages of evolution with a shifting emphasis between small-scale and large-scale systems.** In the 1960s and 1970s, Sahelian countries invested heavily in the development of large scale public irrigation schemes.<sup>10</sup> Fueled by heavy subsidies, public irrigation companies were in charge of the entire agricultural production cycle, including input provision, crop processing and marketing, with limited autonomy for farmers. Following the collapse of this model in the 1980s, institutional reforms refocused the role of public irrigation companies on irrigation development, with partial management transfer to irrigation users associations<sup>11</sup>. At the same time, Governments and development partners reoriented a larger share of investments to small-scale irrigation. In the 1980s, the focus was on ensuring food security in the wake of the mid-1980s drought and development programs focused on village irrigation schemes. In several countries, small rural towns (communes) became progressively involved in village irrigation development as a result of the decentralization process. In the late 1990s and 2000s, private irrigation significantly contributed to the further expansion of irrigated areas in the Sahel where water mobilization is affordable and markets for high value crops are accessible. In total, small-scale irrigation now

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<sup>7</sup> Bricas (2013) estimates that between 70 percent and 90 percent of the food consumption in West African countries is supplied by the subregion, and that the domestic food market is three times larger than exports. (Bricas, et al. AGRAR-2013: 1st conference of African research on agriculture, food, and nutrition, Yamoussoukro, Côte d’Ivoire, June 4–6, 2013).

<sup>8</sup> The volume available per capita varies among the countries, however. Burkina Faso has more limited resources than the other five countries, with 850 m<sup>3</sup> per capita.

<sup>9</sup> Sand dams (“seuils d’épandage / d’infiltration”) are not actually dams but ground level structures built across dry rivers to improve groundwater recharge for agricultural purposes.

<sup>10</sup> In the Sahel, large scale schemes are defined as schemes of 500 hectare or more.

<sup>11</sup> The most successful case of irrigation management transfer to irrigation user organizations in Sahel can be found in Senegal River Valley under the purview of SAED.

represents the largest part of irrigated and irrigable areas and it still has large development potential<sup>12</sup>.

5. **Despite these efforts, areas suitable for irrigated agriculture in the Sahel are largely underdeveloped and underexploited.** Of more than 2 million ha, only 37 percent (750,000 ha) has been equipped for irrigation, and only 60 percent of the equipped area (428,000 ha) is actually irrigated. Growth in areas equipped for irrigation has slowed from a peak of almost 2 percent per annum between 1961 and 2000, to a more modest 0.8 percent per annum in the past 15 years. Many medium and large schemes face maintenance challenges and require recurrent subsidies to ensure continued operation. In addition, sectoral outcomes have been below expectations due to a variety of factors including: (a) insufficient engagement of local populations in decision-making processes; (b) inadequate consideration of commercial viability; (c) errors in technical design; (d) poor construction quality; (e) absence of a transparent irrigated land allocation process; (f) limited access to finance; (g) unclear responsibilities for scheme operation and maintenance (O&M); and (h) poor coordination between stakeholders.

6. **The regional Sahel Irrigation Initiative Support Project (SIIP) aims to address these recurring issues by scaling up the implementation of the irrigation development agenda in six countries**<sup>13</sup> across the Sahel through institutional strengthening and selected irrigation land development. The project concept represents a major shift of the irrigation development paradigm in the Sahel based on three fundamental principles: (a) balancing public interventions across the different types of irrigation systems in the region to allow for a more efficient use of land and water resources; (b) adopting a market-oriented, production system approach to irrigation development; and (c) engaging stakeholders directly in the planning and implementation in a holistic way early in the project cycle. This change of perspective stems from a careful reflection on lessons and experiences from past irrigation interventions in the Sahel and should result in an increased impact of irrigation development on agricultural productivity and incomes, thereby helping to reduce food insecurity and poverty.

7. **By adopting a regional approach, the project will enable the six countries to reap the full benefits of the potential spillover effects of a shared scale-up strategy in the most cost-effective way.** A regional approach for irrigation development will help: (a) facilitate coordinated investment planning in shared natural resource areas; (b) build the knowledge base and facilitate cross-learning at the regional level;<sup>14</sup> (c) attract/facilitate participation of the private sector to innovate and provide high quality services at regional level at lower cost; and (d) facilitate adoption of regional policies through institutional benchmarking. While the regional approach increases project complexity and brings additional political economy risks, it also provides a window of opportunity and entry point for solutions at scale that have not been achievable to date. Experience shows that separate national projects do not provide the scale and depth that is required to induce lasting institutional changes and that analytical work is not sufficient to create an enabling

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<sup>12</sup> Small-scale irrigation equipped area is 320,000 ha with a pipeline of 335,000 ha. This does not include lowland and flood recession areas where partial rainwater control can be achieved. Large-scale irrigation equipped area is 280,000 ha with a pipeline of 175,000 ha.

<sup>13</sup> Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal.

<sup>14</sup> See Lence, Sergio H., and Dermot J. Hayes. "Welfare Impacts of Cross-Country Spillovers in Agricultural Research." 2007. Center for Agricultural and Rural Development, Iowa State University Working Papers. Paper 472.

environment. The World Bank, with its convening power and financial instruments including International Development Association (IDA) allocation for Regional Integration, is uniquely positioned to support this sort of multi-country approach bringing in a wide array of public, private, and Civil Society Organization (CSO) stakeholders.

8. **Project interventions will be based on successful irrigation models that have emerged across the Sahelian countries and will be broadly based on five types of systems commonly found in the Sahel.** Successful examples strongly suggest the importance of the right combination of institutional and organizational arrangements, adequate financing mechanisms using a mix of public and private resources, sound design and technologies, and skilled and empowered stakeholders.

**Table 1. The Five Main Types of Irrigation Systems in the Sahel**

Type		Description
SMALL-SCALE	1	Improved rainwater harvesting with partial water control: inland valley bottom development ( <i>bas-fonds</i> ), flood recession plains or partial control (sometimes thousands of ha), sand dams for groundwater recharge ( <i>seuils d'épandage</i> ). Crops are rice, sorghum and vegetables.
	2	Small-scale private irrigation systems (less than 1 ha up to a few ha) for individuals or small groups of producers, involving pumping equipment, devoted to high value crops such as vegetables.
	3	Small-scale community-based irrigation schemes of less than 50 ha, usually promoted by nongovernmental organizations (NGO) or Governments, for villages or large groups of producers who collectively manage pumping equipment and canals to produce rice or vegetables.
LARGE-SCALE	4	Large-scale irrigation schemes (from 500 ha to more than 5,000 ha with a vast majority below 1000 ha) publicly financed, managed or supervised by public authorities, located usually along large rivers regulated by dams, comprising a combination of pump stations and a network of canal and drainage systems, service roads. They require a complex management structure.
	5	Medium- to large-scale irrigation schemes involving a partnership between the Government, a private party, and the communities surrounding the scheme, for the development and management of the irrigation system (with same technical features as for Type 4).

### The Rationale for World Bank Intervention

9. **The World Bank Group (WBG) has been and remains substantially involved in the irrigation sector in the Sahel through investment projects, sector reforms, and knowledge products.** Since the 1970s, the World Bank has been financing numerous irrigation investments of all types in the Sahel and assisted irrigation reforms in several countries<sup>15</sup>. There are ongoing IDA projects financing irrigation investments in all six countries, which all would benefit from the solutions to be designed and mainstreamed. The International Finance Corporation (IFC) has an advisory project promoting an output-based scheme of supplementary irrigation for cotton producers in Burkina Faso and is financing a climate resilience pilot project promoting drip irrigation in Niger that will be coordinated with the project.<sup>16</sup> The WBG has been involved in a permanent dialogue with the regional economic communities, the States, and the development

<sup>15</sup> Mali, Niger and Senegal notably.

<sup>16</sup> The interventions of the World Bank and IFC are coordinated by a dedicated Joint Implementation Plan (JIP) for irrigation in the Sahel.

partners, and is, therefore, well positioned to assist the design and mainstreaming of the next generation of AWM interventions in the Sahel.

10. **The World Bank is supporting several regional projects in West Africa, with which the SIIP has or will have synergies.** The project builds on the experience acquired under the West Africa Agricultural Productivity Program (WAAPP – P122065 and P129565) by using some of the instruments it developed such as competitive research grants. It will apply some of the implementation arrangements in use under the Regional Sahel Pastoralism Support Project (PRAPS - P147674) with the same countries, notably knowledge sharing processes. Importantly, the solutions developed by the project will be mainstreamed at the level of regional River Basin Organizations (Senegal River Basin Organization (OMVS); Niger Basin Organization (NBA)), which coordinate development programs encompassing several irrigation investments.

11. **The project benefits from a large political commitment from the six Sahel countries that the World Bank can leverage.** The World Bank has already been working for the past several years with national and regional entities in the six countries that will implement this project and will use its convening capacity to ensure coordination of activities. In fact, the collaboration and commitment to date led to the High Level Forum on Irrigation in Sahel held in Dakar in October 2013, which resulted in the launch of the Sahel Irrigation Initiative (2iS) by the six Sahelian countries and the *Comité Permanent Inter-États de Lutte contre la Sécheresse au Sahel* (Permanent Interstate Committee for Drought Control in the Sahel, CILSS). The Dakar Declaration, adopted by all participating countries and CILSS, recommends ensuring “that all hydro-agricultural developments be based on appropriate sectoral policies and strategies, which are integrated in a value chain approach and based on a rational and sustainable use of available resources.” The World Bank support will amplify this existing momentum and ensure that the preconditions (sectoral policies and strategies) for a performing irrigation sector are set in place.

#### **Box 2: The Sahel Irrigation Initiative**

Improving development and management of irrigation will clearly require some paradigm shifts. Constraints faced by stakeholders are very similar across the Sahelian countries and relate primarily to ‘how’ planning, design, construction, etc. is carried out. Addressing them requires, first, political momentum for reform to allow the necessary institutional changes to take place, and second, the capacity for scaling up interventions to improve economic efficiency across the value chains. The ‘Dakar Declaration’ adopted by the six Sahelian countries that gathered at the High Level Forum on Irrigation in the Sahel (October 31, 2013), under the CILSS leadership, recognizes the need to address both of these aspects. It calls for a renewed effort to scale up irrigation development and improve irrigation sector performance in the six Sahel countries to contribute to regional food security within natural resource limits. It sets a target of 1 million ha irrigated in the Sahel by 2020. (see Appendix 1 of Annex 2: The Sahel Irrigation Initiative Strategic Framework).

### **C. Higher Level Objectives to which the Project Contributes**

12. **The proposed project contributes to the overarching goals of the 2iS,** which are “an expanding irrigated agriculture that is productive, sustainable, and profitable for jobs and food security in the Sahel.” It aims to pave the way for the broader investment program needed to achieve the 2iS. The project will (a) enable homogenous and streamlined processes for irrigation investments; (b) increase donor alignment with country approaches; and (c) ultimately attract additional funds, following principles established in the Sahel Irrigation Initiative Strategic Framework (S2I-SF). It aims at influencing and expanding the entire irrigation portfolio in the six countries. The project is designed taking into account the anticipated complexities of a regional



engagement, and as such has set modest, yet realistic, physical targets. These physical targets are mostly related to small scale irrigation undertakings that can reap rapid benefits. However, the project will be preparing a number of feasibility studies that will allow for subsequent preparation of larger scale national investment programs, including through IDA-18 and the private sector window.

**13. The project contributes to the WBG twin goals of reducing extreme poverty and promoting shared prosperity.** The project will have a direct impact in the selected intervention areas where irrigation development will translate into improved food security, job creation, and increased incomes for poor rural households. The project will have a broader leverage impact on the viability, performance, and social and environmental sustainability of existing and future irrigation systems and related agricultural development. Additionally, the project will contribute to improved and transparent policy and planning decision-making at national and local levels.

**14. At the regional level, the SIIP is aligned with the World Bank Regional Integration Assistance Strategy for Sub-Saharan Africa<sup>17</sup> (SSA).** The project will contribute to the Regional Integration Assistance Strategy Pillar III, which explicitly emphasizes objectives that are directly relevant to the SIIP, namely (a) improving management of shared water resources and (b) raising agricultural productivity (including research and knowledge-sharing on likely implications for SSA). The SIIP also contributes to ‘Coordinated Interventions to Provide Regional Public Goods’ and to the cross-cutting area, ‘Strengthening Regional Strategic Planning and Connections with National Development Plans’.

**15. The project fulfills the regional integration criteria.** The project includes six IDA countries, including two fragile States (Chad and Mali). It will specifically contribute to three regional public goods: (a) a more efficient and productive use of scarce transboundary water resources; (b) increased food security at regional level; and (c) knowledge sharing to enhance the viability and harness the scale up potential for irrigation in the Sahel. Irrigation development plans will be based on “solutions” designed in common by the six countries for economies of scale. There is clear evidence of country and regional ownership as demonstrated by the Dakar Declaration and the follow up involvement of the countries and CILSS in the regional Task Force to produce a regional scale-up strategy (see Appendix 5 of Annex 2). Furthermore, the CILSS has been supporting the regional agenda on food security and resilience to climate shocks for the past 40 years by providing services to its member countries (see Annex 3).

**16. The project contributes to the goals and strategic activities of the World Bank’s broader Sahel Initiative, announced during the joint mission of the World Bank President and United Nations (UN) Secretary General to the Sahel in November 2013.** This project is initiated as a response to the security concerns and fragility issues in the Sahel.<sup>18</sup> The project is consistent with both pillars of the Sahel Initiative, ‘Vulnerability and resilience’ and ‘Economic opportunity and integration’. At country level, the project is fully consistent with the Country Partnership Strategy (CPS) for each of the six participating countries (see Table 2).

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<sup>17</sup> #43022-AFR, March 18, 2008.

<sup>18</sup> Five of the six countries have established the ‘G5 Sahel’ to respond to these security concerns ([www.g5sahel.org/](http://www.g5sahel.org/)).

**Table 2. Alignment of the Project with CPSs/CPFs and Africa Regional Integration Strategy**

Country	Alignment of the SIIP with the CPS/CPF and Regional Strategy
Burkina Faso	The CPS #78793 (FY13–FY16) reflects the Government’s medium-term vision, articulated in the Strategy for Accelerated Growth and Sustainable Development (SCADD 2011–15) and the World Bank priority areas of intervention. The National Plan for Economic and Social Development (FY16–FY20) highlighted agriculture and the development of irrigation infrastructures as a key sector to reduce the country’s vulnerability to climate shocks and to sustain food security. The SIIP is aligned with the three main strategic objectives of the CPS: accelerate inclusive and sustained growth; enhance governance for delivering social services more efficiently; and reduce social, economic, and environmental vulnerabilities.
Chad	The SIIP supports the second pillar of the current World Bank CPF #95277 (FY16–FY20), ‘improving returns to agriculture and building value chains’ and, in particular, strongly contributes to the first objective of this pillar, for ‘more productive and resilient agriculture.’ The SIIP is also aligned with the National Development Plan (PND 2013–15), the National Investment Plan for the Rural Sector (PNISR 2016–22), and the Government’s main framework for promoting growth, poverty reduction, and food security, which underpins the National Food Security Program 2014–21 ( <i>Programme National de Sécurité Alimentaire</i> ).
Mali	The SIIP is consistent with the World Bank’s current reengagement in Mali. It is aligned with the goals in the CPF #94005 (FY16–FY19), NAIP, the Government’s legal framework for agriculture ( <i>Loi d’Orientation Agricole</i> 2006), and current Agricultural Development Policy (PDA 2013).
Mauritania	The SIIP supports the five pillars of the CPS #75030 (FY14–FY16), which is aligned with the Country Poverty Reduction Strategy (CSLP III) and the agricultural investment program for 2014–19 contained in the Rural Development Strategy. The new legal framework for agriculture ( <i>Loi d’Orientation Agricole</i> ) also plans for the development of irrigation.
Niger	The SIIP strongly coincides with the strategic objectives of the CPS #76232 (FY13–FY16) to assist Niger to achieve resilient growth, reduce vulnerability, and strengthen capacity for service delivery. The CPS is fully aligned with the 2012 Government Plan for Social and Economic Development and the World Bank’s Africa Strategy.
Senegal	The SIIP is consistent with the Emerging Senegal Plan, which aims to increase the production, productivity, and competitiveness of the SIIP subsector. The SIIP is aligned with the CPS #73478 (FY13–FY17), especially Pillar 1 (accelerating inclusive growth and creating employment). The SIIP will support the regional agenda of the CPS to deepen integration, leverage additional funding, and build knowledge across the region.

*Note: CPF = Country Partnership Framework; SIIP = Sahel Irrigation Initiative Support Project.*

## II. PROJECT DEVELOPMENT OBJECTIVE

### A. Project Development Objective (PDO)

17. The PDO is to improve stakeholders' capacity to develop and manage irrigation and to increase irrigated areas using a regional “solutions” approach in participating countries across the Sahel.

### B. Project Beneficiaries

18. **Project beneficiaries will include farmers (both women and men, youth included) who will benefit directly from selected investments financed under the project and indirectly from the increased capacity of public and private stakeholders to deliver enhanced irrigation services.** The planned irrigation schemes will directly benefit over 58,000 farmers, mostly from

poor households, with a focus on small to medium scale irrigation systems.<sup>19</sup> About 35 percent of the direct beneficiaries in irrigation schemes will be women.<sup>20</sup> In addition, the project will generate benefits along the value chains. Therefore, other beneficiaries include suppliers, non-family farm workers, and various service providers (processing, marketing, maintenance). In total, the project would reach 72,000 households, corresponding to about 430,000 people.

19. **Stakeholders mentioned in the PDO include at the national level key ministries, public authorities and training and research institutes active in irrigation.** At the local level within the project implementation area, they are government decentralized services, operators involved in irrigation development and management, consultancy and construction firms, agribusiness investors, irrigation equipment suppliers and retailers, and producers' organizations. An estimated 1,000 stakeholders of all types will be directly involved in project-related activities and benefit from capacity strengthening.

20. **All beneficiaries – farmers and stakeholders – will benefit from the regional dimension of the project through their involvement in the delivery and use of shared irrigation solutions.** The project will use common implementation arrangements like terms of reference, training curricula or quality labels for irrigation equipment that will be based on the emerging best practices in the participating countries and will be shared using a learning-by-doing approach (see Project Description section).

### C. PDO Level Results Indicators

21. **The following indicators will be used to measure progress toward achieving the PDO:**

- (a) Direct project beneficiaries (number), of which female (percentage);
- (b) Area provided with new or improved irrigation and drainage services (ha) – core;
- (c) Annual crop intensity on areas equipped by the project (percentage);
- (d) Trained stakeholders having used the acquired knowledge (percentage); and
- (e) Share of the country investment portfolios aligned with the “solutions” approach developed by the project (percentage).

22. **Indicators (a) to (c) will be achieved on targeted Project Intervention Areas (PIAs) selected in each country, based on their potential for viable irrigation development scale-up using one or more types of irrigation systems.** Among these three, Indicator (b) measures the increase in irrigated area and in the capacity to develop irrigation, while Indicator (c) measures the improved capacity to manage irrigation. Crop intensity is a good proxy for adequate planning and implementation of AWM activities. Indicator (d) measures the impact of the numerous training activities the project will support. This indicator will consider local stakeholders in the PIAs as well as national stakeholders who will benefit from regionally-led training activities. Indicator (e) is related to the policy and institutional impact expected from the project on the irrigation investment portfolio of the six countries<sup>21</sup> and will measure the project's results in streamlining

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<sup>19</sup> Small-to-medium scale irrigation systems are generally less than 500 ha in size.

<sup>20</sup> A large number of *Petits Périmètres Maraîchers* (vegetable gardens) is included in the investment mix, mostly benefitting women. Specific attention will be given to women's land rights of these vegetable gardens.

<sup>21</sup> The portfolio of upcoming projects in the six countries amounts to US\$500 to US\$1,000 million.

and institutionalizing irrigation solutions across different operations and at a regional scale (see Annex 1).

### III. PROJECT DESCRIPTION

23. **The project creates a regional collaborative platform of technical assistance, knowledge, and demonstration investments using an innovative solutions-based approach.** This approach combines four inter-related dimensions that need to be systematically addressed in any irrigation operation in the Sahel, namely: (a) a sound organizational structure with a clear delineation of the roles and responsibilities of the different actors including all aspects; (b) a well-designed and technically robust irrigation system<sup>22</sup> that is adapted to the local environment with proper O&M; (c) a well-established and reliable financing system for both investment and O&M; and (d) an effective skill acquisition mechanism adapted to the evolving needs and taking into account the gender dimension. By creating the platform for all six countries of the Sahel to collaborate around the best emerging irrigation development approaches at the national and sub-regional levels, the project allows the countries to benefit from the economies of scale offered by addressing these issues together. Specifically, the project creates a structure that allows for coordinated action, information and data sharing, financing development of about 23,000 ha through investment in demonstrative irrigation solutions at the country level that will benefit over 58,000 farmers and some 430,000 people, preparation of feasibility studies for 50,000 ha, and coherent technical assistance that could ultimately benefit many more beneficiaries who will adopt these irrigation solutions.

#### A. Project Components

**Component A: Modernizing the institutional framework (US\$19.6 million equivalent, including US\$19.3 million equivalent IDA)**

24. **The objective of Component A is to strengthen the countries' capacity to scale up irrigation solutions.** Component A will finance assessments of land and water resources and of local production systems in the PIA, as well as organizational strengthening with a view to provide a basis for viable and sustainable irrigation development using the various Types of Irrigation System.

25. **Local development planning based on natural resources assessment.** The provision of consultants' services and training providers will help to carry out (i) diagnosis studies on use of prior land tenure and the strengthening of local land management bodies; (ii) surface and groundwater resources assessment and the strengthening of local water resources management bodies in charge of water resources monitoring and water allocation procedures; and (iii) analysis of farmers production systems and identification of market opportunities for a sound agricultural development planning process at local level. This work will be undertaken using a common approach among the participating countries and facilitated by the regional level. It will result in the establishment of community-owned local development plans laying out an integrated roadmap for irrigation scale-up based on a clear allocation of land and water resources. It will include a specific focus on gender issues.

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<sup>22</sup> Including pumps, boreholes, network of pipes or canals, flow regulation and measurement devices.

### **Box 3. Land Tenure Management Instruments**

The project will support different kinds of land management instruments in the PIAs, building on existing legal local instruments and on donor and NGO good practices, and taking into account the diversity of irrigation systems and their specificities:

- For small-scale irrigation, the project will support: (a) local land management bodies, some of which may already be part of their country's land legal framework in the ongoing decentralization processes; (b) prior land tenure diagnosis; and (c) local participative land charters. These tools have been tested already in the Sahel region and were recognized for their efficiency to identify implicit conflicts, prevent and sort them out, and help allocate and secure land tenure rights.
- For large-scale irrigation, the project will work on a specific diagnosis tool of land tenure for policy decision-making process that was developed during project preparation. This tool will be improved and implemented in association with irrigation design studies. This grid will be used to set up at the regional level a policy for new medium- and large-scale irrigation schemes. This tool is built on the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security.<sup>23</sup>

(see Annex 2 for more details on land management approach)

26. **Organizational strengthening.** The project will finance goods (small equipment), consultant services and financing of operational cost and contractual staff for national and decentralized government services, irrigation agencies (*Société d'Aménagement et de Gestion de l'Irrigation* (Public Irrigation Authorities - SAGIs)<sup>24</sup> and producers' umbrella organizations to (i) carry out inventories and monitoring of existing irrigation schemes in the PIA; (ii) supervise the implementation of the local development planning under this component and of the irrigation solutions under Component B; and (iii) train and advise the project beneficiaries for irrigation scheme management and onward irrigated agricultural development. These activities will be based on the use of shared implementation manuals and capacity development plans developed in common through the regional facilitation.

27. **Regional facilitation.** Service providers will deliver regional technical assistance and facilitate cross-learning activities for local development planning and organizational strengthening under Component A including: (i) preparation of tools and guidelines (technical, contractual, organizational, legal); (ii) provision of training of trainers; (iii) organization of exchange of experience through study tours and the delivery of cross learning events; and (iv) facilitation of regional thematic working groups on specific topics including land tenure, integrated water resources management, and gender approach.

**Component B: Financing irrigation investment solutions (US\$141.2 million equivalent, including US\$118.9 million equivalent IDA and US\$5.85 million Global Partnership on Output-Based Aid (GPOBA) grant)**

28. **The objective of Component B is to craft irrigation solutions for the various types of irrigation systems based on emerging best practices identified in the participating countries and to implement them.** For small-scale irrigation schemes (Types 1 to 3, per Table 1 above) which are cost-effective and easily replicable from one site to another and across countries

<sup>23</sup> See <http://www.fao.org/docrep/016/i2801e/i2801e.pdf>.

<sup>24</sup> The World Bank is currently supporting four of the 16 existing irrigation agencies (SAGI) in the six countries, through Investment Program Financing or Development Policy Operations.

boundaries, the project will finance revitalization and new construction at a significant scale within the PIA so as to demonstrate their scale-out potential. For large scale irrigation schemes (Types 4 and 5, per Table 1) which are costly undertakings and more context specific, the project will finance studies with a view to building a pipeline of projects ready for implementation. Emerging best practice solutions from all participating countries will be shared through these hard and soft investments using a learning-by-doing approach, thus making all Component B investments a contribution to the regional knowledge base.

**29. Subcomponent B.1: Preparation or update of bankable investment proposals, including carrying out feasibility studies and environmental and social assessments for medium or large irrigation schemes and assistance in mobilizing extra financing (US\$9.4 million equivalent IDA).** The project will finance studies covering 50,000 ha (Types 4 and 5 schemes). A list of studies has been identified and will be confirmed based on an assessment of the schemes' bankability. The quality of the studies will be enhanced through the provision at the regional level of high level expertise and the organization of cross-learning events related to Types 4 and 5 solutions. CILSS will also facilitate fund-raising through donor roundtables.

**30. Subcomponent B.2: Design and implementation of irrigation solutions for the revitalization, modernization of existing schemes and construction of new small scale irrigation schemes and appurtenant infrastructure (US\$109.6 million equivalent IDA).** The project will finance design studies, construction works, training activities, and technical assistance for Types 1, 2 and 3 schemes, on about 23,000 ha. Some medium size Type 4 schemes are also considered for rehabilitation only. Existing schemes within the PIA are eligible for revitalization based on a formal commitment by the irrigation users to strengthen the management, operation and maintenance of their scheme. New schemes have been pre-selected within the PIA based on technical feasibility, the prior commitment of farmers to sound management and the existence of market opportunities.<sup>25</sup> Final scheme selection will be done against agreed criteria (see Implementation Arrangements Section). Construction works will include pumping, flow measurement devices, conveyance and distribution systems using adapted technologies, for example low pressure pipe systems for improved efficiency. Solar pumping options will be considered. In addition, the project will finance appurtenant infrastructure within the PIAs including (i) the construction of multipurpose service centers and storage facilities under the ownership of producer organizations; and the rehabilitation of access roads when they are necessary to ensure the commercial viability of the irrigation schemes developed or improved by the project, as determined by the local development plan established under Component A. Training and technical assistance to producer organizations will be provided for the operation of these infrastructures with consideration of gender dimension (women's representation in these organizations). All investments will include a contribution from the beneficiaries as part of the financing mechanism incorporated in the solutions approach. A GPOBA grant will be utilized for construction and rehabilitation on a pilot basis an output-based financing mechanism for Type 2 Irrigation system to limit soil erosion, store water and enhance its retention, and install equipment for cotton producers in Burkina Faso (see Annex 2 for details).

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<sup>25</sup> In order to increase the share of women beneficiaries, a significant proportion of the pre-selected schemes are small village garden schemes for women.

31. **Regional facilitation.** Investment activities under Component B were selected during project preparation following an assessment of the six countries' strengths and needs to maximize the cross-learning spillover (see Appendix 2 of Annex 2). Training services and technical assistance will strengthen the capacity of stakeholders involved in the implementation of Component B. The exchange of experience on the various solutions will be ensured through study tours and the delivery of cross-learning events.

**Component C: Knowledge management and coordination (US\$36.4 million equivalent, including US\$31.7 million IDA equivalent)**

32. **The objectives of Component C are to: (a) collect, produce, and disseminate useful knowledge and allow irrigation stakeholders to communicate with one another around solutions; and (b) allow efficient coordination of the project's activities.** These will be achieved through the establishment and operation of a regional knowledge and information system, targeted action research and efficient coordination, communication and Monitoring and Evaluation (M&E) system.

33. **Subcomponent C.1: Information system and knowledge management platform (US\$12.5 million equivalent IDA).** The subcomponent will finance the development at the regional level of an integrated information and knowledge management (KM) system including: (i) a cloud-based database to monitor the irrigation sector linked to existing data resources on land use, water resources and climate and agricultural markets; (ii) data collection and dissemination tools using information and communication technology (ICT) like smartphone applications and other communication tools; (iii) targeted research activities, training and analytical work focused on solution implementation and cross-cutting issues like gender; and (iv) using the information generated by the information system the project will implement a strategic outreach to decision-makers, irrigation financiers and stakeholders, and the public with the view to showcasing project results, mainstreaming and institutionalizing the solutions and pooling additional resources for investments in the sector. Countries will be responsible at the national level for the collection of data and the implementation of research activities in the fields of information and communications technology, economic surveys, ex-post evaluation and other selected topics of national interest.

34. **Subcomponent C.2: Project coordination and monitoring and evaluation (US\$19.2 million equivalent IDA including US\$5.0 million for project preparation).** The objective of this subcomponent is efficient project coordination at the regional and national levels, including the refurbishing of CILSS' office premises, the strengthening of the regional and national implementing agencies' institutional and fiduciary capacity, and the carrying out of the Project management and coordination functions at the regional and national levels, including for the fiduciary and safeguards aspects, monitoring and evaluation, the carrying out of audits, and the preparation of the project, mid-term and completion reports.

**B. Project Financing**

35. **The total project cost is estimated at US\$197.2 million shared among the six countries and the CILSS.** Total project costs and IDA financing are summarized in Tables 3 to 5. Each country receives a total of US\$25 million in IDA credit or grant, which is complemented by Government and beneficiaries contributions. The CILSS will receive a US\$20 million IDA grant.

In total, the regional IDA allocation amounts to US\$107.48 million complemented by US\$62.52 million of national IDA. In addition, a GPOBA grant in the amount of US\$5.85 million will be used to finance supplementary irrigation for cotton producers in Burkina Faso. The CILSS and the Governments of Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal have all secured and are using a Project Preparation Advance (PPA) estimated in total at US\$5.0 million to undertake key activities for project readiness. About 12 percent of the IDA proceeds are allocated to Component A, 70 percent to Component B, and 18 percent to Component C. Government contribution of US\$10.7 million will be used mainly to cover part of the project management costs, taxes, and to pay compensations to project affected people may the need arise. Beneficiaries' contribution of US\$10.7 million represent the farmers' financial participation to the irrigation investment costs.

**Table 3. Respective Contributions of IDA, GPOBA, Countries, and Beneficiaries in Financing the SIIP<sup>26</sup>**

Project cost (US\$ Million)									
	Burkina Faso	Chad	Mali	Mauritania	Niger	Senegal	CILSS	Total	%
<b>IDA</b>	25.0	25.0	25.0	25.0	25.0	25.0	20.0	170.0	86.2
<b>GPOBA</b>	5.85	-	-	-	-	-	-	5.85	3.0
<b>Government</b>	0.3	0.2	5.5	2.5	0.2	2.0	-	10.7	5.4
<b>Beneficiaries</b>	2.2	2.2	1.5	1.6	2.2	1.0	-	10.7	5.4
<b>Total project cost</b>	<b>33.3</b>	<b>27.4</b>	<b>32.0</b>	<b>29.1</b>	<b>27.4</b>	<b>28.0</b>	<b>20.0</b>	<b>197.2</b>	<b>100.0</b>

**Table 4. Cost and Financing by Component, SIIP**

Project cost (US\$ Million)									
	Burkina Faso	Chad	Mali	Mauritania	Niger	Senegal	CILSS	Total	%
<b>Component A: Modernizing the institutional framework</b>									
Comp. A	2.3	2.7	2.1	2.6	3.1	2.2	4.5	19.6	9.9
Incl. IDA	2.3	2.7	1.8	2.6	3.1	2.2	4.5	19.3	11.3
<b>Component B: Financing irrigation investment solutions</b>									
Comp. B	25.8	21.7	22.2	21.9	20.9	21.2	7.4	141.2	71.6
Incl. IDA	17.8	19.3	18.2	18.8	18.7	18.8	7.4	118.9	70.0
<b>Component C: Knowledge management and coordination</b>									
Comp. C	5.1	3.0	7.6	4.6	3.4	4.6	8.1	36.4	18.5
Incl. IDA	4.9	3.0	4.9	3.7	3.2	3.9	8.1	31.7	18.7
<b>Total project cost</b>	<b>33.3</b>	<b>27.4</b>	<b>32.0</b>	<b>29.1</b>	<b>27.4</b>	<b>28.0</b>	<b>20.0</b>	<b>197.2</b>	
Incl. IDA	25.0	25.0	25.0	25.0	25.0	25.0	20.0	170.0	100.0

<sup>26</sup> For Tables 3 and 4, all numbers are rounded to the nearest one hundred thousands. Since the total is based on exact values, its rounded value may slightly differ from the sum of rounded values.



**Table 5. IDA Financing, SIIP (US\$ million)**

	National IDA		Regional IDA		Total
	Grant	Credit	Grant	Credit	
CILSS	-	-	20.00	-	20.00
Burkina Faso	-	12.50	6.25	6.25	25.00
Chad	8.34	-	16.66		25.00
Mali	-	8.34	8.33	8.33	25.00
Mauritania	8.34	-	16.66	-	25.00
Niger	-	12.50	6.25	6.25	25.00
Senegal	-	12.50	-	12.50	25.00
Total Grant/Credit	16.68	45.84	74.15	33.33	170.00
Grand Total	62.52		107.48		

### C. Lessons Learned and Reflected in the Project Design

36. **The project design is informed by a number of lessons derived from more than 50 years of experience in irrigation development in the Sahel.** The diversity of irrigation models has become a defining fact of the irrigation landscape in the Sahelian countries. The project is built on this diversity by taking into account their specificities (e.g., land tenure system, business model) to build on their comparative advantages and maximize their contribution to higher-level goals, such as food security and increased farmer incomes. The project has a strong focus on small-scale irrigation where economies of scale can be achieved by promoting simple and robust solutions that can be adapted to each local context.

37. **Skilled field operators will engage irrigation stakeholders for scaling out irrigation solutions.** Long experience has shown that the skill of the project field operators is critical to ensure the performance of the participatory approach<sup>27</sup>. Performance-based contracts coupled with the appropriate capacity building activities can help manage the relationship between the project owner (individual or group of beneficiaries), the operator, and the line ministry.

38. **Past experience has consistently shown that failure to consider the wider economy and complex production system beyond the irrigation scheme may lead to poor performing irrigation investments.**<sup>28</sup> The project will balance land and infrastructure development with accompanying nonstructural measures, including value chain development, capacity building, and institutional strengthening, especially in planning. More importantly, the project will institutionalize effective practices to ensure their sustainability beyond project completion.

39. **The project design incorporates the core findings of the thematic studies commissioned by the World Bank before project preparation.** Following the Dakar High Level Forum on Irrigation in Sahel in October 2013, a regional task force, including relevant regional and national stakeholders, was set up to facilitate cross-learning and guide the countries on project preparation, and later, on project implementation. Major conclusions of in-depth thematic studies

<sup>27</sup> E Brown and R Nooter. Successful Small-Scale Irrigation in the Sahel, World Bank technical paper n° 171, 1992.

<sup>28</sup> *Initiative pour l'Irrigation au Sahel*, Strategic Framework for Agricultural Water in the Sahel, 2016.

on key irrigation-related topics, including value chains, KM, capacity building, and water resources management highlight the dearth of information systems for land and irrigation, the declining capacity in irrigation expertise in some of the countries, and a deficit of capitalization of experiences at the national and regional levels. These studies also highlight pockets of success that remain isolated, KM and information systems need to be strengthened to scale out these success stories.

40. **A detailed assessment of land tenure practices during all phases of irrigation scheme development and management was conducted in the six countries as part of the thematic studies.** The guiding principle consideration of the framework was that a transparent and fair process resulting in the establishment of a clear set of rules owned by the communities will do more to improve tenure security than the distribution of formal titles. The following key principles were highlighted: (i) land issues must be incorporated into the project design at the beginning of the project cycle; (ii) the land tenure regime need to be adapted to the different types of irrigation systems; and (iii) existing good practices and relevant land management tools (see Appendix 4 of Annex 2) are generally sufficient to provide adequate tenure security.

41. **The project's design benefited from specific lessons learned in implementing similar regional projects including the WAAPP and the PRAPS.** While the implementation structure can be viewed as complex as it necessarily involves several agencies at the regional and national levels, all of these agencies already have experience working with the World Bank and are fully supportive of the project. In line with WAAPP and PRAPS, all project units (national and regional) will use the same knowledge and M&E software systems to ensure a consistent and harmonized reporting and evaluation system across the countries and to smooth out the related challenges. The regional-level unit will provide guidance and a template for key activities to ensure project coherence across the region and to prevent unnecessary and costly duplication of efforts. For example, strategic frameworks (communication, gender, and knowledge dissemination) will be developed at the regional level with input from the countries, while responsibility for implementation through adapted action plans will be at the national level. West and Central Africa Council for Research and Agricultural Development (CORAF) experience in promoting gender inclusive approaches to agricultural development was used to inform project design.

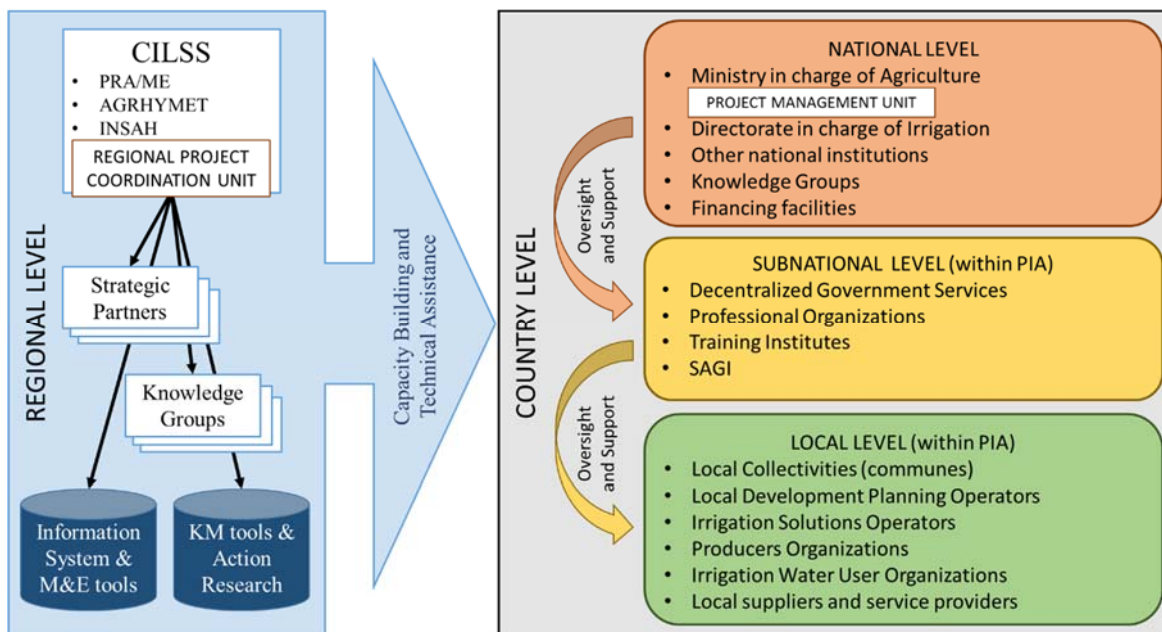
## IV. IMPLEMENTATION

### A. Institutional and Implementation Arrangements

42. **The SIIP implementation arrangements follow the existing institutional structure cascading down from regional to national, subnational and local organizations.** The seven regional and national implementation agencies have already been working on project preparation for the past several years and as such, are fully prepared to take on project implementation. They will be further strengthened with dedicated technical and fiduciary expertise after project commencement, as stipulated in the conditions of effectiveness and dated covenants included in each FA. The project will work with existing institutions and the private sector at subnational and local levels to enhance their implementation capacity. The regional coordination, knowledge exchange, accessible information systems, as well as training activities will ensure that field activities implemented in one country are interrelated with those from other countries and result in economies of scale. The project puts a strong focus on clarifying the role and responsibilities of

all stakeholders in the implementation of the irrigation solutions, and on developing the local training capacities, so as to improve the scalability of the solutions. The overall architecture of the implementation arrangements is described in Figure 1.

**Figure 1. Schematic Implementation Arrangements**



43. **Regional-level implementation.** The CILSS will be the overall project implementing agency and primarily responsible for regional coordination, under the oversight of the existing *Comité de Pilotage des Projets et Programmes du CILSS* (Regional Steering Committee for the CILSS Projects and Programs, CRP) which will ensure that project activities are consistent with CILSS vision and programs. The CILSS has a track record of implementing regional projects funded by various partners including the World Bank. It fulfills all the criteria to receive a regional integration grant from IDA (see Annex 3). The regional-level implementation arrangements within CILSS include the following entities:

- (i) A Regional Project Coordination Unit (RPCU) for the SIIP has been set up within the Executive Secretariat of the CILSS (SE-CILSS) in Ouagadougou. It is responsible for the administration of regional activities, procurement, financial management (FM), programming, and M&E. Within the SE-CILSS, the RPCU is anchored at the existing Water Management Program (PRA/ME) Regional Support Program for Water Management (PRA/ME), whose core functions include coordination of resource mobilization, regional programming and M&E services, regional capacity development and technical assistance, regional data generation, KM, and communication. The PRA/ME coordinator who is leading the project preparation for the CILSS was appointed as Project Coordinator, supported by a team of permanent staff and contractual experts. In addition, the CILSS technical centers *Centre Agrhymet* (Regional Center for Agriculture, Hydrology and Meteorology, AGRHYMET) in Niamey and *Institut du Sahel* (Sahel Institute, INSAH) in Bamako will contribute to capacity building and knowledge generation and sharing activities falling within their mandate. The RPCU will work with Strategic Partners (SPs) supporting the

solutions improvement process and with others partners for the knowledge management and advocacy activities.

(ii) A Comité Technique Régional (Regional Technical Committee or RTC) will be established by the SE-CILSS, and shall meet at least twice each Fiscal Year to undertake: (i) the review and approval of the draft Annual Work Plan and Budget (AWP&B); (ii) the assessment of project progress against the current AWP&B and the approval of the semi-annual Project Reports; and (iii) the validation of any modification or update to the Project Implementation Manual (PIM). The RTC shall be chaired by the Recipient's Executive Secretary or his/her representative and shall be composed of, inter alia, the Regional Project Coordinator, the national project coordinators of each Participating Country, the permanent secretary of the CONACILSS of each Participating Country, representatives of *Réseau des Organisations Paysannes et des Producteurs Agricoles an Afrique de l'Ouest* (West Africa Network of Farmer Organisations and Agricultural Producers – ROPPA), and donors. Members of the existing Sahel Irrigation Initiative Task Force that helped design the project might be invited to this Committee.

(iii) SPs, each specialized in a cross-cutting thematic area or a type of irrigation<sup>29</sup>, will be contracted by CILSS at the beginning of the project to provide technical assistance to CILSS and the countries. SP's terms of reference have been developed as part of project preparation activities, and procurement is expected to be completed by the CILSS grant agreement effectiveness date. The SPs will intervene in components A and B, and carry out the main following tasks:

- recurrent supportive supervision of project implementers and other stakeholders benefiting or delivering irrigation solutions in the PIAs;
- preparation of methodological documents and learning tools that allow replication of solutions;
- assistance to the establishment of knowledge exchange groups and to their initial activities and mechanism to curate their production;
- implementation of a training-of-trainers program to ensure the scalability of the approach.

(iv) Knowledge Exchange Groups will be established at both regional and national levels to support the 'solutions improvement process.' Groups of stakeholders, including practitioners from the private sector (service providers, design consultants, contractors) will convene at the regional level and in the six countries under the leadership of the SPs. The findings of the knowledge groups will be public, curated, and incorporated into the information material that pertains to solutions when relevant. Members will volunteer and knowledge groups will be allocated a budget to compensate the participants for the costs they incur in participating (notably to attract engineers and technicians from consultancy firms). A detailed description is provided in Annex 3.

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<sup>29</sup> The SPs are: SP Irrigation Types 1 & 3; SP Irrigation Type 2; SP Irrigation Types 4 & 5; and SP Local Development Planning.

(v) A pool of high-level experts will be established to provide quality enhancement services and ad hoc support on specific issues related to the implementation of irrigation solutions under Component B, notably for the studies under B.1. They will also be resource persons for the knowledge groups. A number of experts have already been identified.

44. The CILSS has drafted a detailed PIM, which incorporates all operational details at the regional level, including technical activities (e.g., SP's terms of reference, action research manual), the M&E manual, as well as administrative and fiduciary procedures. The regional PIM has to be approved by the World Bank before effectiveness.

45. **Country-level implementation.** Though it will be adapted to each country's context, the institutional and implementation organization of the SIIP project at the country level will be based on common features. These will include: (a) a general implementation structure at the national level including a Steering Committee and a Project Management Unit (PMU) embedded in the line ministry; and (b) shared organizational arrangements for the implementation of irrigation solutions at local (project area) level. These organizational arrangements are designed to be replicable from one area to another so as to facilitate cross-learning and provide scalability to the implementation process.

46. A National Steering Committee will be established in each country<sup>30</sup> to provide policy guidance and oversight to the PMU throughout project implementation. The Committee's responsibilities include the review and approval of the draft annual work plan and budget (AWP&B), approval of the consolidated annual report, assessment of implementation progress, and validation of any change requested to national PIMs.

47. The line ministry in each country will establish a PMU<sup>31</sup> to handle the coordination, FM (including channeling of the project's funds), procurement, M&E, reporting, and assessment of impacts of the project at the national level. The PMU will consolidate the plans and reports from all contracted parties to present consolidated documents to the National Steering Committee. Specific arrangements and proposed staffing for the PMU of each country are given in Annex 3. In most countries, the National Focal Point who has been coordinating project preparation is expected to continue as National Coordinator during implementation.<sup>32</sup>

48. The PMU will enter into agreements with:

- relevant national and/or subnational directorates, notably rural engineering, agriculture and environment, as well as SAGI in order for them to supervise the activities of stakeholders involved in the investments of Component B, thereby gaining exposure to actual implementation of the solutions, and to feed the project's regional M&E system with data they will collect;
- national and subnational professional bodies – such as Chambers of Agriculture, Federations of Producer Organizations, and Interprofessional Associations – to provide

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<sup>30</sup> It has already been established in Chad, Mauritania, Niger and Senegal. It will be established no later than three months after project effectiveness in Burkina Faso and Mali.

<sup>31</sup> PMU was already established in Chad, Mauritania, Niger and Senegal. Its establishment is condition of effectiveness in Burkina Faso and Mali.

<sup>32</sup> The project coordinator was already appointed in Chad, Mauritania and Niger. His appointment is a condition of effectiveness in Burkina Faso, Mali and Senegal.

support services to producers groups and local stakeholders. In some cases, these agreements will be Memoranda of Understanding (with no financial implications) to partner with institutions acting under their own mandate and budget; and

- existing financing facilities in Mali and Niger to channel funds through these institutions as part of the irrigation solutions' financing mechanism.

49. At the local level (within the PIAs), the beneficiary owners of the small scale irrigation systems (Types 1 to 3) to be developed or improved – be it a group of producers, a commune or an individual farmer – will sign an agreement with the PMU to formalize the responsibilities that are attached to the ownership of the irrigation scheme (the “subproject agreement”). Through this subproject agreement the owner will commit to endorse full responsibility for the efficient and sustainable management of the irrigation scheme and to participate in all stages of the subproject including the capacity building activities. A separate agreement may also be signed between PMU and local authorities where integration of irrigation in local development plans needs to be improved, with support from specialized operators (in general, NGOs).

50. In the PIAs, investment subprojects under Component B (Types 1 to 3) will begin once the subproject agreement is signed. Subproject selection criteria will include: (a) documented land and water use rights and/or allocation (preexisting or established as a result of the local development planning process supported under Component A); (b) a sound business plan with clear market access strategy; and (c) approved applicable safeguard instruments (as stipulated in the Environmental and Social Management Framework (ESMF)). In addition, the subproject beneficiaries will need to mobilize their own contribution to the investment either directly or through a commercial bank or micro-finance institution, as determined for each type of irrigation system as part of the solution's financing mechanism. The process will be described in the PIM. The countries have already identified a list of subprojects through a due diligence process at preparation stage. These subprojects will be screened and studied, as necessary, during the first six months of the project before moving to the construction phase. They will be implemented under the oversight of the subnational government services. The PMU retains overall fiduciary responsibility for all project activities.

51. Irrigation Solutions Operators (OSI) will be contracted by PMUs, assigned each a specific part of the PIA and entrusted with the responsibility to assist subproject owners and ensure the elements of the irrigation solutions are actually implemented (by contractors, consultants, service providers, and the owners themselves with respect to their commitment) from identification and early social mobilization to full transfer of asset management and product marketing. They will enter a two to three year contract with the PIUs with possible extension for the most complex investments. Operators will be listed in each country and for each solution as potential OSIs in given areas of the country based on their past achievements and knowledge of the local context.<sup>33</sup> Where there is no capable service provider, training sessions and exchanges with such providers from other countries will be organized as part of the capacity-building program facilitated by the SPs.

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<sup>33</sup> The size of the specific implementation areas given to the OSI will depend on the implementation capacity of the potential operators. A list of skilled operators has been established for each country during preparation.

## B. Results Monitoring and Evaluation

52. M&E will be undertaken at two levels for the SIIP: (a) at the regional level by the CILSS and (b) at national level by the six participating countries. The CILSS has overall responsibility for designing and coordinating the project M&E. It will also be responsible for providing training to the countries and will ensure timely production of quality data and information from all countries. Local stakeholders (decentralized government services, operators, and so on) will be responsible for data collection. Each PMU (national and regional) will have an M&E specialist to supervise data collection. In addition, CILSS will have a data management specialist in charge of data quality control. The CILSS will receive evaluation and progress reports from all of the countries and will share results and best practices across the Sahel.

53. The project will build on national and regional systems to monitor results in line with the CILSS mandate. Project interventions will be georeferenced using earth observation tools and smartphones. This information will be publicly accessible through interactive websites. PPA funding was allocated for the development of the M&E system during project preparation. A baseline survey will be implemented as part of local development planning activities under Component A using ICT tools. This survey will gather irrigation, social and environmental data in the PIAs. The baseline and target figures indicated in the Results Framework must be reviewed and improved at project Mid Term Review (MTR), using data collected during the first three years, to better reflect the situation of the six countries.

## C. Sustainability

54. **Sustainability is at the core of the project strategic positioning.** By structuring the sector around holistic and integrated solutions defined with stakeholders, including the private sector, and by institutionalizing them to ensure their scalability, the project aims to establish a solid framework the countries can use to leverage more resources and keep improving the sector's performance. This will allow further improvements in the solutions by replicating the learning-by-doing approach followed by this project and expand their use in the six countries.

55. **The project will work with existing institutions at all levels.** At the regional level, the CILSS capacity will be strengthened in its coordinating role, and the technical centers AGRHYMET and INSAH will be closely involved in all learning and KM services so as to build their capacity to deliver these services to the countries after the end of the project. The SPs that will work under the CILSS coordination to deliver technical assistance to the states will be organizations already deeply rooted in the region and there to stay. A financing mechanism will be devised before project MTR by which national projects will contribute to the cost of regional services on a recurrent basis as long as countries need these services and are satisfied with their quality. It is expected that this mechanism would be progressively implemented during the second half of the project and would take over the financing of the CILSS services from IDA.

56. At the national level, the PMU will be embedded in the line ministries or in specialized agencies<sup>34</sup> with a view to building their capacity. Other ministries and agencies will be involved

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<sup>34</sup> *Agence d'aménagement des Terres et de Fourniture de l'Eau d'Irrigation* (Land Improvement and Irrigation Water Supply Agency - ATI) in Mali.

in line with their mandate. The agreements will provide the necessary funding to conduct their operations while making sure the responsibilities are appropriately delegated.

57. At the local level, the project will use scalable institutional arrangements, relying on decentralized government services and professional bodies for supervision and support functions. The project will also be working with service providers to assist communes and producer organizations to implement their own subproject following the solutions approach. All these entities will be trained by the SPs at the beginning of the project. To the extent possible, the training program will be implemented by existing training institutes following training of trainers by the SPs. This will ensure that training capacity on the various topics and solutions will remain in place after the project ends. The same approach will be used for all type of services the irrigating farmers will need on a recurrent basis.

58. **For each subproject and as part of the solutions approach, a thorough sustainability assessment will be done based on selection criteria described above.** Sustainability includes economic viability (with support services and market access infrastructure) and technical and financial arrangements for O&M (at the core of the irrigation solutions), as well as sound investment planning process taking into account limited availability of natural resources. Irrigation scheme sustainability will be ensured by: (a) the quality assurance mechanism that will be embedded in the design of the irrigation systems to be rehabilitated or constructed to ensure they perform according to the expected standards; (b) the strong project focus on building viable water users organizations via the investment in social engineering; (c) the extended support provided by the solutions operators going beyond simple design and construction of the schemes and encompassing support to agricultural development and market access; (d) the accompanying investments in value chain development, and supporting infrastructure; and (e) the development of equipment supply chain and professional services to be made available to water users and producer groups on a recurrent basis.

## V. KEY RISKS AND MITIGATION MEASURES

59. **The risk to development outcome is rated high.** This rating results from: (i) the high political and governance risk as well as high security risks in project implementation areas; (ii) the high risk related to the institutional capacity for implementation given the complex nature and geographical extent of this project; and (iii) the cumulative impact of several other substantial risks as described in the following paragraphs.

60. **Political and governance risk is high.** Several countries (Burkina Faso, Chad, Mali, and Niger) are facing governance challenges. Chad, Mali, and Niger and to a lesser extent Burkina Faso and Mauritania are currently facing direct terrorist threats and/or internal conflicts. There are few possible mitigation measures by the project for these external risks, except targeting less risky areas for field interventions. However, several approaches promoted by the project should improve sector governance, and irrigation development of marginalized areas may play a significant role in providing agricultural and economic development opportunities to local population, hence reducing tensions and instability and lending the project itself as part of the answer to these risks.

61. **Sector strategies and policies risk is rated substantial.** Most countries already have irrigation strategies and policies in place, however they are often not reflected in the reality in the



field. The project will build on the relevant countries' strategies and policies and promote the adoption of the irrigation solutions. CILSS will use its convening power – notably its program steering committee and regular ministerial meetings – to advocate for policy reforms. Given the innovative nature of the 2iS initiative, its early stage of implementation and its complexity, the risk is rated substantial.

62. **Technical design risk is substantial.** Although the project will primarily develop micro- and small-scale schemes, its intended impact will only be achieved if there is a significant improvement in the quality of design and construction while bringing unit costs down. Coordinated stakeholders' intervention is also critical. To achieve this, the project aims at creating a network of local service providers who are selected and trained to implement the solutions approach. The technical design risk will be mitigated by the intervention of the CILSS SPs in support of the countries.

63. **Institutional capacity for implementation and sustainability risk is high.** The project will only be effective if there is a high level of coordination among the various partners and willingness of the six countries to implement the policy changes derived from stakeholder consultations. Some resistance to change is to be expected. This risk will be mitigated by providing a wide menu of investment options and focusing initially on the solutions that will require fewer institutional changes. The strong focus on capacity building and KM, as well as on M&E at the sector level, will also help to make the case for the necessary changes. Capacity development activities will be designed in coordination with ongoing and pipeline projects related to tertiary education in the six countries for increased efficiency.

64. Sustainability risk is further affected by the focus of the project on irrigation services with less attention given to agricultural intensification. Weaknesses in the agricultural extension services or input supply chains may render the project outputs irrelevant if farmers do not receive incremental income from their improved irrigation systems. Establishment of a sound business plan will be a criteria for investment in irrigation development, and critical accompanying investments (access roads and storage) and services (business development services and access to finance) have been incorporated in the project design. Moreover, the World Bank is already supporting agricultural intensification at a larger regional scale through the WAAPP and bridges have been established with this project. Possibilities to use and expand on instruments already developed under the WAAPP will be further explored at the national level in the countries where the WAAPP is active. Third, complementarity with other national agricultural development operations will also help mitigate this risk.<sup>35</sup>

65. **Fiduciary risk is rated substantial.** The overall fiduciary environment has substantial weakness in the integrity of the procurement and financial management systems. Difference in procurement, FM, and project management capacities among the CILSS and the six countries could result in delays in the acquisition of key project commodities and lead to disjointed implementation of key interventions. Extensive technical assistance will be included in the project to build the capacity at all levels, including FM, procurement, and M&E. It will notably develop guidelines and standardized documents, simplify processes and train project implementation staff

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<sup>35</sup> A list of on-going national agriculture development operations from World Bank and IFC is available in the project files.

along the solutions approach, thus aligning technical and fiduciary requirements. Specific actions to strengthen CILSS fiduciary capacity have been incorporated in the project design and reflected as dated covenants in the legal agreement with CILSS.

66. **Environmental and social risk is rated substantial.** This includes the risk of overexploitation of water resources or competition for the resources even though the project-financed investments will be restricted to small- and medium-scale irrigation and will have a negligible impact on the overall water resources availability at transboundary basin level (see Section G). As part of the mitigation measures, strategic environmental and social assessment studies will be conducted where needed to analyze the cumulative effect of irrigation development on water resources, and the Integrated Water Resources Management Approach (IWRM) approach will be promoted by the project to feed into the investment planning process. Groundwater assessment studies will be conducted where significant abstraction is planned. Other environmental risks, like waterborne diseases, will also be taken into account in the screening of subprojects and appropriately mitigated.

67. **Stakeholders' risk is rated substantial due to reputational risks that may affect the development outcome.** The expansion of irrigated areas may cause land disputes, especially in case of large private developments even if they are not directly supported by the project. The specific and important consideration given to land aspects in the project should mitigate this risk. An important communication effort will also be required. The project will not directly finance large-scale irrigation developments, either public (Type 4) or private (Type 5).

68. **Other risks, including climate change are rated high.** Climate change effect was assessed as high by the application of the climate risk screening tool. This risk is mostly driven by extreme temperature, extreme precipitation and flooding, and drought. By providing solutions for irrigation investment scale up while preserving the natural resources base, the project in its entirety is directly contributing to climate change adaptation. Improvement in irrigation system designs resulting in increased efficiency and the promotion of solar pumping will also contribute to climate change mitigation as compared to more usual type of design.

## VI. APPRAISAL SUMMARY

### A. Economic and Financial Analysis

69. The economic and financial analysis (EFA) of the SIIP is based on the assumption that 23,230 ha of irrigation schemes will be developed or rehabilitated, of which about 17,100 ha (74 percent) will be new schemes and 6,130 ha (26 percent) will be rehabilitated to benefit over 58,000 farmer households. The project focuses its investment program on small-scale irrigation solutions (Types 1, 2 and 3) which are usually less expensive and more cost-effective than large scale irrigation. Substantial benefits of the project will derive from improving the enabling institutional environment as well as the capacity-building efforts (Components A and C), which will enhance the competitiveness of the entire sector as well as quality and sustainability of the investments over time. This analysis focuses on measurable and foreseeable benefits generated by irrigated agriculture (Component B), while assuming that the institutional capacity building is required to achieve and sustain the targeted yields and crop rotations in the irrigation schemes. The regional

approach to training, KM and technology transfer is expected to generate ‘spillover’ effects with economy wide benefits. Such effects are not modeled and quantified in the analysis.

70. Financial cost-benefit analyses were prepared for each of the five types of irrigation. They show that the project interventions are financially viable, with internal rate of return (IRR) ranging from six percent to 64 percent for expansion and from nine percent to 94 percent for rehabilitation. An economic cost-benefit analysis was prepared to reflect the project impact at countries economy level. The analysis was based on the financial prices converted into economic prices using conversion factors. It also includes quantified environmental externalities. The economic IRR of the project is 15.5 percent, with a net present value (NPV) of US\$81.9 million. These indicators show the economic feasibility of the project investment. The economic incremental cash flow of the project would be US\$26.3 million per year from Year 7 forward.

71. The economic analysis also quantified environmental externalities using an Ex Ante Carbon-balance Tool (EX-ACT). The project activities will lead to carbon emissions of 498,823 tons of CO<sub>2</sub> equivalent over the 20-year analysis or 0.6 tons of CO<sub>2</sub>-equivalent per hectare per year.

72. **Rationale for using public funds and value added of World bank support.** Most of the outputs financed by the project will be public goods, notably the local development planning process (component A) and knowledge management activities (component C). Under Component B, irrigation investments driven and implemented by the States and decentralized collectivities have public ownership. Private irrigation investments will be supported as long as they use innovative approaches establishing spill-over benefits for smallholder farmers. The WBG is able to build on a wealth of knowledge and on-going relationships with regional and national stakeholders that is unique. In return, the results of the proposed project will help the design and implementation of the next generation of agricultural water management interventions financed by the WBG, other donors, and the private sector.

## **B. Technical**

73. **Regional approach.** The project’s regional dimension transpires in all its components. It significantly contributes to the efficient achievement of the PDO and the higher-level outcomes. Each of the three components of the SIIP are critical for irrigation development in the Sahel and have high regional relevance. Together, they will build or strengthen the institutional foundations, enhance stakeholders’ capacity, improve irrigation KM, and increase productivity. The project builds on the experience of a number of regional projects including WAAPP, PRAPS, PGIRE.<sup>36</sup> The regional approach is validated and fully supported by each of the six participating countries and by the regional organization, the CILSS. It will reduce costs by avoiding inefficient duplication of efforts (research and trainings), promote knowledge sharing across the countries, and coordinate activities (exchange visits, strategic framework for dissemination, and coordination). It will also leverage financing mechanisms that can best succeed at a regional scale. Finally, the regional

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<sup>36</sup> PGIRE = *Programme de Gestion Intégrée des Ressources en Eau et de Développement des Usages Multiples du Bassin du fleuve Sénégal* (River Basin Multi-Purpose Water Resources Development Project – P131323).

approach will allow economies of scale conducive to the development of adapted technologies such as solar pumps. The regional nature of the project is thus fully justifiable.<sup>37</sup>

74. **The project's solution approach.** Informed by regional and international experience, the project is based on a systemic approach to irrigation development. By working across the different types of irrigation systems and along value chains, the project will take advantage of emerging irrigation models in the different countries. Prior diagnosis followed by rigorous monitoring and evaluation will enable clear determination of the success factors conducive to performing systems. Through a well-coordinated cross-fertilization process, the regional organization will ensure that identified innovative solutions are shared, adapted, and implemented in the six countries. Demonstrations at scale in select areas and close engagement with farmers will catalyze adoption. Simultaneously, project activities will address capacity building of stakeholders, including Irrigation Water Users Organizations (IWUOs) and service providers, and improve access to input and output market, finance, and other services providers—all aspects that will be part of the scope of works of OSIs and facilitated by the SPs. The agreement between the PMU and the subproject owner will also contain genuine incentives for sustainable O&M. This array of integrated activities will pave the way to irrigation up-scaling in the Sahel. The approach is appropriate to meet the needs of the countries that aspire to more productive irrigation systems. The knowledge platform will make cloud-based tools available to practitioners with tutorials that will allow them to improve key technical aspects of irrigation project design such as for instance the practical approach to socio-economic surveys, quantified requirements for topographic surveys, and so on.

75. **A progressively expanding geographical scope.** Project Intervention Areas have been defined at project preparation stage and a number of potential subprojects have been pre-identified within these areas (see Appendix 3 of Annex 2). Physical investments will be phased initially on the basis of the availability and capacity of OSIs and other service providers. The geographical scope will be reviewed annually as part of the annual planning process and expanded progressively in line with the progress of the capacity building activities. Concentrating the activities on a limited area will be key to achieving the efficiency gains pursued by the project and to demonstrate the scale-up potential of the solutions. It will also ease project supervision.

76. **Irrigation solutions have been identified and documented at project preparation stage for systems of Types 1 to 3.** These solutions and the related costs<sup>38</sup> are based on best practices and engineering standards identified in the six countries and will be shared from one country to another according to their needs. For example, small pumps available on the market have already been rated based on their performance, robustness and price in Mauritania. Low pressure distribution systems have been tested at scale in Burkina Faso and Niger. Technologies are available for low cost hand-drilled boreholes. A financing system is being piloted in Niger. In addition, a common implementation framework has been agreed by the six countries based on the concept of OSI and following a demand-driven approach. This common framework and the

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<sup>37</sup> Continent-wide evidence suggest that with coordination mechanisms, an increase in agricultural production in neighboring countries leads to five times more agriculture production increase in the home country compared to a situation without such mechanisms. (Ulimwengu and Sanyal, 2013, Is Agricultural Production Spillover the Rationale behind CAADP Framework? Spatial Panel Model Approach? Modern Economy, 2013, 4, 391–402.).

<sup>38</sup> Costs may vary from one country to another. Actual costs observed in each country have been used to establish the budget. However, during implementation, effort will be exerted to reduce the costs of each solution based on the lowest costs observed in the six countries.

support provided by the regional coordinating entity will allow for rapid implementation of Component B investments and initiation of the learning-by-doing approach for the constant improvement of the irrigation solutions until the end of the project (see Annex 2).

77. **Technical Assistance from the regional coordinating entity (CILSS) will be delivered through selected SPs.** Several partners already active in irrigation development in Sahel have been involved in the 2iS task force (see Appendix 1 of Annex 2) and are keen to further contribute to the implementation of this initiative. They will bring in their specific expertise, based on years of engagement with the Sahel countries, to facilitate the generation and sharing of knowledge in their respective fields. In addition, the CILSS will finance action-research activities in support of the project. CILSS and its SPs will not try to impose any irrigation solutions to any country. To the contrary, the best practice solutions will be crafted through a “co-construction” approach with the six countries using shared training, knowledge management and monitoring tools.

### C. Financial Management

78. An FM assessment was conducted on the FM arrangements for the SIIP for the implementing agencies at the national level that are the Secretariat General (SG) of the Ministry of Agriculture and Rural Equipment (MARE) in Senegal, General Directorate for Rural Engineering (DGGR) of the Ministry of Agriculture and Livestock (MAG/EL) in Niger, Ministry of Agriculture and Hydraulic Schemes (MAAH) in Burkina Faso, ATI of the Ministry in charge of Agriculture (MA) in Mali, SG of the Ministry of Production, Irrigation and Agricultural Equipments (MPIEA) in Chad and the Directorate for Agricultural Infrastructure (DAA) of the MA in Mauritania. At the regional level, CILSS/RPCU was assessed, which will serve as the regional coordinating institution for the project. An FM assessment was also conducted at Burkina Faso Company for Textile Fibers (SOFITEX), which will implement the Grant from GPOBA allocated to Burkina Faso.

79. The objective of the assessment was to determine whether the implementing entities have acceptable FM arrangements in place that satisfy the World Bank’s Investment Project Financing (IPF) Directive and Policy. These arrangements will ensure that the implementing entities (a) use project funds only for the intended purposes in an efficient and economical way; (b) prepare accurate and reliable accounts as well as timely periodic interim financial reports (IFRs); (c) safeguard assets of the project; and (d) have acceptable auditing arrangements. The FM assessment was carried out in accordance with the FM Manual for World Bank IPF Operations (effective March 1, 2010) but was issued (retrofitted) on February 4, 2015.

80. There are adequate FM arrangements in all the implementing entities except for the following that need to be strengthened:

- (i) **Accounting staff.** All implementing entities need to recruit accounting staff to ensure project accounts are prepared. This will involve recruiting FM Specialists by effectiveness and additional accounting staff within 3 months after effectiveness;
- (ii) **FM Manual.** All the PMUs of the MAs in Mali, Burkina Faso, Niger, Chad, Mauritania and Senegal need to prepare acceptable PIM with FM arrangements before

effectiveness. The CILSS/RPCU and SOFITEX will update their FM arrangements in the PIM to cover aspects related to the project that are not included in their existing FM Manual.

(iii) **Computerized accounting information system.** SOFITEX and all the PMUs of the MAs in Mali, Burkina Faso, Chad, Niger, Mauritania and Senegal need to acquire a computerized accounting information system within three months after effectiveness. This will ensure accounts are prepared in an efficient manner and errors are minimized.

(iv) **Internal audit staff.** These staff will be critical given that each implementing entity will be dealing with a number of sub-implementing entities to implement the project. To ensure that internal control systems are operating as designed, it will be essential for the CILSS/RPCU and PMUs of the MAs in Mali, Burkina Faso, Niger, Chad, Mauritania and Senegal to recruit a qualified and experienced internal auditor within three months after effectiveness.

81. In addition to the project specific arrangements, institutional capacity strengthening measures will be taken to resolve fiduciary issues revealed by an institutional and financial audit of CILSS. The external auditor expressed an adverse opinion on CILSS Executive Secretariat, adverse opinion on AGRHYMET and qualified opinion on INSAH's financial statements as of November 30, 2016. An action plan/road map to strengthen the institutional systems of CILSS Executive Secretariat that will host the RPCU was prepared by CILSS and discussed with Development Partners including the World Bank. These measures have been added to the FM Action Plan and reflected as dated covenants in the FA between CILSS and the World Bank (IDA) (refer to Annex 3 for details).

82. Furthermore, CILSS will commit to the following additional measures to strengthen FM systems: (i) use of direct payments for contractual payments, where appropriate; (ii) submitting quarterly audited interim financial reports to the World Bank within 45 days after the end of the quarter by an external auditor acceptable to the World Bank; (iii) emphasizing in the audit terms of reference the audit of a large sample of expenditure dependent on the risk profile of CILSS and undertaking an annual information systems audit; (iv) submitting quarterly internal audit reports to the World Bank within 45 days after the end of the quarter; (v) submitting annual entity audited accounts of CILSS within six months after the end of the financial year by an auditor acceptable to the World Bank; and (vi) conducting an in-depth review whenever requested by the World Bank on risky project expenditures by an acceptable consultant other than the external auditor that should be funded under the project.

83. Project governance and anticorruption arrangements need to be put in place, including a complaint handling mechanism and the required publication of project budgets and audited financial statements on the implementing entity's website to promote transparency and accountability. With regard to disbursements, a transaction-based method that uses statements of expenditure will be used by all the implementing entities. Further details on the assessment are included under Annex 3.

84. The conclusion of the assessment is that the FM arrangements in place meet the World Bank's (IDA's) minimum requirements under IPF Directive and Policy and therefore are adequate to provide, with reasonable assurance, accurate and timely information on the status of the project

required by the World Bank (IDA). The overall FM risk is high but upon application of mitigation measures the residual risk rating will be substantial for all the implementing entities under the project.

#### **D. Procurement**

85. Procurement under the proposed project will be carried out in accordance with the following World Bank guidelines: (a) “Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers”, dated January 2011 and revised July 2014; (b) “Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers”, dated January 2011 and revised July 2014; and (c) “Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants”, dated October 15, 2006 and revised in January, 2011, and other provisions stipulated in the FA.

86. All procuring entities, as well as bidders and service providers (suppliers, contractors, and consultants) shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with Paragraph 1.16 of the Procurement Guidelines and Paragraph 1.23 of the Consultant Guidelines.

87. Procurement shall be carried out (a) at the regional level by the CILSS and (b) at the national level by the government structure where the PMU will also be located: (i) Burkina Faso, by the SG of the MAAH; (ii) Chad, by the SG of the MPIEA; (iii) Mali, by the PMU embedded in ATI, a specialized entity of the MA; (iv) Mauritania, by the Directorate for Agricultural Infrastructure (DAA) of the MA; (v) Niger, by the DGGR of the MAG/EL; and (vi) Senegal, by the Secretariat General of the MA.

88. Procurement assessments were carried out for each of the implementing agencies in the participating countries as well as the CILSS. Annex 3 summarizes the assessment for each agency and participating country.

89. Procurement Plans covering the first 18 months of the project have been developed for each country and for the regional activities coordinated by the CILSS, and agreed at negotiations. They will be disclosed on the implementing agencies’ and on the World Bank’s external website. The Procurement Plans will be updated annually or as required to reflect the project’s actual implementation needs and improvements in institutional capacity. All Procurement Plans and their updates or modifications shall be subject to the World Bank’s prior review and no objection before implementation.

90. The overall project risk for procurement is substantial but expected to be moderate once the mitigation measures and hiring of the required specialists are complete.

#### **E. Social (including Safeguards)**

91. The project is expected to have large positive social and economic benefits for agriculture households in the targeted areas. Even if some countries intend to finance some feasibility studies and engineering designs for large-scale infrastructure, the potential adverse impacts of these

irrigation investments could be easily manageable. Still, the project is classified Category A and will require a substantive level of due diligence.

92. The project will ensure that women are fully consulted in discussions on arrangements for water management and land distribution, through social mobilization practices that ensure high levels of their participation. The project addresses women's needs through specific investments and service delivery, for example: (a) small-scale collective women gardens (Type 3) will be developed since they have shown good impacts on women and their families (income generation, collective organization, empowerment, and so on); (b) while taking into account local customs, the SIIP will ensure a minimum number of women will benefit from the irrigation scheme development (all types); (c) women will also benefit by most activities related to value chain development; and (d) specific training sessions will be organized to assess and meet their needs and constraints. Surveys for M&E system making use of ICTs will allow to collect disaggregated information (women/men/youth) in an easier way.

93. The operational policy Operations Policy (OP) / Bank Policy (BP) 4.12 on Involuntary Resettlement is triggered because the project will support the development of some types of irrigated areas, which may imply land acquisition and involuntary resettlement in relation to Component 2: Financing irrigation investment solutions. The project will do a screening to assess social impacts and address possible adverse impacts of the identified types of irrigation systems. Since the location and details of investment activities are not yet determined, an Resettlement Policy Framework (RPF) has been prepared in each of the six countries, cleared by the World Bank and disclosed. The RPF documents outline the principles and procedures for resettlement and/or compensation of subproject-affected people and establish standards for identifying, assessing, and mitigating negative impacts of identified activities. In addition, the RPF will guide the preparation and implementation of Resettlement Action Plans, if needed. The RPF in each country provides a tentative budget for resettlement activities that has been incorporated in both Government and IDA contribution envelopes.

94. **Complaint handling and citizen engagement.** A complaint handling mechanism will be established in each country no later than six months after project effectiveness. This mechanism, with adequate staffing and processes for registering complaints, shall ensure the ongoing improvement on service delivery under the project. Citizen engagement will be ensured through the local planning activities undertaken under Component A, notably through the involvement of producer organizations in the oversight of these planning activities. At the regional level the ROPPA will be charged to gather feedback and communicate with CILSS.

#### **F. Environment (including Safeguards)**

95. The overall project is intended to generate positive environmental benefits by improving water use efficiencies and natural processes that enhance soil fertility, and promoting maximum productivity on existing agricultural lands. The project will also reduce the climatic and environmental risks in its areas of interventions. By developing and financing irrigation schemes that are economically viable, socially beneficial, and environmentally sustainable, the project will contribute to sustainably manage agricultural water, including both surface water and groundwater, and taking into consideration transboundary water flows. Due consideration is also given to improved land management and reducing land degradation. The project will more generally



increase the Sahel agriculture sector's resilience to climatic shocks and have a broader leverage impact on the viability and environmental sustainability of existing and future irrigation systems and related agricultural development.

96. Some potential adverse impacts may arise, however, as a result of project irrigation activities, combined with seasonal or periodic precipitation and/or flooding, which can raise the water table and result in waterlogging and salinization of the soils, thereby adversely affecting agricultural production. Furthermore, there can be other impacts, such as the concentration of fertilizers and salts in agricultural drainage, in turn affecting the water quality in the receiving waters and the aquatic ecosystems, and affecting downstream users.

97. **Environmental safeguards.** The project is classified as a Category A project. Although most of the expected potential environmental and social impacts of the irrigation investments are expected to be local, site-specific, reversible, and easily manageable, some medium-scale investments may have more substantial impacts, yet limited to the neighboring environment. Moreover, some countries intend to finance feasibility studies and engineering designs for large-scale infrastructure investments, which require a Category A classification.

98. In general, the environmental and social impacts are expected to be largely outweighed by the improved irrigation schemes and the improved land and water management practices. These adverse impacts are fully addressed and mitigated in the ESMF of the project for each country, which includes a screening process for the subprojects that are yet to be identified. In addition, strategic and/or sectoral impact assessments will be conducted during implementation in conjunction with the update of existing studies and the preparation of new ones for irrigation systems development. Studies will include strategic environmental and social assessments where there are potential environmental and social risks associated with scaling up irrigation development.

99. In addition to the umbrella OP/BP 4.01 on Environmental Assessment, the following safeguards policies have been triggered:

(a) OP/BP 4.04 - Natural Habitats. Though the project is not expected to intervene in any critically important natural habitat, the impacts of severe climate conditions, insecurity, and conflict situations may lead to expanding activities in areas requiring specific management considerations, such as zones located within Ramsar sites in the Niger inner delta, in which case, a natural resources management plan acceptable to the World Bank will be prepared.

(b) OP 4.09 - Pest Management. Irrigation schemes for agriculture purposes imply the possibility of handling and using pesticides within the areas of intervention or the areas of influence of a particular project's activity, which calls for the preparation of a Pest Management Plan (PMP) for each of the participating countries. The project will however promote the use of integrated pest management techniques rather than pesticides.

(c) OP/BP 4.11 - Physical Cultural Resources. Though no investments will be selected in areas with a cultural heritage potential, given that the exact locations of these activities have not yet been determined, chance-find procedures will be included in work contracts

(construction of irrigation canals and/or irrigation infrastructure). In case such resources are encountered, a physical and cultural resources management plan will have to be developed.

(d) OP/BP 4.37 - Safety of Dams. This safeguard has been triggered as some activities aimed at developing new irrigation schemes, or rehabilitating existing ones, will depend on existing dams. This situation requires the assessment of the safety of dams, and specific guidelines on conducting this assessment have been developed and attached to the ESMF of the respective countries to prepare a Dam Safety Plan when necessary. One dam safety assessment has been conducted during the preparation for the Dourou dam in Burkina Faso, which, at 14 meter height and 90 million m<sup>3</sup> volume, is the only large dam (volume >3 million m<sup>3</sup>) identified within the PIA. Although the location of irrigation schemes to be developed downstream of this existing dam are not known, these schemes would be affected if the dam faces safety issues. Details on this assessment and related remedial measures are provided in Annex 2.

100. **Disclosure of safeguard documents.** All of the Borrowers' assessments (six national ESMFs, PMPs, and RPFs) were completed and disclosed in country and on the World Bank website between December 2016 and February 2017. The project complies with all relevant World Bank safeguard and national policies and meets the requirements of the World Bank's Disclosure Policy.

### G. Other Safeguards Policies Triggered

101. The legal safeguards operational policy on international waters, OP 7.50 - Projects on International Waterways, is also triggered, as the project spans four international basins.<sup>39</sup> However, most of the irrigation schemes to be financed under the project (some 3,500–5,000 ha for each of the six countries, on average) are scattered, ranging from small- to medium-scale. Schemes will use groundwater or water stored in small earth reservoirs. Some of these small irrigation schemes may withdraw irrigation water from international rivers. Based on the likely locations of the schemes, the impact on international waterways will likely be insignificant.<sup>40</sup> Some small village schemes located along the Senegal river will be rehabilitated (Senegal) or constructed (Mauritania). They are located more than 800 kilometers downstream from the 11 bn m<sup>3</sup> Manantali dam in Mali, which contributes to satisfying the needs of all the irrigated agriculture requirements in the Senegal River Valley. Their individual and aggregated consumption is small (less than 5/10,000 of the reservoir's volume). The project will not finance any activities that would alter the dimensions of the Manantali dam nor its operational rules. Similarly, from the small-scale irrigation schemes that will be developed in Mali, some might pump water from the River Niger. If so, their degree of abstraction (as a fraction of the entire water abstracted) is minimal. Those which would be located upstream of the Markala weir across the River Niger would also not influence the operation of the latter. This weir just raises the upstream level of the river – by a few

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<sup>39</sup> The six beneficiary Sahel countries are sharing four basins:

- The Senegal River Basin, shared by four countries: Guinea, Mali, Mauritania, and Senegal
- The Niger River Basin which spreads over ten countries, including Burkina Faso, Chad, Mali, and Niger
- The Volta River Basin shared by six countries: Burkina Faso, Mali, Cote d'Ivoire, Ghana, Benin, and Togo
- The "conventional" Lake Chad Basin spreading over four countries: Chad, Niger, Nigeria, and Cameroon

<sup>40</sup> With an estimated 17,100 ha new irrigated areas to be developed, the impact of the project will therefore remain limited and should only mobilize between 0.1 percent and 0.2 percent of the annual volumes available.

meters - but does not change the flow between upstream and downstream through separate storage – release sequences like storage dams do.

102. Thus, given the nature of the project which deals mainly with rehabilitation and renovation of small scale irrigation schemes, the fact that the project will not adversely affect the quality or quantity of water flows to other riparian countries nor that it will be adversely affected by other riparians' water use (it could, in fact, improve the water quality in the riparian countries due the application of improved solutions), the exception to the external notification requirements of OP 7.50, set forth in Paragraph 7(a) of OP 7.50, is applicable and has been approved on February 10, 2017.

103. The part of the project financed by the GPOBA grant of US\$5.85 million to be implemented by SOFITEX, Burkina Faso, will apply the World Bank Performance Standards under OP 4.03. SOFITEX is an existing client of IFC and has been complying with IFC's Performance Standards. IFC disclosures are covered as part of the trade finance activities under the Global Warehouse Finance Program. However, due to issues specific to the cotton sector, IFC prepared a separate Environmental and Social Action Plan that has been agreed with SOFITEX and is updated annually. As part of the actions, SOFITEX has appointed an environmental and social officer who received training and has the competency to manage the environmental and social risks of the company. SOFITEX is also in the process of establishing an Environment and Social Management System (ESMS) for its cotton processing activities, using the action plans of national technical services agencies. The ESMS policy has been approved by SOFITEX's senior management and is satisfactory to IFC. The ESMS development is being supported by a consultant, and the environmental and social capacity-building support being provided by IFC is ongoing. Furthermore, the World Bank has assessed the company's institutional capacities for safeguards policies as being acceptable.

#### **H. World Bank Grievance Redress**

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

## Annex 1: Results Framework and Monitoring

### WEST AFRICA: Sahel Irrigation Initiative Support Project

Indicator Name	Core	Unit of Measure	Cumulative Target Values								Frequency	Data Source (S)/ Methodology (M)	Responsibility for Data Collection
			Country	Base-line	YR1	YR2	YR3	YR4	YR5	End Target			
<b>PROJECT DEVELOPMENT OBJECTIVES INDICATORS</b>													
Project Development Objectives : To improve stakeholders' capacity to develop and manage irrigation and to increase irrigated areas using a regional 'solutions' approach in participating countries across the Sahel.													
PDO 1. Direct project beneficiaries	<input type="checkbox"/>	Number	Burkina Faso	0	0	2,400	4,800	7,100	9,500	11,900	Yearly	S: List of the effective assignees of the plots established by the IWUO, gender disaggregated; surveys providing number of jobs created; list of clients of strengthened service providers; gender disaggregated	PMU, operator, extension services
			Chad	0	0	1,500	3,100	4,600	6,200	7,700			
			Mali	0	0	1,700	3,400	5,000	6,700	8,400			
			Mauritania	0	0	2,100	4,100	6,200	8,200	10,300			
			Niger	0	0	1,900	3,900	5,800	7,800	9,700			
			Senegal	0	0	2,100	4,200	6,400	8,500	10,600			
			<b>Total</b>	<b>0</b>	<b>0</b>	<b>11,700</b>	<b>23,500</b>	<b>35,100</b>	<b>46,900</b>	<b>58,600</b>			
Of which women <sup>41</sup>		%		-	-	35	35	35	35				
PDO 2. Area provided with new or improved irrigation and drainage services <sup>42</sup>	<input checked="" type="checkbox"/>	Ha	Burkina Faso	0	0	1,200	2,400	3,600	4,800	5,950	Yearly	S: Works completion reports M: Total of newly equipped areas completed in one year; total of rehabilitated or modernized areas completed in one year (includes GPOBA subproject in Burkina Faso)	PMU, operator, extension services
			Chad	0	0	600	1,200	1,700	2,300	2,890			
			Mali	0	0	600	1,200	1,800	2,400	3,030			
			Mauritania	0	0	700	1,400	2,100	2,900	3,580			
			Niger	0	0	900	1,900	2,800	3,800	4,710			
			Senegal	0	0	600	1,200	1,800	2,500	3,070			
			<b>Total</b>	<b>0</b>	<b>0</b>	<b>4,600</b>	<b>9,300</b>	<b>13,800</b>	<b>18,700</b>	<b>23,230</b>			
PDO 3. Annual crop intensity on areas equipped by the project	<input type="checkbox"/>	%	Burkina Faso	0	—	80	—	120	—	120	Y2, Y4, Y6	S: Extension and water services reports and IWUO records (plus cross-checking using remote sensing) M: Total irrigated area in one year divided by equipped area	PMU, operator, extension services
			Chad	0	—	—	—	120	—	150			
			Mali	0	—	80	—	100	—	130			
			Mauritania	0	—	80	—	100	—	120			
			Niger	0	—	80	—	120	—	150			
			Senegal	0	—	80	—	100	—	120			
			<b>Total</b>	<b>0</b>	<b>—</b>	<b>80</b>	<b>—</b>	<b>100</b>	<b>—</b>	<b>130</b>			

<sup>41</sup> The project will specifically target women's groups to increase women's access to irrigation facilities including for small-scale collective women gardens (Type 3).

<sup>42</sup> This indicator will be split into new areas (final target: 17,100 ha rounded to 17,100) and improved areas (final target: 6,130 ha).

Indicator Name	Core	Unit of Measure	Cumulative Target Values								Frequency	Data Source (S)/ Methodology (M)	Responsibility for Data Collection
			Country	Base-line	YR1	YR2	YR3	YR4	YR5	End Target			
PDO 4. Trained stakeholders having used the acquired knowledge	□	%	Burkina Faso	0	25	30	35	40	40	40	Yearly	S: Survey of a sample of trained stakeholders M: Simple questionnaire to assess effective use of training received	RPCU, service provider
			Chad	0	25	30	35	40	40	40			
			Mali	0	25	30	35	40	40	40			
			Mauritania	0	25	30	35	40	40	40			
			Niger	0	10	20	30	40	40	40			
			Senegal	0	25	30	35	40	40	40			
			<b>Total</b>	<b>0</b>	<b>10 to 25</b>	<b>20 to 30</b>	<b>30 to 35</b>	<b>40</b>	<b>40</b>	<b>40</b>			
PDO 5. Share of country investments portfolios aligned with the solutions approach	□	%	Burkina Faso	>0	—	—	25	—	—	40	Yearly	S: Survey of projects M: Screening of existing and new projects based on their implementation manual, using a grid of criteria <sup>43</sup>	RPCU, PMU
			Chad	>0	—	—	25	—	—	40			
			Mali	>0	—	—	25	—	—	40			
			Mauritania	>0	—	—	25	—	—	40			
			Niger	>0	—	—	25	—	—	40			
			Senegal	>0	—	—	25	—	—	40			
			<b>Total</b>	<b>&gt;0</b>	<b>—</b>	<b>—</b>	<b>25</b>	<b>—</b>	<b>—</b>	<b>40</b>			
<b>INTERMEDIATE RESULTS INDICATORS</b>													
<b>Component A: Modernizing the institutional framework</b>													
A1. Functional local land management instrument	□	Number	Burkina Faso	0	4	13	20	27	27	27	Yearly	S: Survey M: Evaluation of local land management instruments in PIAs (instrument compliant with its status and actively performing its role) <sup>44</sup>	PMU, operator, extension services
			Chad	0	4	8	12	16	20	24			
			Mali	0	0	5	10	15	20	20			
			Mauritania	0	0	2	4	4	4	4			
			Niger	0	8	16	28	28	28	28			
			Senegal	0	9	29	43	57	57	57			
			<b>Total</b>	<b>0</b>	<b>25</b>	<b>73</b>	<b>117</b>	<b>147</b>	<b>156</b>	<b>160</b>			
A2. Functional local water management bodies	□	Number	Burkina Faso	0	0	3	4	5	5	5	Yearly	S: Survey M: Evaluation of local water management bodies in PIAs (entity compliant with its status and actively performing its role)	PMU, operator, extension services
			Chad	0	1	3	5	9	11	12			
			Mali	0	2	2	3	5	7	7			
			Mauritania	0	5	7	10	10	10	10			
			Niger	0	2	5	20	40	65	65			
			Senegal	0	0	3	12	18	25	25			
			<b>Total</b>	<b>0</b>	<b>10</b>	<b>23</b>	<b>54</b>	<b>87</b>	<b>123</b>	<b>124</b>			

<sup>43</sup> Criteria will include (a) inclusive and participative planning process taking into account production systems analysis, value chains development, water resources assessment and land tenure management as well as gender aspects; (b) secured land and water allocation based on appropriate due diligence; (c) design based on documented irrigation solutions; and (d) reporting on shared indicators.

<sup>44</sup> *Plan d'occupation et d'affectation des sols* (POAS), local land committees, land charters for Types 1 to 3, standard land use agreements (*cahiers des charges*) for Type 4.

Indicator Name	Core	Unit of Measure	Cumulative Target Values								Frequency	Data Source (S)/ Methodology (M)	Responsibility for Data Collection
			Country	Base-line	YR1	YR2	YR3	YR4	YR5	End Target			
A3. Number of participants in consultation activities <sup>45</sup>	□	Number	Burkina Faso	0	0	1,000	13,000	15,000	15,000	15,000	Yearly	S: Consultation activities reports M: Total number of participants	RPCU, PMU
			Chad	0	2,000	5,000	8,000	11,000	14,000	14,000			
			Mali	0	1,350	7,100	13,000	14,000	15,000	15,000			
			Mauritania	0	3,000	3,500	4,000	4,500	5,000	5,000			
			Niger	0	4,000	8,000	10,000	12,000	16,000	16,000			
			Senegal	0	0	7,500	11,250	15,000	15,000	15,000			
			<b>Total</b>	<b>0</b>	<b>10,350</b>	<b>32,100</b>	<b>59,250</b>	<b>71,500</b>	<b>80,000</b>	<b>80,000</b>			
<b>Component B: Financing irrigation investment solutions</b>													
B1. Studied irrigation scheme areas that attracted funding	□	Ha	Burkina Faso	0	0	0	350	700	1,400	2,400	Yearly	S: Study reports; Financiers' commitment letters M: Total of project area financed	PMU, RPCU
			Chad	0	0	0	300	600	1,800	3,300			
			Mali	0	0	0	0	700	1,200	2,000			
			Mauritania	0	0	0	0	0	0	0			
			Niger	0	0	0	0	0	0	0			
			Senegal	0	0	0	2,400	4,800	4800	4800			
			<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,050</b>	<b>6,800</b>	<b>9,200</b>	<b>12,500</b>			
B2. Number of water users provided with new/improved irrigation and drainage services	□	Number	Burkina Faso	0	0	2,500	4,500	7,000	9,000	9,900	Yearly	S: IWUO records, operators reports M: Total of registered (active) water users, disaggregated by gender	PMU, operator, extension services SAGI, IWUO
			Chad	0	0	1,700	2,700	5,000	6,000	7,700			
			Mali	0	0	2,300	5,000	7,000	8,000	8,400			
			Mauritania	0	0	1,000	2,000	4,000	8,000	10,300			
			Niger	0	0	2,000	4,000	6,500	7,500	9,700			
			Senegal	0	0	1,700	5,700	8,500	9,500	10,600			
			<b>Total</b>	<b>0</b>	<b>0</b>	<b>11,200</b>	<b>23,900</b>	<b>38,000</b>	<b>48,000</b>	<b>53,300</b>			

<sup>45</sup> Citizen engagement indicator. Consultation will involve collecting feedback on the land and water resources allocation and local development plans to be developed under Component A.

Indicator Name	Core	Unit of Measure	Cumulative Target Values								Frequency	Data Source (S)/ Methodology (M)	Responsibility for Data Collection
			Country	Base-line	YR1	YR2	YR3	YR4	YR5	End Target			
B3. Operational water users associations established or strengthened	<input type="checkbox"/>	Number	Burkina Faso	0	0	5	10	15	15	15	Yearly	S: IWUO records M: IWUO has governance bodies compliant with status, an approved budget and the budget is under execution <i>Note: the terminology Water Users' Association is used in the result framework for IWUO</i>	PMU, SAGI, operator, extension services
			Chad	0	5	20	30	40	40	40			
			Mali	0	15	20	45	60	75	75			
			Mauritania	0	0	20	50	95	95	96			
			Niger	0	0	5	15	25	30	30			
			Senegal	0	0	10	35	55	75	76			
			<b>Total</b>	<b>0</b>	<b>20</b>	<b>80</b>	<b>185</b>	<b>290</b>	<b>330</b>	<b>330</b>			
B4. Farmers with access to support services established or improved by the project	<input type="checkbox"/>	Number	Burkina Faso	0	0	4,500	10,150	13,000	14,000	14,000	Yearly	S: Services providers records M: Total of users having paid for improved services including financial, technical advice and others	PMU, services providers
			Chad	0	0	300	800	3,000	5,000	6,500			
			Mali	0	0	3,000	10,500	17,000	17,000	17,000			
			Mauritania	0	0	1,000	2,000	4,000	5,600	5,600			
			Niger	0	0	2,000	5,000	7,000	9,400	9,400			
			Senegal	0	0	7,000	11,000	14,000	14,000	14,000			
			<b>Total</b>	<b>0</b>	<b>0</b>	<b>17,100</b>	<b>39450</b>	<b>58,000</b>	<b>65,000</b>	<b>66,500</b>			
<b>Component C: Knowledge management and coordination</b>													
C1. Active knowledge groups (developing solutions)	<input type="checkbox"/>	Number	Burkina Faso	0	0	3	3	4	5	5	Yearly	S: Records of knowledge groups meetings and activities M: Total number of active groups working on irrigation solutions and cross-cutting topics at national and regional levels in one year	PMU, RPCU with SP
			Chad	0	1	2	3	3	3	3			
			Mali	0	1	2	3	3	3	3			
			Mauritania	0	4	4	4	4	4	4			
			Niger	0	1	3	4	4	4	4			
			Senegal	0	1	2	3	3	3	3			
			<b>Total</b>	<b>0</b>	<b>8</b>	<b>16</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>22</b>			
C2. Action research results documented and disseminated	<input type="checkbox"/>	Number	Burkina Faso	0	0	3	3	3	3	3	Yearly	S: Action research agreements signed, outputs produced M: Total number of output produced and disseminated (cumulative)	PMU, RPCU
			Chad	0	0	1	1	1	1	1			
			Mali	0	0	1	2	3	3	3			
			Mauritania	0	0	2	3	4	4	4			
			Niger	0	0	2	3	3	3	3			
			Senegal	0	0	2	3	3	3	3			
			<b>Total</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>15</b>	<b>17</b>	<b>18</b>	<b>18</b>			
C3. Irrigation solutions documented and disseminated per country	<input type="checkbox"/>	Number	Burkina Faso	0	0	2	2	2	2	2	Yearly	S: Solutions manuals; Knowledge platform records M: Counting solution manuals established / endorsed by countries and made accessible using KM platform	PMU, RPCU
			Chad	0	0	1	2	2	3	3			
			Mali	0	0	1	2	3	3	3			
			Mauritania	0	0	1	2	3	3	3			
			Niger	0	1	2	3	4	4	4			
			Senegal	0	0	3	3	4	4	4			
			<b>Total</b>	<b>0</b>	<b>1</b>	<b>10</b>	<b>14</b>	<b>18</b>	<b>19</b>	<b>19</b>			

## Annex 2: Detailed Project Description

### WEST AFRICA: Sahel Irrigation Initiative Support Project

#### 1. PROJECT BACKGROUND

##### OVERVIEW

1. The SIIP is a regional operation aiming to build irrigation stakeholders' capacity in order to accelerate and to scale up the implementation of irrigation development agenda in six countries<sup>46</sup> across the Sahel through institutional strengthening and selected irrigation land development. The project concept represents a major shift of irrigation development paradigm in the Sahel based on three fundamental insights: (a) balancing public interventions across the different types of irrigation systems in the region; (b) adopting a market-oriented, production system approach to irrigation development; and (c) engaging direct stakeholders in the planning and implementation. This change of perspective stems from a careful reflection on lessons and experiences from past irrigation interventions in the Sahel.

2. **Sahel Irrigation Initiative (2iS).** The proposed project will contribute to the 2iS that stems from the Dakar Declaration: it was agreed at the outset of the High Level Forum on Irrigation in the Sahel,<sup>47</sup> held in Dakar in October 2013, that an international coalition will be formed to support the Sahel countries and their people in addressing irrigation challenges, galvanizing political commitment, and ensuring acceptable returns on investments. A task force of regional and national stakeholders was established and received technical assistance from the World Bank to develop a comprehensive operational program for implementing the Dakar Declaration, including a Strategic Framework and an Action Plan. The six countries have expressed willingness to implement this operational program as part of their upcoming or ongoing investment frameworks within the agriculture sector at the national and regional levels (see Appendix 1).

3. **“Solutions” concept.** The project is built around the “solutions” concept, which combines four essential dimensions that need to be systematically addressed in any irrigation operation due to its complex nature. The four essential dimensions are: (i) a sound organizational structure with a clear delineation of the roles and responsibilities of the different actors including all aspects; (ii) a robust technical irrigation system with proper O&M; (iii) a well-established and reliable financing system for both investment and O&M; and (iv) an effective skill acquisition mechanism adapted to the evolving needs and taking into account the gender dimension. Despite the wealth of knowledge and methods, solutions are rarely implemented adequately in irrigation operations because of their limited accessibility and familiarity by key stakeholders, challenging implementation due to a broad range of required expertise, and prevailing emphasis on infrastructure construction (see Appendix 2).

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<sup>46</sup> Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal.

<sup>47</sup> The High Level Forum on Irrigation in Sahel of October 31, 2013 (in Dakar, Senegal) was jointly organized by the CILSS and the World Bank. The forum's title was 'Forging Resilience and Accelerating Growth in the Sahel and West Africa through the Renewal of Irrigated Agriculture.'



4. **Regional approach.** The operation is aligned with national and regional priorities and contributes directly to agricultural and water strategies. By adopting a regional approach, the project will enable the six countries to reap the full benefits of the potential spillover effects in the most cost-effective way through the provision of adequate levels of regional public goods and economies of scale in research, design, and implementation of irrigation investment solutions, as well as in regionally more integrated irrigation equipment supply chains. Specific key regional interventions will encompass exchanging knowledge management and information sharing, shared research and capacity-building resources as well as institutional benchmarking resulting in harmonized policies. By supporting a broad M&E and communication effort, it will help sustain the necessary momentum for the adoption of policy reforms, demonstrate the viability and scale-out potential of various types of irrigation solutions developed by the six countries, and mobilize funding for their further expansion. The project fulfills the IDA regional integration criteria as shown in Appendix 5.

#### **KEY PROBLEMS ADDRESSED**

5. The Dakar Declaration and the S2I-SF<sup>48</sup> translate a strong will of the countries to increase investments in irrigated agriculture and improve irrigation development based on an enhanced understanding of the major constraints. The S2I-SF recognizes the need for innovative and adapted sectoral policies and strategies; improved governance with enhanced participation from all stakeholders; easier access to finance, data-information-knowledge, skills, and services; and expanded infrastructure and value chain development. The S2I-SF highlights the diversity of water management systems and the potential for integrated development of these systems. It emphasizes the potential benefits of enhanced regional cooperation. The project will tackle these complex issues through an interrelated set of activities tailored to meet regional needs and national specificities. Project activities will revolve around the typology of irrigation systems and the concept of solutions defined in the S2I-SF and endorsed by the participating countries.

6. The project design builds on lessons from large-scale irrigation development projects in between the 1970s and the 1990s. Evidence indicates that more than half of World Bank-funded schemes during that period failed to achieve their predicted economic rates of return and quickly faced economic unviability.<sup>49</sup> Some of the underlying factors of this poor performance include deficient project planning, persistent implementation lags, and recurrent external shocks affecting agricultural commodity prices. Other influential causes pertain to the poor enabling institutional environment, especially poor governance of public irrigation agencies resulting in a low level of service. This situation has often led to the disengagement of farmers who are the central stakeholders. The high level of coordination and the necessary enforcement of collective rules in irrigation schemes are key challenges as they are hard to achieve and sustain. The challenges are even more critical when, as it frequently happens, the technical studies and the civil works do not meet quality standards.

7. However, several examples of successful reforms resulted in new forms of governance engaging farmers and boosted agricultural production (Senegal River Delta, Office du Niger in

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<sup>48</sup> 2IS-SF is the Strategic Framework for the Sahel Irrigation Initiative (S2I)

<sup>49</sup> IWMI Economics Report. 2014. The economics of rice production in large-scale irrigation schemes in Sahelian West Africa: new perspectives and priority questions.

Mali). The consolidation of these and other internationally recognized experiences can contribute to the ongoing policy dialogue on the reform of irrigation agencies across the region by establishing tools for enhanced governance and improved service delivery. Thus, the project will reflect the following promising approaches:

(a) ***New emerging irrigation models.*** In several West African countries, clusters of farmers using small motorized pumps have spontaneously emerged, mainly around urban centers, irrigating small parcels of land from river streams or from shallow wells. This irrigation model appears to be adapted for the production of high-value crops, such as vegetables and exotic fruits. The relative success is catalyzed by the presence of a growing demand in nearby cities. However, the development of small-scale irrigation faces huge constraints due to lack of access to financing and professional services, as well as lack of an adequate level of institutional support for a well-organized value chain. An increasing number of evaluations indicate a critical need of coordination for private initiatives using new technologies to optimally blossom.<sup>50</sup> In addition, experience sharing has been identified as a fundamental channel to accelerate the uptake of successful practices. For example, low-cost water distribution helped scale up affordable irrigation systems accessible to farmers with low investment capacity.<sup>51</sup> The SIIP will share such stories at the regional level through different channels. The project will also streamline irrigation technologies, for example low-cost solar pumps, by organizing the market at the regional level<sup>52</sup> and by setting up pilots for research and demonstration purposes.

(b) ***Structural equipment and infrastructure for processing, packaging, and conservation of products*** can substantially improve the performance of value chains while increasing the added value of farm products. Successful examples include the green bean subsector in Burkina Faso where public investment in storage facilities helped shape the value chain, create jobs, especially for women, and leverage exports throughout the West African region and beyond.<sup>53</sup> The project will fund the establishment of coherent financing mechanisms and build the necessary network of professional service providers (O&M, insurance, etc.) and equipment suppliers that is required to sustain and scale up investments in small irrigation systems and to facilitate the commercialization of agricultural produce. It will ensure that solutions around smallholder irrigation are institutionalized by grounding them in national strategies pertaining to small-scale irrigation and agricultural value chain development.

## TYOLOGY OF IRRIGATION SYSTEM

8. The Dakar Declaration identified five key areas of intervention corresponding to a typology of irrigation systems applicable to the Sahel region. This typology is based on a system approach with each type corresponding to a certain business model and set of issues (Table 2.1). The project intends to develop practical and performing solutions for each type of irrigation system.

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<sup>50</sup> Abric et al. 2011. Lessons learned in the development of smallholder private irrigation for high-value crops in West Africa.

<sup>51</sup> VISA. 2010. *Synthèse des activités du résultat 4 : Volet petite irrigation de surface, Rapport d'étape, 40p.*

<sup>52</sup> Few solar pump manufacturers have already been identified: one of the main constraints for the production of such pumps is the investment costs for the manufacturer. By organizing a potential market at the regional level, this venture will be profitable and attract manufacturers.

<sup>53</sup> *Module EASYPol 107. 2007. Analyse de la filière maraichère au Burkina Faso.*

**Table 2.1. Types of Irrigation Systems – Opportunities and Challenges**

Type	Description	Opportunities	Challenges
<b>Type 1</b>	Small- to medium-scale improved rainwater harvesting systems based on partial water control using small embankments, gated structures, and access structures in lowland areas including inner valleys ( <i>bas-fonds</i> ) and flood recession plains.	Large potential in Sahel with possibility to significantly increase yields in rainy season, with negligible impact on water resources. Water harvesting helps recharge groundwater for use in dry season using Type 2 or Type 3 systems.	Economic profitability can be dubious when sizable infrastructures are required to properly manage rainwater. Need strong community ownership and engagement for operation and maintenance, with no possibility of “cutting off” one member since the service is purely collective.
<b>Type 2</b>	Micro- and small-scale private irrigation systems for individuals or small groups of producers involving pumping equipment and efficient water distribution by various types of canals or pipes.	Well adapted solution for micro and small entrepreneur farmers, including women. Usually no issue with access to land. Very high profitability when low cost technologies can be used and high value crops produced. No issue of collective management since systems are individual. These systems can be developed in conjunction with Type 1 investment.	Market access risk is increased in the absence of producer organization and considering the small scale of the individual systems. Risk of over-abstraction of water resources if not properly monitored and managed. Scaling out adoption requires financial solutions.
<b>Type 3</b>	Small-scale community-based irrigation for villages or large groups of producers organized in user organizations managing pumping equipment and water distribution by various types of canals or pipes as well as access structures.	These schemes are usually used for production of a combination of staple and vegetable crops and allow entire villages to improve their food security. Community-led initiative reduces risk of conflict.	Relatively high investment cost and pumping requirement as well as small size of plots result in relatively low economic viability. Collective management is a challenge, and operation and maintenance often problematic.
<b>Type 4</b>	Large-scale irrigation schemes managed by public authorities, usually supplied from large rivers regulated by dams, involving a combination of pump stations, gated structures, large canal and drainage systems, service roads, and a complex governance structure using user organizations.	Volume effect resulting from the large size of the systems allows economies of scale at all levels. Large-scale schemes become the anchor for the development of value chains as well as strong producer organizations. Operation and maintenance is delivered by professional entities (SAGI).	Governance issues in the SAGI may result in bad management. Land management issues are common (public land). High investment cost per hectare. Operation and maintenance can be complex. Full O&M cost recovery is difficult to achieve, these scheme usually rely on recurrent subsidies or frequent rehabilitation.
<b>Type 5</b>	Medium- to large-scale irrigation schemes involving a partnership between the Government, a private party, and the communities surrounding the scheme for the development and management of the irrigation system (with same technical features as for Type 4).	Win-win partnership between the Government, private investors and local communities can provide an interesting solution to enhance the performance of scheme management, improve access to markets and –in the best case scenario– mobilize private finance for irrigation development.	Challenging deal structure with very few successful examples to build upon. On-going experiments in some African countries including Burkina Faso and Senegal need to be monitored for lessons learnt, before expanding.

## DETAILED PROJECT DESCRIPTION

### PDO

9. The PDO is to improve stakeholders' capacity to develop and manage irrigation and to increase irrigated areas using a regional 'solutions' approach in participating countries across the Sahel. This PDO stems from the following key principles:

- (a) Increasing the irrigated areas in Sahel will only happen if the performance of irrigation systems is improved and the long-term viability of new systems can be demonstrated.
- (b) The key to improving the performance of the sector is to enhance the capacity of the stakeholders in implementing and managing irrigation systems.
- (c) Capacity-building activities have to rely on 'doing things on the ground' in a constant cycle of policy and planning, implementation, and learning for improvement.

### PROJECT BENEFICIARIES

10. The SIIP will directly benefit over 58,000 farming households, mostly farming under Types 1, 2 and 3. In addition, it is assumed that for each farm household, 0.25 jobs would be created upstream and downstream in the value chains, for example in input supply, non-family farm labor, processing, marketing, maintenance of equipment, and so on. In total, the project would reach approximately 72,000 households, corresponding to about 430,000 people.

**Table 2.2. Number of Beneficiary Farming Households by Type of Irrigation Schemes**

	Type 1	Type 2	Type 3	Type 4	Type 5	TOTAL
<b>Burkina Faso</b>	5,800	4,100	2,000	—	—	11,900
<b>Chad</b>	3,820	2,480	1,400	—	—	7,700
<b>Mali</b>	3,700	2,000	2,700	—	—	8,400
<b>Mauritania</b>	4,000	900	5,400	—	—	10,300
<b>Niger</b>	700	1,200	5,800	2,000	—	9,700
<b>Senegal</b>	1,600	—	9,000	—	—	10,600
<b>Total</b>	19,620	10,680	26300	2,000	—	58,600

11. About 35 percent of the direct beneficiaries of the project will be women, namely 24 percent in schemes of Type 1, 23 percent in Type 2, 55 percent in Type 3, 20 percent in Type 4. The project addresses women's needs through specific investments and service delivery, for example: (a) small-scale collective women gardens (Type 3) will be developed since they have shown good impacts on women and their families (income generation, collective organization, empowerment, and so on); (b) while taking into account local customs, the SIIP will ensure a minimum number of women will benefit from the irrigation scheme development (all types); (c) women will also benefit by most activities related to value chain development; and (d) specific training sessions will be organized to assess and meet their needs and constraints. Surveys for M&E system making use of ICTs will allow to collect disaggregated information (women/men/youth) in an easier way. A detailed assessment of issues related to gender and youth is provided under Appendix 2.

## LOGICAL LINK BETWEEN THE PROJECT COMPONENTS

12. The proposed project will have three interrelated components that will be implemented in parallel over a period of six years. The three components are closely related and feed one another in a complementary manner, as follows:

(a) **Component A: Modernizing the institutional framework** will contribute directly to institutional strengthening and to improving the planning capacity by financing assessments of land and water resources and of local production systems in the PIA, as well as organizational strengthening with a view to provide a basis for viable and sustainable irrigation development using the various Types of Irrigation System.

(b) **Component B: Financing irrigation investment solutions** will be the laboratory to develop irrigation solutions applicable at a regional scale. Component B will implement irrigation solutions within the Project Implementation Area (PIA – see Appendix 3) with two broad objectives: (a) increase actually exploitable irrigated areas and cropping intensity in the region and (b) build sufficient momentum for irrigation scale-up and improved performance. It will thus directly contribute to increase irrigated areas through investment in the revitalization of degraded irrigated schemes and development of new schemes. The scope of Component B also extends beyond the SIIP as the activities will build a portfolio of feasible projects backed with solid business cases and hence leverage additional funding. The investment program under Component B will be reviewed annually at the regional level and adapted to the evolving country needs based on the lessons learnt.

(c) **Component C: Knowledge management and coordination** will contribute to the PDO by capitalizing knowledge, building strong M&E systems, and ensuring appropriate coordination of project activities at the national and regional levels. Component C will capitalize knowledge generated through the project and diffuse it back into the SIIP and other irrigation projects. The regional coordination component will ensure that the six participating countries share knowledge effectively.

13. The project in its entirety will reshape the irrigation development approach in the region and create an enabling institutional environment conducive to leveraging financing through convergence effects. The underlying information and communication strategy, human networks (face to face/offline), and ICT infrastructure/applications (online) will reinforce the connections between the three components (see other important cross-cutting dimensions of the project in Appendix 4).

## PROJECT COMPONENTS

### Component A: Modernizing the institutional framework

14. **The expected outcome of Component A is an enabling environment for irrigation development.** This outcome will be achieved within the PIA through an appropriate local development planning process and the monitoring of natural resources, and at national level through an improved organizational structure involving key stakeholders. These activities will be supported and streamlined at regional level using shared best practices.

15. **Local development planning based on natural resources assessment.** This set of activities will review and complement existing local development plans or develop new ones if required, with a view to ensure a fair and transparent allocation of natural resources available to the host communities and set in place appropriate management and monitoring mechanisms. Special attention will be given to two specific target groups of the program: women and youth. Use of various ICTs will contribute to reach results in a transparent and fair way. This will include the following activities to be implemented within the PIA by specialized service providers:

- (i) the strengthening of local land management bodies, carrying out of land tenure diagnosis, and establishment, as required, of land use plans and local participatory land charters applicable to irrigated land tenure management;<sup>54</sup>
- (ii) the strengthening of local water resources management through the assessment of water resources availability at subcatchment level, the development of simple water resources monitoring systems using ICT, and the adoption of a formalized water allocation process following the IWRM approach, thus ensuring appropriate mitigation of potential cumulative impacts of the construction of a large number of small irrigation schemes; and
- (iii) the assessment of agricultural production systems in the area and identification of market potential for the agricultural products and the establishment of an irrigated agriculture development plan ensuring the necessary level of coordination and support is mobilized prior to irrigation investment scale-up.

16. The IWRM approach will also consider the issue of dam safety, should a dam contribute to the water storage in the studied sub-catchment. The project will finance dam safety assessment for all dams located within the Project Implementation Area that supply water to existing or new irrigation schemes to be built. The existence of such dams will be screened as part of subproject identification as per the provisions of the ESMF. In Burkina Faso the Dourou dam has been identified and surveyed during project preparation (see Box 2.1). In addition, the project will ensure that remedial measures be implemented and would finance those measures if they are not funded from other sources.

17. The irrigated agriculture development plans will set priorities for production and marketing support to irrigation producers in liaison with off-takers. They will identify the needs for appurtenant infrastructure (that might be funded under Component B if no other source of finance can be mobilized) and the provision of services like input supply and financing and will consider options to develop these services using local entrepreneurs as need be. Collaboration with on-going agricultural support projects will be sought to this end.

18. The regional level will contribute to these activities through the mobilization of one SPs dedicated to Component A. Based on its own experience and on a review of irrigation planning practices (both local and national) in use in the countries, this SPs will prepare a methodological guide on how to engage local stakeholders and take into account their needs and constraints, which will be shared and incorporated, as needed, into the local development planning process. The

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<sup>54</sup> In Senegal, the project will be coordinated with the ongoing PDIDAS project which is supporting local land bodies in 30 communes.

participatory planning process in Mali (*Programme National d'Irrigation de Proximité* [National Community Irrigation Program, PNIP]), considered a successful model will be among the main documents informing the guide. The SPs will also mobilize specialized expertise related to land and water resources to support the prior analysis of these resources. In addition, CILSS will avail high level dam safety expertise to support dam safety assessments within the countries.

**Box 2.1: The case of Dourou Dam in Burkina Faso**

During preparation the Dourou dam in Burkina Faso has been identified as a candidate for dam safety assessment. This dam has a height of 14 m and a volume of 90 mm<sup>3</sup> which classifies it as a large dam as per OP 4.37 (volume >3 mm<sup>3</sup>). The dam safety assessment that was conducted resulted in the following recommendations (remedial measures) and a provision has been made in the project budget for those:

- Setting up a monitoring and dam safety inspection function including rehabilitation of the instrumentation equipment, mobilization of operation and maintenance staff at the dam site, and strengthening of the oversight functions;
- Availing technical documentation and establishing the dam O&M manual;<sup>55</sup>
- Remove aquatic vegetation near the dam structures;
- Design and implement remedial work necessary to secure the spillways and improve the safety of the dam in case of extreme flood; and
- Develop an emergency preparedness plan.

19. **Organizational strengthening.** Within the PIAs, the project will enhance the coordinating and monitoring role of Government decentralized services involved with irrigation development and the supporting role of producers' umbrella organizations like chambers of agriculture. The project will finance operational costs, training activities, and equipment and tools (notably ICT) necessary to render the following services: (i) inventories of irrigated areas; (ii) support to the local development planning process under Component A; (iii) monitoring of all existing public irrigation systems of a sample of private irrigation systems through regular visits and reporting; (iv) support to project beneficiaries for irrigation management and O&M functions; and (v) mobilizing support for agricultural development from extension services and other service providers to work with producer organizations and off-takers to help get the agricultural produce to the market. The project will procure global positioning system equipment and topographic and hydrometric tools as need be to carry out the above tasks.

20. At the regional level CILSS will contribute to draft standard agreements (see also Annex 3). The SP dedicated to Component A will train the staff of the first batch of Government decentralized services and of the producers' umbrella organizations involved in the project, work on improved information and communication flows between the various stakeholders and provide training of trainers for national staff so that they can duplicate the training. The use of ICTs to enhance communication will be promoted. Specific focus will be given to the targeting of women and youth. Outputs will be clarified mandates, functions, and responsibilities of the stakeholders for development and management of irrigation schemes along a unified framework, and the related capacity building plan. Beyond this direct support targeting project stakeholders, the CILSS will prepare advocacy material to be used by the line ministries to increase the budget allocation to

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<sup>55</sup> The O&M manual would be adapted from the existing small dam manual established by the *Agence de l'Eau du Nakambé*.

their decentralized services as well as to the various local planning and coordination bodies so that they are in a position to undertake these tasks without always relying on project funding.

21. CILSS will also enter into an agreement with the regional network of producer organizations ROPPA. Through this agreement, the ROPPA will support its national members and gather their feedback on the project activities and results. This will contribute to the citizen engagement mechanism to be established under the project. By going through ROPPA the project ensures that the voices of the producers is channeled directly to the regional level. ROPPA will also contribute to the advocacy work for policy changes, investment financing and so on.

22. In addition to the above activities the project will provide a more specific support for the organizational strengthening of the public irrigation authorities known as SAGI (*Sociétés d'Aménagement et de gestion de l'Irrigation*) in order to improve their effectiveness. CILSS will use a Strategic Partner, the COSTEA (*Comité Scientifique et Technique Eau Agricole*) think tank funded separately by AFD (*Agence Française de Développement – French Development Agency*), to support six out of the sixteen existing SAGIs in the six countries on themes they all have in common. For each of the themes, a specific mix of analytical work, methodologies, training, piloting (for some themes), and knowledge exchange will be engineered at the regional level by CILSS with COSTEA support.<sup>56</sup> The priority themes set collectively during preparation between CILSS, the SAGIs, and COSTEA are the following:

- (a) Establish the basis and provide assistance for improved contractual arrangements between the SAGI and their main public and private partners: water users and their associations, local communities, agro-entrepreneurs, and financial institutions through the preparation of well-designed agreements based on best practices.
- (b) Establish guidelines for irrigation scheme design adapted to the Sahel context and taking into account new technologies that can facilitate the design (for example, for topographic survey) and help improve the quality—flexibility and reliability—of the service to farmers, including SCADA<sup>57</sup> and ICT technologies. These guidelines will help improve the quality of design.
- (c) Review flow metering technologies to monitor the volumes used at different points in the system and design flow metering systems adapted to the needs of the SAGIs. This will help improve water management, reduce losses, and test volumetric pricing or other water saving incentives.
- (d) Develop a water requirement planning tool to facilitate water management at the interface between the SAGI and the users and possibly move from a full upstream control to a more demand-driven distribution.
- (e) Provide a strategic approach and guidelines for maintenance program and implementation including maintenance planning and budget, monitoring system and outsourcing strategy.
- (f) Provide a strategic approach and guidelines to improve irrigation service cost recovery based on enhanced irrigation tariff and the provision of evolving operational subsidies.

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<sup>56</sup> COSTEA support includes also an in-kind (staff-time) contribution from CIRAD which is a key member of COSTEA.

<sup>57</sup> SCADA = Supervisory Control and Data Acquisition for canal system regulation.



- (g) Provide budget and accounting tools for improved internal management.
- (h) Review the role and added value of the SAGI in providing agricultural extension services and supporting agricultural value chains.
- (i) Support environmental and social impact assessment notably with regard to water quality and propose a mitigation action plan.

**Table 2.3. Main Contracts Related to Component A and Readiness Status**

	<b>Types/Number of Contracts</b>	<b>Readiness</b>
<b>Regional level</b>	Contract with SP to support local development planning process (× 1)  Agreement with ROPPA Co-financing agreement with COSTEA to support a performance improvement program targeting six SAGIs	Draft ToR available; contracts will be negotiated for signing at the time of effectiveness. Draft ToR available. Detailed program under development by COSTEA, to be submitted by effectiveness
<b>Country level</b>	Contracts with local service providers specialized in social engineering to facilitate the local development planning process and strengthen capacity of land and water management bodies (× 2 initially, number will be progressively increasing to cover PIA) Agreements with decentralized services and producers umbrella organizations for monitoring, supervision and support	Outline ToR available; first contracts to be signed during first six months of project implementation   Outline ToR available

### **Component B: Financing irrigation investment solutions**

23. **The expected outcome of Component B will be a set of solutions related to the five types of irrigation systems based on emerging best practices identified in the participating countries and aiming at the expansion of the area under irrigation and improved performance and sustainability of these investments.** This shall be reached through (1) the preparation of bankable investment proposals for about 50,000 ha and the mobilization of financing for part of these proposals; (2) the revitalization of existing irrigation schemes on 6,130 ha and development of new irrigation schemes on 17,100 ha, as well as the construction of multipurpose service and storage buildings and rehabilitation of access roads as required to ensure access to market for irrigated production within the Project Implementation Area (see Appendix 3).

24. The SIIP will support all types of irrigation schemes, as defined in the typology. However, the development of new schemes will be limited to small-scale irrigation schemes and will thus only concern the Types 1, 2 and 3 of irrigation systems. Types 4 and 5 schemes will be supported through the preparation of bankable investment proposals. For each type, the SIIP will promote irrigation solutions that are a holistic combination of (a) governance structures (including IWUOs) and related organizational arrangements; (b) technology, equipment, and infrastructure; (c) financing mechanism for investment and management of the irrigation systems, combined with input supply and provision of specialized services; and (d) a capacity-building program related to (a) to (c). (see Appendix 2)

25. **Subcomponent B.1: Preparation or update of bankable investment proposals.** The project will update existing studies and finance new studies for irrigation development covering about 50,000 ha of both public and private investments in the six countries out of which 20,000 ha are related to the improvement of the drainage system in the Senegal River delta. the scope of the studies will be defined following a gap analysis and may cover all aspects required to prepare a bankable proposal, for example, engineering design, institutional arrangements, safeguard instruments, and so on. Strategic environmental and social assessments will be conducted where large impacts are to be expected.<sup>58</sup> The SIIP will also support fund-raising for these proposals through the organization of roundtables and other promotion activities at national and regional levels (CILSS). These studies will be selected on the basis of their strategic regional relevance with regard to potential champions and solutions that can be of interest to other countries.

**Table 2.4. Portfolio of Studies to be Prepared under the SIIP (ha)**

Country	Ha
Burkina Faso	2,400
Chad	3,300
Mali	# 20,000
Mauritania	—
Niger	—
Senegal	# 20,000
<b>Total</b>	<b># 50,000</b>

26. Quality control of these studies will be ensured by the CILSS, using specialized technical assistance (pool of experts) and screening tools (see Component C description). The process will be based on the use of (a) standard ToR that guarantee the holistic approach of an irrigation solution; (b) quality review, through dedicated committees and specialists; and (c) mobilization of technical expertise to assist drafting of strategic or complex ToR. Mapping of groundwater resources will be financed for areas where unsustainable use is a risk.

27. **Subcomponent B.2: Design and implementation of irrigation solutions for the revitalization and/or modernization of existing schemes and development of new schemes and appurtenant infrastructures.** The Subcomponent B.2 will finance efficient and reliable irrigation solutions for the revitalization / modernization and management of existing irrigation schemes and development of new schemes in the selected intervention areas. It will also finance appurtenant infrastructure critically needed to ensure irrigation schemes commercial viability, including access roads, storage facilities and service centers.

28. About one third of the improved or newly built irrigation surfaces will be from Type 1 (8,390 ha out of 23,230 ha). Although they provide only supplementary irrigation in the rainy season, Type 1 irrigation solutions have indeed proven to be less expensive, well adapted, and mastered by farmers who often have a long experience with these solutions that are quite robust and often well integrated within farming systems and local development plans. Types 2 and 3 will be developed in conjunction with Type 1 to benefit from the increased groundwater recharge generated by the Type 1 rainwater harvesting structures, like it is done already in Mali, Niger, and Chad notably.

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<sup>58</sup> Along the lines of the recent flagship *Programme d'Aménagement HydroAgricole de la Zone Office du Niger* in Mali, for example.

**Table 2.5. Targeted Area to Be Developed or Rehabilitated by Type (ha)**

		Type 1	Type 2	Type 3	Type 4	Type 5	TOTAL	
<b>Burkina Faso</b>	Rehabilitation (ha)	750	—	100	—	—	850	<b>5,950</b>
	New (ha)	700	3,800	600	—	—	5,100	
<b>Chad</b>	Rehabilitation (ha)	—	—	120	—	—	120	<b>2,890</b>
	New (ha)	1,910	620	240	—	—	2,770	
<b>Mali</b>	Rehabilitation (ha)	950	—	110	—	—	1,060	<b>3,030</b>
	New (ha)	900	500	570	—	—	1,970	
<b>Mauritania</b>	Rehabilitation (ha)	1,000	—	300	—	—	1,300	<b>3,580</b>
	New (ha)	1,000	230	1,050	—	—	2,280	
<b>Niger</b>	Rehabilitation (ha)	0	—	—	500	—	500	<b>4,710</b>
	New (ha)	360	2,400	1,450	—	—	4,210	
<b>Senegal</b>	Rehabilitation (ha)	400	—	1,900	—	—	2,300	<b>3,070</b>
	New (ha)	420	—	350	—	—	770	
<b>Total</b>		8,390	7,550	6,790	500	—	<b>23,230</b>	
<i>Of which new schemes</i>		5,290	7,550	4,260	—	—	<b>17,100</b>	
<i>Of which rehabilitated schemes</i>		3,100	—	2,530	500	—	<b>6,130</b>	

29. A number of solutions have been prioritized by the participating countries to be fine-tuned and promoted in the other participating countries (see Appendix 2 for details). For each solution the project will finance both revitalization / modernization of existing schemes, as well as new schemes. The aim of the revitalization is to improve existing, functional, yet underperforming irrigation systems by using, for example, flow measurement devices, replacing open canals with low-pressure pipe systems, developing solar pumping, moving from producer-owned equipment to supplier-owned equipment using the pay-as-you-go method, enhancing governing structures, and so on. It is expected that 6,130 ha will be rehabilitated; about 26 percent of the irrigation surfaces developed under the SIIP. The remaining 74 percent will be new small-scale irrigation schemes, based on regionally shared irrigation solutions in the selected intervention areas. It is expected that 17,100 ha of new schemes will be developed (see Table 2.5). A number of schemes have already been pre-identified within the PIA and will be listed as priority intervention during the first year of the project for either rehabilitation or new construction. An example of a subproject targeting cotton producers in Burkina Faso and using an innovative, output-based aid mechanism is described in Box 2.2.

30. At the country level, the main activities under this subcomponent will include:
- Site identification based on results of the planning process under Component A and the rapid rural appraisal method or equivalent;
  - Social engineering to build the capacity of the community of beneficiaries in managing their own project at both development and management stages, and establishment of an IWUO;
  - Business development planning including the identification of market opportunities and related constraints (need for storage, access to quality inputs and so on) using again the outputs of the planning process under Component A;
  - Engineering studies to design the best technical solution for the target community taking into account future operation and maintenance requirements;
  - Construction and construction supervision;

- (f) Training of IWUO leaders and members and of service providers who will be involved in the management of the scheme;
- (g) Regular follow up visits and on-the-job training until the IWUO is autonomous.

**Box 2.2. World Bank/IFC Burkina Faso Cotton Smallholder Irrigation Project**

In Burkina Faso, the project will receive co-financing from the GPOBA to support Component B, financing irrigation investment solutions. The subproject will target smallholder farmers in the cotton industry that also grow food crops. Cotton is the country's second largest source of export revenue after gold and is largely grown by smallholder farmers under an offtake model with large processing companies. The subproject will be implemented by SOFITEX, Burkina Faso's largest cotton processor, which has a supply chain consisting of some 160,000 smallholder farmers grouped into approximately 7,000 village cooperative groups (known as GPCs). SOFITEX is an IFC client with a working capital facility from the IFC. The intervention will be jointly supported by the World Bank (through the GPOBA grant of US\$5.85 million) and IFC, which will provide technical support for farmer training and investment in water management and irrigation (around US\$540,000).

The farmers, through the cotton producer groups (*Groupements de Producteurs de Coton - GPCs*), currently take loans from local commercial banks to finance the purchase of inputs at the start of the growing season (seeds, fertilizer, and pesticides). After harvesting, SOFITEX collects the harvest and gins and packages the cotton for sale into the international market. From the proceeds, SOFITEX makes direct loan repayments to the banks on behalf of the farmers and subsequently pays the net proceeds to the farmers through the GPCs. Most of the farmers depend on cotton sales for cash income. Rotation crops such as maize, beans, peanuts, and sesame provide food and/or additional revenue, depending on the farmers' needs.

The subproject intervention will support farmers in three areas:

- (a) Farmer training, in the construction of small-scale water management infrastructure for rainwater capture; in the use, operation, and maintenance of irrigation equipment; to provide supplementary irrigation equipment at critical growth phases of the cotton plant; and in good agricultural practices for soil and water management;
- (b) Partial grants to support investment in reducing erosion by introducing stone contour planting and water collection lines, thereby retaining rainwater (and fertilizer, organic matter, and so on) in the soil; small reservoirs to collect rainwater for later usage; and irrigation equipment;
- (c) Facilitating access to finance from commercial banks for farmers for their share of this investment.

The GPOBA financing will take the form of an output-based aid subsidy, which will be a one-off subsidy toward capital costs, payable upon independent verification of outputs linked to installation and functioning of the equipment at the farm level. The subsidy will be set at levels required to bridge the gap between cost and farmers' ability to pay, which is expected to vary between 50 percent and 80 percent of capital investment cost. The subproject will work with around 1,000 farmers (3,000 ha), with the objective of scaling up with SOFITEX and the other two large producers on successful demonstration of results.

31. In addition to the irrigation solutions, Subcomponent B.2 will finance, as required to allow market access, critical collective infrastructures such as multipurpose service and storage facilities, and the rehabilitation of access roads. The buildings will be owned by producers organizations, and support will be provided for the operation of these facilities. These facilities will be used to support the strengthening and expansion of existing models of service centers (like *Faranfasi so* in Mali or *Centre de Gestion et d'Économie Rurale* in Senegal). The roads will be improved to allow access to the fields at critical times of the year, and not necessarily to a full standard. The needs will be identified as an output of the local planning process under Component A and the project will only intervene if no other financier can be identified.

32. At the regional level, the CILSS will play a crucial role to document the emerging best practices in the countries, enrich them with international experience, consolidate them into full-fledged irrigation solutions incorporating the four main pillars (institutional model, infrastructure and equipment, financial system and capacity building plan), and disseminating them to the six

countries. This dissemination will be done at first through direct training of local stakeholders involved in project implementation – including the organization of exchange visits between countries – and in a second step through training of trainers, so that the countries are equipped to further disseminate the solutions at reduced cost. The CILSS will rely on two SPs for these tasks, one for Types 1 and 3 and one for Type 2.<sup>59</sup>

33. The SP will notably develop and share solution specific implementation manuals for each Type of irrigation system. These manuals will specify the steps of planning, implementation, and M&E of investments on the irrigation schemes. They will also present advantages and potential risks. In Senegal, Burkina Faso, Niger, and Mali, the existing manuals will be updated at the project implementation stage through knowledge groups and reviews of best practices. In Chad and Mauritania, project will assist the full design of these manuals. The implementation manuals will be complemented by various media products developed to address specific target groups, such as peer-to-peer videos for men/women/youth smallholder farmers and multimedia materials for extension officers, for example.<sup>60</sup>

**Table 2.6. Main Contracts Related to Component B and Readiness Status**

	<b>Types/Number of Contracts</b>	<b>Readiness</b>
<b>Regional level</b>	One SP contracts for Types 1 and 3 and one contract for Type 2  Individual experts for just-in-time quality support to countries (~ 20 on various topics)	Draft ToR submitted, contracts will be negotiated for signing at the time of effectiveness
<b>Country level</b>	Consultancy contracts for feasibility studies (one to three per country)  Contracts with solutions operators (indicatively about 10 to 15 per country with progressive geographical phasing)  Contracts for engineering studies (similar number)  Contracts for civil works (community-based procurement for small works, up to few 100 per country, and public procurement for large works, about 10 to 15 per country)	ToR to be developed with support from SPs and regional experts  Outline ToR available, detailed ToR will be drafted in each country with assistance from SPs  Standard contracts to be drafted during first six months of project implementation period

### **Component C: Knowledge management and coordination**

34. **The expected outcome of Component C will be the production and dissemination of knowledge in the irrigation subsector and the coordination of project activities.** This will be achieved through a sound and evidence-based KM strategy. Information from and knowledge created by the various stakeholders will be shared in various ways, depending on the needs and local context. The implementation of this strategy will be supported through the establishment of a KM platform, linked to regional and national agriculture, irrigation, water and land resources

<sup>59</sup> With regard to Types 4 and 5, the dissemination of solutions is handled by COSTEA under Component A.

<sup>60</sup> See also contents of an irrigation solution in Appendix 2.

information systems, the implementation of targeted data gathering for research activities (in particular baselines studies), and the regional and national coordination of project activities.

35. **Subcomponent C.1: Information system and knowledge management.** The output of this subcomponent will be the accessibility of knowledge and information to stakeholders in the irrigation subsector. This result will be achieved through (i) a cloud-based database to monitor the irrigation sector linked to existing data resources on land use, water resources and so on; (ii) data collection and dissemination tools using ICT like smartphone applications; (iii) targeted research activities, training and analytical work focused on solution implementation issues; and (iv) strategic outreach to decision-makers and irrigation financiers, with the view to mainstreaming and institutionalizing the solutions and pooling additional resources for investments in the sector.

36. **Information system and knowledge management platform.** At the national and regional levels, an integrated monitoring system to collect and organize information on irrigation in the PIAs and on irrigated-related themes countrywide will be designed and implemented with project support. The national systems will feed the regional system. In some countries, additional specific information tools will be developed for management purposes (notably by the SAGI). Information generated will feed into a comprehensive shared regional Knowledge Platform, a central element of solutions dissemination, tools, and capacity building. It will include both virtual and physical spaces to foster knowledge exchange among stakeholders.

37. The Information system will support the M&E part of the program. An important aspect is to have a baseline survey to be able to report on progress. As 90 percent of the targeted areas are Types 1, 2, and 3 and are related to more than 50,000 scattered households, the program will gather information related to them using an ‘individual’ approach based on mobile phone surveys to geo-localize the plots in a fast and comprehensive way, with good quality data. The performance of existing irrigation approaches will be assessed and proposals will be formulated to improve it. This benchmarking, improving, and promoting of solutions will be a continuous process of the project, which will be ensured by the CILSS and its partners, in close collaboration with the national institutions. This will allow the acceleration of innovation mainstreaming.

38. The KM platform will develop, share, and manage knowledge products using appropriate activities including ICT and media tools, discussion forums, focus-group meetings, regional workshops, benchmarking activities, and capitalization and dissemination of good practices and research results. Stakeholders’ participation and national to regional linkages will be ensured through the knowledge groups’ architecture as shown, thus making them the drivers of the KM platform. The use of innovative ICT tools will help ensure a trickle-down effect toward end beneficiaries and will allow them to provide feedback and valuable information to the policy and decision makers (using ICTs will allow information flow in both directions). An ICT needs assessment has been conducted during project preparation.

39. To expand the impact of the project beyond its direct intervention areas under Components A and B, the platform (through its knowledge groups and with support from the SPs and a dedicated technical assistance on training development) will identify training needs of various

categories of stakeholders,<sup>61</sup> and work with selected institutes with appropriate capacities to develop the required training sessions. The training program will focus on specific skills and services necessary to deliver the irrigation investment solutions. Close coordination with ongoing education projects<sup>62</sup> in the target countries will be sought to establish complementarity. At the national level, this platform will ensure the capitalization and dissemination of technologies throughout each country wherever relevant. It will fund the design of well-suited materials to ensure local buy-in of irrigation solutions to be developed in the project with an emphasis on the use of local languages. Innovative dissemination tools including video projection of documentaries at the village level will be used to engage stakeholders, stimulate discussions, and accelerate the knowledge acquisition process. Specific activities include (a) strengthening the role of rural training centers in the dissemination of good practices and experiences in irrigation; (b) development of well-designed materials for dissemination of identified irrigation solutions (illustrated operational method sheets, radio programs and documentaries in local languages peer-to-peer videos, and so on); and (c) dissemination of the materials developed at the regional level (in cooperation with the target group) and adapted to each country. A strategic communication and learning framework will be developed at the regional level encompassing the above described activities. Action plans based on the regional framework will be developed and implemented at the national levels. Effective communication will be ensured by capitalizing the experiences of other regional projects and programs including WAAPP, PGIRE, and PRAPS.

40. **Research-action activities.** The project will finance need-based irrigation-related research and development with specific focus on areas that have been identified as high priority and with great relevance at the national and regional levels. The main research topic will be on irrigation systems performance. The project will provide grants for PhD students, regional workshops, and short-term training and operating costs related to research. All research activities will need to be jointly implemented with field operators and stakeholders (like producer organizations) involved hands-on in irrigation development and management, so as to ensure that research proposals are based on the concrete, operational needs of grassroots stakeholders.

41. **Subcomponent C.2: Project Coordination and Monitoring and Evaluation.** The project will ensure coordination and communication at the regional and national levels, including fiduciary matters, communication, planning, and the monitoring of safeguards mitigation measures. The project will finance appropriate project management tools such as financial and procurement management software and a management information system including an archiving system. The project will also ensure the sustainability of the project-generated information by anchoring project information systems within well-established institutions in the countries.

42. At the level of the CILSS, the regional coordination will (a) manage the strategic partnerships with regional and international partners to gather continued support to and alignment with the 2iS and conduct fund-raising activities; (b) manage the research activities; (c) support regional project management, including setting up national project management systems, coordination of supervisions, MTRs, and impact surveys.

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<sup>61</sup> This shall include members of public services and private organizations involved in irrigation management and development, umbrella organizations representing irrigators' interests, training institutions, commercial banks and microfinance institutions, and so on.

<sup>62</sup> Notably the Africa Center of Excellence regional project and WAAPP specialized institutes.

**Table 2.7. Main Contracts Related to Component C and Readiness Status**

	<b>Types/Number of Contracts</b>	<b>Readiness</b>
<b>Regional level</b>	SP for information system (× 1) Technical assistance for training development (× 1) Action research (8–10 proposals) INSAH and AGRHYMET-based staff RPCU staff <i>NB: Contributions from all SPs to KM platform</i>	SP preselected and proposal received Terms of reference to be established Report on identification of research areas available List established and profiles defined
<b>Country level</b>	PMU staff Data collection by field operators and decentralized services	Draft ToR (for some countries) Included in Components A and B contracts

*Note:* RPCU = Regional Project Coordination Unit.



**Table 2.8. Project Costs Summary (IDA financing)**

	<b>Burkina Faso</b>	<b>Chad</b>	<b>Mali</b>	<b>Mauritania</b>	<b>Niger</b>	<b>Senegal</b>	<b>CILSS</b>	<b>TOTAL</b>
<b>Component A: Modernizing the institutional framework</b>								
<b>Subtotal Comp A</b>	2.3	2.7	1.8	2,6	3.1	2.2	4.5	19.3 (11.3%)
<b>Component B: Financing irrigation investment solutions</b>								
B.1: Preparation or update of bankable investment proposals	0.8	1.0	1.6	-	-	4.5	1.4	9.4 (5.5%)
B.2: Design and implementation of irrigation solutions and appurtenant infrastructure	17.0	18.2	16.6	18.8	18.7	14.3	6.0	109.6 (64.5%)
<b>Subtotal Comp B</b>	17.8	19.3	18.2	18.8	18.7	18.8	7.4	118.9 (70.0%)
<b>Component C: Knowledge management and coordination</b>								
C.1: Information system and knowledge management platform	2.7	0.6	2.5	0.7	0.6	1.9	3.6	12.5 (7.4%)
C.2: Project coordination and monitoring and evaluation	1.6	1.8	1.9	2.4	2.1	1.4	3.0	14.2 (8.3%)
Incl. PPA	0.6	0.6	0.6	0.5	0.5	0.6	1.6	5.0 (3.0%)
<b>Subtotal Comp C</b>	4.9	3.0	4.9	3.7	3.2	3.9	8.1	31.7 (18.7%)
<b>TOTAL PROJECT COSTS</b>	<b>25.0</b>	<b>25.0</b>	<b>25.0</b>	<b>25.0</b>	<b>25.0</b>	<b>25.0</b>	<b>20.0</b>	<b>170.0</b>

*Per country cost tables are available in project files.*

## **Appendix 1: The Sahel Irrigation Initiative**

### **WEST AFRICA: Sahel Irrigation Initiative Support Project**

#### **A Joint Initiative Supported by a Shared Vision**

1. The 2iS is a joint initiative by six Sahelian countries coordinated by the CILSS, supported by regional economic communities (Economic Community of West African States - ECOWAS and West African Economic and Monetary Union - WAEMU) and the World Bank. It comes in the wake of the Dakar Forum on Irrigation in the Sahel held in October 2013, which ended with the adoption of a Declaration by the Governments of Senegal, Burkina Faso, Mali, Mauritania, Niger, and Chad and their partners.
2. The goal of this initiative is to support member states and actors in irrigated agriculture to increase the area under AWM to 1 million ha while ensuring the viability, performance, and environmental sustainability of existing and future irrigation systems and their associated agricultural development.
3. The vision underlying the 2iS as described in this Strategic Framework is highly ambitious. Based on the Sahel countries' long experience in water management, various irrigation solutions adapted to the Sahelian context can be designed, set up, and funded as part of an enhanced institutional framework with a view to permitting the development of sustainable irrigated agriculture suited to the environment that is competitive and inclusive.
4. The framework is therefore a strategic and technical reference within which complementarity and synergy between actions and initiatives taking place in these six countries can be adapted in the long term for the concrete implementation of irrigation projects and programs following a shared baseline of effective methods, tools, and processes that can be replicated over time and space and based on diverse irrigation solutions.
5. The Strategic Framework is the outcome of a concerted process marked by the strong involvement of many actors coming together in a regional task force established in the wake of the Dakar Forum. It defines concrete methods for reaching the objectives of the Dakar Declaration according to a process that remains consistent over time not just with regard to successive new development and revitalization projects for existing systems, but also of all aspects promoting the effective and inclusive development of irrigation in the Sahel. Its implementation will be supported by a regional project funded by the World Bank.

#### **A Historic Opportunity**

6. Sahelian agriculture faces extreme climate variability exacerbated by climate change. The agricultural sector's share of these countries' domestic product and rural employment makes them vulnerable to climatic shocks. At the same time, population growth and rapid urbanization present a unique opportunity for growth as long as the products of Sahelian agriculture are competitive and supplant imports. The Sahel's climate also offers opportunities for seasonal exports to coastal countries around the Gulf of Guinea and beyond.

7. Historically, many forms of partial control over water, including seasonal lowland and flood recession cultivation, *zai*, and so on, were developed to reduce farmers' exposure to variability in rainfall. Transhumant pastoralism holds an important place in these production systems. In the 1970s, member states committed major investments to developing areas under total water management (through irrigation and drainage) based on large-scale projects. These structuring investments, which require far more formalized land and water management methods and have major impacts on the environment and societies, struggle to achieve a level of economic viability that would ensure their long-term sustainability. The approaches followed by the public irrigation development and management agencies (known as SAGI) responsible for these infrastructures are diverse. There is room for progress, which a subregional exchange of experiences could exploit.

8. Today, the confluence of traditional forms of irrigation and modern infrastructure and technology opens up a range of opportunities on which sustainable and economically competitive development programs can be built that would meet the growing demand of the markets. However, the development of irrigation in the Sahel suffers from a lack of continuity in efforts, insufficient capitalization and dissemination of successes, and a failure to take into account lessons drawn from failures. Effective, replicable methodologies and solutions are not often appropriated by actors and do not receive funding. At both the regional and national levels, sector strategies and policies provide guidelines with regard to the challenges and objectives the various programs implemented attempt to address more or less successfully but with a lack of overall vision for improving irrigation performance in the Sahel.

9. Consequently, only around 60 percent of the land area equipped for irrigation appears to be actually irrigated. It follows that the objective of the Dakar Declaration cannot be met merely by increasing developed areas but by combining the creation of new areas, the recultivation of existing areas, and increased crop intensity. It is essential that conditions for sustainable farming be taken into account to keep completed projects operational and avoid costly rehabilitations.

### **Irrigable Potential and Pace of Development**

10. Over the six Sahelian countries under consideration, the total land area irrigated from major rivers and their tributaries, according to water allocation models for cross-border watersheds, is currently 400,000 ha under total water management and 800,000 ha for all irrigation systems combined (including submerged areas). The various documents prepared on the scale of the major watersheds show that the area under total water management could be increased to more than 1.1 million ha, with 800,000 ha irrigated in the rainy season and 300,000 ha in the off-season. However, this would be limited to 800,000 ha unless several large storage projects are completed in the Niger and Volta basins.

11. There is also widespread potential for mobilizing runoff water (in lowlands and hillside reservoirs) as well as groundwater. A major effort is needed to understand and monitor the resource at the local level and develop this potential as part of the integrated management of surface and groundwater resources.

12. To realize this potential, the six countries have investment portfolios covering around 340,000 ha under small-scale irrigation and 180,000 ha under large-scale irrigation, for a total of

520,000 ha and a total investment estimated at US\$4 billion. This program could make it possible to reach the objective of 1 million ha. However, with regard to cost, the projects for which funding has been obtained represent only one-quarter of those surveyed, which shows the scale of the funding needs remaining to be covered.

13. An analysis of the pace at which developed areas are advancing shows that on average, approximately 40,000 ha are coming under irrigation each year. At this rate, it will take about fifteen years to reach 1 million ha. Member states must therefore reinforce their investment portfolio for the development of private irrigation systems to achieve this objective sooner.

### **Implementation Approach**

14. The Strategic Framework rests on three pillars: diversity, integration, and commitment.

- (a) **Diversity: From Irrigation to Irrigations.** The initiative supports the development of programs that take into account all types of irrigated systems to best respond to the needs of producers and to the opportunities presented by each region. Water efficiency is optimized when it is supported by the diversity of compatible irrigation systems within a given region while taking into account the various uses in an integrated approach to managing the resource.
- (b) **Integration: From Land Development to Production System.** The initiative supports taking into account production systems and their integration into networks so as to make development serve producers and not the other way around. For this purpose, irrigators need to be provided with a secure production environment that includes land rights, water rights, water service quality and predictability, subsector organization, and agricultural loans. AWM projects must be designed to evolve so that they can be adapted to producers' needs and market dynamics.
- (c) **Commitment: From Concertation to Commitment by all Actors.** The initiative calls on actors at all levels to commit to building shared solutions aimed at developing effective and viable irrigation. The active commitment of local communities and populations in the planning process must be ensured. To this end, modern KM tools will be made available to actors.

15. The Strategic Framework makes use of the 'solution' concept in putting performing irrigation systems in place for the long term. Solutions combine an institutional model, adapted infrastructures and technologies, a funding mechanism, and a training program for actors to meet the needs of a given type of irrigation system. They are implemented as part of a participatory and contractual approach ensuring responsible commitment by the parties along with methods for monitoring their compliance with their commitments.

16. The key characteristics of these solutions are as follows:

- (a) Sustainable irrigation management requires increased decentralization to put producers in a position of responsibility (through management transfer) while ensuring professional support from operators trained for that purpose.

- (b) Ensuring quality technical studies and works and making available more reliable equipment are conditions for permanent and well-maintained irrigation systems.
- (c) The problems associated with irrigated land and the methods designed to anticipate and manage these are well known. Implementing these methods in the field on a large scale involves a vast lengthy, but unavoidable construction project. Successfully allocating land for new collective public projects is the first priority in this area.
- (d) Capacity building will improve the availability and quality of the necessary services offered for implementing the solutions identified. Ordering parties must ensure that so-called 'soft' support activities are adequately taken into account.
- (e) Funding mechanisms must be adapted to each type of irrigated system while taking into account the various levels of borrowing requirements involved in development and systems operation plans. Contributions can be made to project funding by the beneficiaries, public operators, or private investors depending on the appropriate mechanisms. Mobilizing private funding starts with better recovery of operating and maintenance costs. Many types of financial instruments can be used and combined to promote private fundraising by means of proper structuring of agricultural financing and related subsectors.

### **Regional Dimension and Actor Commitment**

17. The similarity in issues and contexts among the various Sahelian countries argues for a pooling of the knowledge needed to formulate solutions for the regional plan. The six countries are therefore committed to adopting the Strategic Framework, collaborating in sharing experiences at the regional level, ensuring the harmonization of projects structured by type of irrigated system, and utilizing joint services whenever economies of scale can be achieved. It is expected that this collective effort will broaden the measures taken by each country to a regional scale and considerably enhance the sector's visibility. This commitment is supported by CILSS in its role as coordinator tasked with ensuring regional consistency and the sharing of knowledge and experience. It also benefits from the regional political support of WAEMU and ECOWAS and from the technical support and endorsement from organizations like Food and Agriculture Organization of the United Nations (FAO), International Water Management Institute (IWMI), West and Central Africa Irrigation and Drainage Association (ARID), and ROPPA.

18. The proposed regional platform will have no impact unless it results in a genuine mobilization of national and local actors around the approaches proposed in the Strategic Framework. That is why a commitment is needed from all actors so that these approaches can be specified in the field as they continue to be enhanced through a recurring process of innovation, training, and M&E. Synergizing all actors is the only way to truly make a change and improve the performance of irrigation systems in the Sahel.

## **Appendix 2: A New Regional Approach: The Irrigation Solutions**

### **THE CONCEPT OF IRRIGATION SOLUTIONS**

1. The project will be based on the concept of solutions, which stems from the fact that irrigation schemes are complex systems that need to be deeply embedded in the environmental, social, and commercial and production environment locally to yield their benefits in the long run. Irrigation, while overcoming the hydrological risk, requires drastic changes in farmers' behaviors and exposes them to new risks, such as the risks of not being able to collectively manage the scheme, and of not being able to sell their surplus production at a sufficiently high price. This is particularly the case in areas, where it is still not very developed like West Africa. In such a context and to perform in the long run, irrigation development requires a whole set of ingredients surpassing mere infrastructure development. The major factors contributing to successful irrigation solutions include (a) a sound organizational structure with a clear delineation of the roles and responsibilities of the different actors including all aspects; (b) a robust and cost effective technical irrigation system with proper O&M; (c) a well-established and reliable financing system for both investment and O&M; and (d) an effective skill acquisition mechanism adapted to the evolving needs. These four dimensions can be fully functional and maintained only in a transparent, stable, and incentivizing institutional framework for agriculture, water, and land management.

2. Solutions are context-specific and can be informed by good (and bad) practices and successful innovations from other similar areas. They need to be adapted to the constraints and potentialities with regard to water resources availability and variability, land tenure systems, socioeconomic and cultural context, market demand, and consumer behavior. Careful planning taking into account market and natural resources boundaries at the appropriate scale has to support the development of solutions in any given area. Feedback mechanisms from M&E activities are fundamental for this planning.

3. The Sahel countries have a lot of their economic, agro-ecological, and social characteristics in common and present extensive potential for economies of scale and knowledge transfers. However, a coordination mechanism is imperative to activate and sustain economies of scale and knowledge transfers and surmount political barriers. Such a role will be played by the CILSS, which will be implementing the regional activities of the project. The project will institutionalize the solutions commonly developed by the six countries to ensure the capitalization of knowledge gained and to guarantee the sustainability of the approach beyond the project life.

**Table 2.9. Contents of an Irrigation Solution**

<b>Dimension</b>	<b>Contents (to Be Adjusted for Each Type of Irrigation)</b>
Institutional framework and governance: a sound organizational structure with a clear delineation of the roles and responsibilities of the different actors including all aspects	<p>Solution Development Manual (including multimedia tools) describing for both development and management of the system:</p> <ul style="list-style-type: none"> <li>• institutional architecture and organizational relationships between stakeholders (institutions, service providers, suppliers, and contractors),</li> <li>• detailed description of the role of each stakeholder,</li> <li>• performance incentives and flow of funds,</li> <li>• standard bylaws, contracts, and agreements, and</li> <li>• approach to revitalization of degraded systems</li> </ul> <p>Land allocation process and land tenure management policy  Water allocation process and water rights policy  Enforcement policy and grievance mechanism</p>
Engineering design, equipment, and technologies: a robust and cost effective technical irrigation system with proper O&M	<p>Standard ToR for engineering designs and works supervision  Design and construction guidelines, norms, and standards  Equipment specifications and quality labels  O&amp;M Manual (including multimedia tools)  Costs (unit rate sheets and cost monitoring mechanism)  Quality control mechanisms</p>
Financial mechanism for investment and for O&M: a well-established and reliable financing system for both investment and O&M	<p>Business development guidelines including</p> <ul style="list-style-type: none"> <li>• assessment of scheme development and management cost,</li> <li>• Model Business Plan and Financing Plan, covering all aspects from irrigation to production and marketing</li> <li>• market information and guidelines for marketing studies and market access, and</li> <li>• production system analysis</li> </ul> <p>Subsidy rules and rates and application forms/guidelines (including for tax exemption if applicable)  Information/facilitation material for financing institutions  Guidelines for Scheme Administration Manual including cost recovery  Updated inventory of funding sources (projects, programs, and so on)</p>
Capacity-building program: an effective skill acquisition mechanism adapted to the evolving needs	<p>Information and training manuals for all stakeholders involved  Training program for all stakeholders involved (women and men)  List of eligible service providers trained/experienced with the solution (so called OSIs)  Assessment of training capacities and list of certified training providers  Training costs to be included in scheme development and management costs</p>

## **STATUS OF IRRIGATION SOLUTIONS IN THE SIX COUNTRIES**

4. The added value of the regional approach of SIIP will be the identification, generation, and regional dissemination of shared irrigation solutions resulting in economies of scale. All selected investments in irrigation solutions financed under the project shall be based on innovative or first-best irrigation solutions, so as to serve as examples to farmers in other SIIP countries. Each country has developed over the years its own, often incomplete, irrigation solutions of which some can be considered as ‘scalable solutions’ ready to be promoted in other countries, while others are rather best practices that do not yet cover the four essential dimensions of an irrigation solution. The existing solutions and best practices will be screened, fine-tuned, adapted and promoted in other countries. Table 2.10 summarizes some of these best practices that were identified by the participating countries at the design stage of the SIIP.

**Table 2.10. Best Practices Identified by Country**

Country	Best Practices
<b>Burkina Faso</b>	<ul style="list-style-type: none"> <li>• Supplementary irrigation from small basin (Type 2)</li> <li>• Lowland development and management (Type 1)</li> <li>• Land tenure issues for irrigation (Types 1 to 3)</li> </ul>
<b>Chad</b>	<ul style="list-style-type: none"> <li>• Small schemes and manual drilling (Types 1 and 2)</li> <li>• Development of spate irrigation (Type 1)</li> </ul>
<b>Mali</b>	<ul style="list-style-type: none"> <li>• Small-scale irrigation national program (PNIP) (Types 1 and 3)</li> <li>• Village irrigation schemes (Type 3)</li> <li>• Lowland development and management (Type 1)</li> <li>• <i>Faranfasi so</i> service centers to farmers (support services on Type 4 scheme)</li> <li>• <i>Contrat plan</i> State - Office du Niger - Farmers' organizations (Type 4)</li> </ul>
<b>Mauritania</b>	<ul style="list-style-type: none"> <li>• VISA irrigation system (Types 2 and 3), with need to improve financial mechanism</li> <li>• Flood recession cropping and small ponds (Type 1)</li> </ul>
<b>Niger</b>	<ul style="list-style-type: none"> <li>• Small-scale private irrigation schemes (Type 2)</li> <li>• Semicalifornian network (Type 2)</li> <li>• <i>Programme de Réhabilitation des Périmètres Irrigués Publics</i> (PRPIP) approach for rehabilitating large-scale schemes (Type 4)</li> <li>• Galmi onion production and value chain organization (support services on Type 2 schemes)</li> <li>• Women's cooperatives in Agadez region (Type 3)</li> <li>• Best farming practices for rice (Types 3 and 4)</li> </ul>
<b>Senegal</b>	<ul style="list-style-type: none"> <li>• Irrigated domain charter (water resources management and planning)</li> <li>• POAS approach for concerted land development and planning (land management and planning)</li> <li>• State - farmers' organization concertation processes (irrigation development planning)</li> <li>• Sharing responsibilities between <i>Société d'Aménagement et d'Exploitation du Delta</i> (Delta Development and Management Company, SAED) and farmers' cooperatives in the Senegal valley (Type 4)</li> <li>• SAED as one of the SAGI (Type 4)</li> <li>• <i>Centres de Gestion et d'Économie Rurale</i> (CGER) service centers to farmers and <i>Centre Interprofessionnel pour la Formation aux Métiers de l'Agriculture</i> (CIFA) training centers (support services)</li> <li>• Maintenance funds of irrigation schemes: FOMAED, FOMIIG, FOMPI, FOMUR (Type 4)<sup>63</sup></li> <li>• <i>Domaines agricoles communautaires</i> (DAC), Irrigated farms for young farmers (Type 3)</li> <li>• <i>Agence Nationale d'Insertion et de Développement Agricole</i> (ANIDA), individual irrigated farms using underground water resources (Type 2)</li> <li>• Village irrigation schemes (Type 3)</li> </ul>

Note: CGER = *Centre de Gestion et d'Économie Rurale* (Rural Management and Economic Advisory Center).

5. All six participating countries have prioritized during project preparation the best practices they would like to adopt from the other countries (see Table 2.11). The SIIP will enhance sharing of experiences between countries so that these experiences will be further disseminated.

<sup>63</sup> FOMAED: *Fonds de Maintenance des Adducteurs et Emissaires de Drainage*; FOMIIG: *Fonds de Maintenance des Infrastructures d'Intérêt Général*; FOMPI: *Fonds de Maintenance des Périmètres Irrigués*; FOMUR: *Fond Mutuel de Renouvellement des stations de pompage et équipement hydromécanique*.



**Table 2.11. Requests for Specific Best Practices by Country**

Country	Interested in the Following Solutions
<b>Burkina Faso</b>	<ul style="list-style-type: none"> <li>• Service centers to farmers (<i>Faranfasi so</i> and CGER) - from Mali and Senegal</li> </ul>
<b>Chad</b>	<ul style="list-style-type: none"> <li>• Experience of farmers' organizations - from Mali, Senegal, Burkina Faso, and Niger</li> <li>• Service centers to farmers (<i>Faranfasi so</i> and CGER) - from Mali and Burkina Faso</li> <li>• Drip irrigation - from various pilot experiences</li> <li>• Improved water management in flood recession cropping - from Mali and Mauritania</li> </ul>
<b>Mali</b>	<ul style="list-style-type: none"> <li>• Small-scale private irrigation development - from Niger</li> </ul>
<b>Mauritania</b>	<ul style="list-style-type: none"> <li>• PPP experience (sugar production) - from Senegal and Mali</li> <li>• Organization of large-scale schemes (Type 4) - from Senegal and Mali</li> <li>• Structuration of producers organizations notably for vegetable exports- from Senegal, Mali and others</li> <li>• Farmer Service Centers – from Senegal and Mali</li> </ul>
<b>Niger</b>	<ul style="list-style-type: none"> <li>• How to improve land tenure access for women? - from Mali</li> <li>• Complementary irrigation from small basins - from Burkina Faso</li> <li>• Experience of cooperatives managing large-scale schemes (Type 4) - from Senegal</li> </ul>
<b>Senegal</b>	<ul style="list-style-type: none"> <li>• Improved water management in flood recession cropping - from Mali and Mauritania</li> </ul>

6. When indispensable elements of solutions are not yet available, pilot projects and action research can be undertaken. Priorities identified by each country are listed below (Table 2.12). Among these, elaborating solutions for solar pumping is a priority for all countries, as well as developing financial mechanisms to support Type 2 private irrigation schemes.

**Table 2.12. Priorities for Pilot Projects and Applied Research by Country**

Country	Pilot Projects and Applied Research Required to Elaborate Solutions
<b>Burkina Faso</b>	<ul style="list-style-type: none"> <li>• Solar pumping and drip irrigation</li> <li>• Developing a medium scheme based on a comprehensive package of solutions</li> </ul>
<b>Chad</b>	<ul style="list-style-type: none"> <li>• Rehabilitation of Type 3 village irrigation schemes</li> <li>• Solar pumping</li> </ul>
<b>Mali</b>	<ul style="list-style-type: none"> <li>• PPP (Type 5)</li> <li>• Solar pumping and automated irrigation</li> <li>• Financial mechanisms to support Type 2 (private irrigation) development</li> </ul>
<b>Mauritania</b>	<ul style="list-style-type: none"> <li>• Improved VISA schemes (Type 2), organizing the value chain</li> <li>• Solar pumping</li> <li>• Financial mechanisms to support Type 2 (private irrigation) development</li> </ul>
<b>Niger</b>	<ul style="list-style-type: none"> <li>• Solar pumping</li> <li>• Articulation of Niger Small-Scale Irrigation Strategy (<i>Stratégie de la Petite Irrigation au Niger</i>)-FISAN</li> <li>• Complementary irrigation from small reservoirs</li> <li>• Financial mechanisms to support Type 2 (private irrigation) development</li> </ul>
<b>Senegal</b>	<ul style="list-style-type: none"> <li>• Irrigation from ground water including with solar pumping</li> <li>• Applied research on drainage and soil salinity</li> <li>• Financial mechanisms to support Type 2 (private irrigation) development</li> </ul>

7. At appraisal stage the countries have pre-identified 164 schemes that could potentially be developed during the first 18 months of the project.

### Appendix 3: Project Implementation Areas

1. The project aims at implementing improved solutions at a scale sufficient to demonstrate their competitiveness and their expansion potential but remaining within limits set to avoid any substantial harmful environmental impacts. The scale shall however allow establishing a wide enough client base to ensure the viability of various professional services (for maintenance and so on) that will be established and strengthened to operate the schemes. These considerations will be incorporated in the local development plans to be implemented under Component A before any investment takes place. These plans will notably be based on necessary due diligence regarding sustainable levels of surface water and groundwater abstraction at the subcatchment level.

2. The SIIP will favor clustering of interventions, in two ways: (a) geographic concentration combined with a phased expansion approach of the project and (b) combining different solutions of irrigation schemes. Geographic concentration will be achieved by starting initially with two—maximum three—zones of limited scale eligible for investment during the first year of the project and progressively expanding these zones and opening new ones as progress is made in the initial ones. The expansion of the PIAs (or *Zones d’Intervention du Projet*) in each country will be decided during an annual review of project progress. Investments in the PIAs will combine various solutions corresponding to the different types of irrigation systems. For instance, groundwater-based small-scale vegetable gardens for women (Type 3) will be developed in combination with lowlands schemes or *bas-fonds* (Type 1) that help increase the groundwater recharge.<sup>64</sup> The PIA-level activities will also combine the development of new schemes with the revitalization or modernization of existing ones with a view to improve the performance of irrigated agriculture in a holistic manner. Both existing and new schemes will contribute to the viability of professional services that will be established.

**Table 2.13. Project Implementation Areas per Country**

Country	Project Implementation Area
Burkina Faso	Four administrative regions: Boucle du Mouhoun, Nord, Centre, and Centre-Ouest plus the provinces of Houet and Tuy for SOFITEX subproject
Chad	Eastern region: Ouaddaï, Wadi Fira, and Sila Central region: Guera and Salamat Western region: Hadjer Lamis and Chari Baguirmi Southern region: Mayo Kebbi East and West, Tandjile, Logone Oriental and Occidental
Mali	Koulikoro region: cercles Koulikoro and Dioïla Ségou region: cercles Ségou and Barouéli Office du Niger area
Mauritania	Senegal River valley: Trarza, Brakna West, Gorgol, Guidimaka Other: Adrar, Tagânt, Hodh El Gharbi, Hodh ech Chargui, Assaba
Niger	Four administrative regions: Agadez, Tahoua, Dosso and Tillabéri
Senegal	Senegal River valley Casamance region: Kolda Sédhiou Groundnut basin central area

<sup>64</sup> In all cases, a gender analysis should be done to identify and formulate the best approach to be used, depending on the local reality.

## Appendix 4: Important Cross-cutting Dimensions of the SIIP

### PLANNING FOR IRRIGATION DEVELOPMENT

1. Even the best irrigation solution will not be successfully implemented unless it fits within the social context and accommodates the needs of the local production systems. There are numerous examples of small and large irrigation systems that were built and never used because the labor requirements were competing with other businesses and the economic assessment had not taken into account the labor opportunity cost. Other factors of failure include unsecured land rights and various types of conflict over land use, inappropriate assessment of water resources availability, and insufficient attention given to market outlets and to the various capacity building requirements. All these issues call for adequate, holistic development planning at local as well as subnational and national levels.
2. Although complex and time consuming, the planning process can be much improved at a reasonable cost if the various stakeholders implement their respective part in a coordinated manner. In particular, such planning instruments as management of land use and water resources, and coordination of local development generally exist, but they need to be applied before a project comes to identify a new scheme to finance. Capacity building activities need to start at this very planning stage. A proper assessment of the local production systems and market outlets needs to inform the economic viability of the proposed investments.
3. The SIIP will actively promote an informed local planning process and base the identification of irrigation development opportunities on the results of this process. Depending on the specific situation in each country, the project will use existing planning tools (committees, plans, and so on) or create new ones. The situation by country is summarized in the Table 2.14.
4. **Land use management.** Among the six countries, the legal framework differ in the way customary land tenure rights are recognized. The six countries are at different stages in their land reform process. The approach needs to be differentiated based on the situation met in each country.
  - (a) In Burkina Faso, Mali, Niger, and Senegal the local land management instruments need to be put to use and strengthened.<sup>65</sup>
  - (b) In Chad and Mauritania, which are still at an early stage of their land policy process, the reform process and the establishment of local instruments can be supported with communication and dissemination activities and exchanges with the more advanced countries.
5. On irrigated land developed by the States (Type 4), the public nature of water resources (*domanialité de l'eau*) and of the associated infrastructure is usually reflected in the land ownership: most of the land on large scale irrigation schemes belong to the state, and land use rights are subject to the effective use of the land for the purpose of irrigated agriculture production.

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<sup>65</sup> In Burkina Faso the Local land committees and the Land charter are legal mechanisms since the land reform in 2009. In Mali, Land local commissions exist since 2009 with some positive experiences (Sikasso region). In Niger, the Rural Code recognizes traditonnal ownership since 1993, managed by the local land committee (COFO Commission foncière). In Senegal, local land committee have been managing land in rural areas since 1964.

6. There are specific challenges associated with this approach: lack of participation from local communities in issues related to land management, risk of land grabbing and urban elite capture, insufficient level of tenure security, lack of opportunities for successful farmers to expand their farm in the absence of a formal land market. These issues have often been compensated by the creation of informal land markets which are necessary to provide some level of flexibility in the management of land resources, but which result in a complete lack of transparency. Based on the land tenure study from the Task Force<sup>66</sup> and the related action plan for SAGI<sup>67</sup> carried in partnership with AFD, there are significant opportunities to improve the situation by strengthening the land allocation process at design stage, adapting land use rights (*cahiers des charges*), and recognizing local practices that provide the needed flexibility. A land assessment framework (or guidelines) was established as a result of this work which now needs to be operationalized.

7. **Water resources management.** Burkina Faso, Mali, Niger and Senegal recently adopted major reforms in water resources management to align their institutions with IWRM principles. Inter-ministerial agencies/committees are in charge of the coordination of different sectoral ministries. Technical responsibilities for water management are decentralized from national level to local levels through national, regional and local committees in charge of coordinating their activities with water basin agencies. Also, these countries adopted master plans for water resources management. However, these institutions suffer from several deficiencies including low participation of water users in decision making and low involvement of local institutions in water related activities. In Mauritania and Chad, institutional reforms for integrated water resources management are still to materialize, resulting in unclear mandates and institutional gaps over water resources management.

8. **Local development planning.** Even though the level of political empowerment varies from one country to another, all Sahelian countries have developed policies and methodologies to allow communities to prepare and approve local / communal development plans. They all share in common the following steps: (a) participatory spatial, socio-economic, and institutional diagnostic; (b) a strategic vision and an action plan; (d) a set of prioritized and quantified development interventions; and (e) an approach to mobilize the resources. These plans underline the importance of local ownership and emphasize the need to make local authorities “more responsible” for identifying and selecting intervention sites. They also underline the importance of estimating the “opportunity for development” based not just on physical criteria (land use and quality, water, etc.) but also on social and economic parameters. However, these policies have not been applied consistently and the necessary resources are too often insufficient to provide sufficient analytical underpinning to these plans, and to monitor their implementation. Water resources management and land use planning both require a specific process as described above. When it comes to agricultural development, the local entities responsible for the planning process are often ill-equipped to discuss and resolve issues such as the integration of new irrigation practices in the existing production systems and the constraints thereof. Agricultural development needs to be supported by a business development approach which in turn can feed in a local development plan. There is a need to support the process of upgrading the existing plans and in

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<sup>66</sup> *Initiative pour l'irrigation au Sahel. La problématique de l'accès au foncier et de sa sécurisation.* Peter Hochet, Saadou Aladoua, Mamadou Goita, Ndiaware Kane, Mathias Koffi, Saidou Sanou, Yombatina Sitack, 92p.

<sup>67</sup> *Plan d'actions pour le renforcement des capacités des Sociétés d'Aménagement et de Gestion de l'Irrigation (SAGI)*

some cases establishing them from scratch. In doing so, it will be important to align the development of productive assets like irrigation schemes with that of other infrastructures, like access roads and storage facilities, and of accompanying services like rural finance and so on. This will ensure that irrigation is not developed in a vacuum and fits into a broader development plan endorsed by the community.

**Table 2.14. Existing Instruments for Local Development Planning in the Six Countries**

<b>Country</b>	<b>Land Use Planning and Land Tenure Management</b>	<b>Water Resources Management</b>	<b>Local Development Planning and Coordination</b>
<b>Burkina Faso</b>	<ul style="list-style-type: none"> <li>• Rural Land Services (<i>Services Fonciers Ruraux</i>)</li> <li>• Land charter (<i>Charte Foncière</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Local Water Committee (<i>Comité Local de l'Eau</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• National Consultative Framework for Irrigation Subsector (<i>Cadre de Concertation National des Acteurs du Sous-secteur de l'Irrigation</i>)</li> </ul>
<b>Chad</b>	<ul style="list-style-type: none"> <li>• Land management consultative framework (<i>Cadre Consultatif de Gestion des terres</i>)</li> <li>• Prior land diagnoses for each irrigation scheme</li> </ul>	<ul style="list-style-type: none"> <li>• Water Management Committee (<i>Comité de Gestion de l'Eau</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• National Intersectoral Water Coordination (<i>Coordination Nationale Intersectorielle de l'Eau</i>)</li> </ul>
<b>Mali</b>	<ul style="list-style-type: none"> <li>• Local land committee (<i>Commissions Foncière Locales</i>)</li> <li>• Traditional ownership deeds</li> </ul>	<ul style="list-style-type: none"> <li>• Local Water Committee (<i>Comité Local de l'Eau</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Regional and Local Development Coordination and Support Committees (called <i>CROCSAD</i> and <i>CLOCSAD</i>)</li> <li>• Local Plan for Social, Economic and Cultural Development (<i>PDSEC</i>)</li> <li>• Irrigation Technical Committee (<i>Comité Technique PNIP</i>)</li> </ul>
<b>Mauritania</b>	<ul style="list-style-type: none"> <li>• Prior land diagnoses for each irrigation scheme</li> </ul>	<ul style="list-style-type: none"> <li>• National Center for Water Resources (<i>Centre National des Ressources en Eau</i>)</li> <li>• Authority for Multisectorial Regulation (<i>Autorité de Régulation Multisectorielle</i>)</li> </ul>	
<b>Niger</b>	<ul style="list-style-type: none"> <li>• Local land committee (<i>Commission Foncière Communale</i>)</li> <li>• Traditional ownership deeds (<i>attestation de propriété</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Water User Organisations (<i>Organisations des Usagers de l'Eau</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Regional and Communal Consultative Framework (<i>Cadres de Concertation Régional et Communal</i>)</li> <li>• Local Development Plans with support from ANFICT (fund for local authorities)</li> </ul>
<b>Senegal</b>	<ul style="list-style-type: none"> <li>• Local Land Committee managing land attribution (<i>affectation</i>) on national domain</li> </ul>	<ul style="list-style-type: none"> <li>• Local Water Commission (<i>Commission Locale de l'Eau</i>)</li> <li>• Borehole Water User Associations (<i>Association d'Usagers de Forages</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Local development plans and associated local investment plan</li> </ul>

## **APPROACH TO KNOWLEDGE MANAGEMENT AND CAPACITY BUILDING**

1. The project will put a lot of emphasis on KM tools to enable the intensive learning and best practice based solutions dimension of the project, as well as build a platform for continued knowledge generation, capturing and dissemination. This will include the creation of the Information and KM system that would become a repository of curated knowledge and personalized planning and data generation tools for usage by the Sahelian countries and CILSS for improved decision making and implementation monitoring.
2. The project's capacity building approach will aim at demonstrating irrigation solutions and institutionalizing these solutions in order to scale up their uptake. Technical training capacities do exist in local training institutes, both for graduate and vocational training, but they tend to be fragmented and inconsistently reflected in coherent training plans. The training resources are often scattered with little or no synergy between projects and programs and duplication of training activities. Hence the project will establish quality and sustainable training schemes in the six countries by developing training modules, materials and tools using local training resources before moving to national and then regional resources. A strong capacity building program at the local level will improve service delivery and render expected outcomes of future project interventions more sustainably. The regional dimension of the project will help to: (i) co-build with the countries and support them in the development of national training plans, using technical assistance and training of trainers; (ii) manage some trainings with key stakeholders; and (iii) set up a KM system to disseminate the information and training tools. A dedicated "training development" technical assistance will be contracted by CILSS to this effect and work closely with AGRHYMET on this subject.
3. The project design incorporates the findings of the 'ICT for irrigation' inventories and roundtables commissioned by the World Bank during project preparation. In the six countries, inventories and an assessment were carried out to identify viable ICT solutions that have potential for regional scaling up (if not yet the case): (i) stakeholders' data-information-communication needs in the irrigation sector and (ii) tools in use in the countries. This activity confirms that there is scope to include relevant and affordable ICT tools that can be sustainable and adapted to the local context. For example, mobile phones can be used for data gathering (such as social-economic surveys or water management monitoring), and multimedia (peer-to-peer video) can enable sharing of best practices.

## **SUSTAINABLE FINANCING MECHANISMS FOR THE DEVELOPMENT OF IRRIGATION SCHEMES**

4. The project will facilitate the establishment (or adaptation) and spread among producers (men and women) of financial services that address the constraints they are usually faced with. The main constraints are (a) the unavailability of adapted financial products, in particular to finance irrigation equipment such as pumps, manual boreholes; solar panels; (b) the limited knowledge of producers (men/women/youth) on rural financial services, their products, and requirements (conditions and credit terms). The project will promote the direct interaction between farmers and financing institutions, with a view to reduce the share of the traditional direct subsidy model where farmers receive a grant covering 80 percent to 90 percent of the system cost (Type 2), or 100 percent for collective irrigation (Types 1, 3, and 4), which is still the most common.

5. At the regional level, the project through the CILSS and its SPs will (a) provide methodological support to participating countries in the design of financing mechanisms in line with their targeted irrigation systems; (b) provide technical assistance on demand of the participating countries to implement the financial instruments to be promoted in the irrigation solutions; (c) explore the opportunities to build on existing experiences of ICTs-supported financing systems; (d) develop a partnership framework to rule the business relationship with rural financial institutions; and (e) organize capitalization and knowledge sharing workshops on best practices in the financing of irrigated agriculture. The project through the CILSS will also make an inventory of the available services with regard to insurances for farmers to cover production and market risks (diseases, climate hazards, crop storage, and so on).
6. At the level of the countries, the project approach will build on existing facilities:
- (a) In Mali, the project will partner with the refinancing agency recently established with the support of IFAD to provide stable lending resources to rural microfinance institutions (RMIs) for Component B subprojects. Because of this facility, the RMIs are developing medium-term loan products suitable to address the needs of the producers with respect to equipment for production and processing. Similar support is foreseen in Senegal.
  - (b) In Niger, the project will partner with the FISAN facility to provide the working capital for inputs. The partnership will include the RMIs that will be selected under relevant criteria regarding their portfolio performance on rural areas.
  - (c) In Mauritania and Chad, the project will (i) carry out an inventory of the supply of rural financial services with a focus on medium-term credit; (ii) support the design of new financial products based on best regional practices and conduct a pilot test; and (iii) assess the pilot results and analyze the feasibility of scaling up.
  - (d) In Burkina Faso the project will focus on the financial education of the beneficiaries and their linking with the RMIs operating in the project targeted areas.

## **GENDER AND YOUTH**

7. Women make up the largest share of the agricultural workforce (62 percent), and while they are often the key stakeholders involved in value chains development (e.g. production of parboiled rice, rice marketing, vegetable marketing, etc.) and at times the first irrigators (e.g. on vegetable gardens), their situation in the irrigation sector is known to be difficult, particularly when it comes to access to land, information, and finance. Irrigated agriculture represents a very important opportunity for women, whereby access to irrigated land can help them develop income generating activities and improve the nutritional quality of the family meals.

8. The project is expected to promote gender inclusive approaches to agricultural development, capacity building activities, local development planning processes. The project will ensure that women are fully consulted in discussions on arrangements for water management and land distribution, through social mobilization practices that ensure high levels of their participation, as well as their involvement in water user organizations

9. The situation of youth in the irrigation sector is also difficult for various reasons. Youngsters who regarded farming as a type of last resort source of income without much prospects now see it

as a potentially strong source of rewarding business. For the very high number of rural young men and women entering the labor market now and in future decades, irrigated agriculture or the associated activities (agroprocessing, services to irrigation, transport...) notably during the dry season, during which no rainfed crops are cultivated, is a central means of providing jobs and incomes. There is a unique niche for the youth to get engaged in various aspects of farming management, notably through the use of ICTs, for instance, to obtain the best market prices, keep records, find crops in high demand, get information on pest and disease control, get access to new farming practices and agricultural/irrigation technologies, get access to financing products, communicate with other farmers, and raise awareness.



## Appendix 5: Regional Integration Criteria

1. This annex summarizes the rationale for regional IDA financing for the Sahel Irrigation Initiative Project. Regional IDA projects are initiatives:

- a. That involve three or more countries, all of which need to participate for the project's objectives to be achievable (at least one of which is an IDA country). The required minimum number of countries is reduced from three to two if at least one fragile country participates in the regional project;
- b. Whose benefits spill over country boundaries (e.g., generate positive externalities or mitigate negative ones across countries);
- c. Where there is clear evidence of country or regional ownership (e.g., by ECOWAS or SADC) which demonstrates commitment of the majority of participating countries; and
- d. That provides a platform for a high level of policy harmonization between countries and is part of a well-developed and broadly-supported regional strategy.

**Table 2.15. Application of Regional IDA criteria to SIIP**

Criteria	Justification
i	<ul style="list-style-type: none"> <li>• <b>Six countries.</b> There are six countries participating in the Sahel Irrigation Initiative: Burkina Faso, Chad, Mali, Mauritania, Niger and Senegal..</li> </ul>
ii	<ul style="list-style-type: none"> <li>• <b>Food security.</b> Food security will be improved across the six countries, providing stability and contributing to the broader security agenda notably in the two fragile countries, Chad and Mali. In addition, irrigation development plans will be established in a coordinated manner with a view to avoid bringing the same product at the same time on the same markets.</li> <li>• <b>Water resources.</b> The entire project area is included in transboundary basins. Irrigation development plans will be based on an assessment of shared water resources including surface water and groundwater and the project will contribute to a more efficient and productive use of scarce water resources. Moreover, environmental impact assessments will consider the regional dimension of the irrigation development plans, and Strategic Environmental Assessment will be conducted at regional level when relevant.</li> <li>• <b>Knowledge sharing.</b> Irrigation development plans will be based on “solutions” designed in common by the six countries for economies of scale. Knowledge management will be boosted by sharing KM and M&amp;E tools and regional dissemination of research activities.</li> <li>• <b>Advocacy and governance.</b> Fund raising will be done more efficiently at regional level. Institutional benchmarking will contribute to facilitate the adoption of reforms in the irrigation sector.</li> </ul>
iii	<ul style="list-style-type: none"> <li>• <b>Country ownership.</b> Commitment from the six countries was translated in the Dakar Declaration and in the follow up contributions from the six countries to the work of the Task Force, including through the nomination of National Focal Points and hiring of National Consultants.</li> <li>• <b>Regional ownership</b> is strongly materialized in the coordination role taken by CILSS and the direct involvement and support received from CILSS Executive Secretary and staff. Besides, ECOWAS and WAEMU are also supporting the</li> </ul>

	<p>process through their regular involvement in the Task Force and the inputs they provided.</p> <ul style="list-style-type: none"> <li>• <b>Stakeholders engagement.</b> A similar level of engagement was demonstrated by the various stakeholders member of the Task Force who have contributed freely their time and repeatedly traveled to the regional Task Force meetings at their own cost.</li> </ul>
iv	<ul style="list-style-type: none"> <li>• The Dakar Declaration provides a platform for a high level of policy harmonization between countries.</li> <li>• The Declaration has been translated into a strategic framework and global action plan prepared by the Task Force set after the Dakar Forum, which will form a well-developed and broadly-supported regional strategy (see appendix 1).</li> <li>• Key services will be delivered by the regional institution to its member countries and sustainable financing mechanisms be developed to ensure their long term viability.</li> <li>• The Sahel Irrigation Initiative is embedded into the AGIR platform for resilience in Sahel under which many IFIs are now aligning their effort to support resilience in Sahel including European Union (EU), African Development Bank (AfDB), Islamic Development Bank (IsDB) and several bilateral donors.</li> <li>• CILSS has been supporting the regional agenda on food security and resilience for the past 40 years by providing services to its member countries.</li> </ul>

2. The specific investments proposed for regional IDA financing demonstrate clear externalities across countries for each component.

**Table 2.16. Externalities across countries for each project component**

Component	Externalities
A	<ul style="list-style-type: none"> <li>• Institutional strengthening: countries will learn from each other about what institutional model works; political momentum will be maintained through emulation among the countries.</li> <li>• Coordinated planning will help manage the regional impacts of irrigation development and bring commonality.</li> </ul>
B	<ul style="list-style-type: none"> <li>• Studies will be used for joint advocacy work to leverage funding.</li> <li>• Investment activities will be used for learning by doing and to apply capacity building and institutional improvements from the other two components.</li> <li>• Irrigation technologies and associated services: standardization and other activities will be conducted at regional level in order to increase the market size and attract the interest of private equipment suppliers</li> <li>• Countries will focus their effort in a first instance on few selected investment solutions which will then benefit other countries thus ensuring integration of the solutions.</li> </ul>
C	<ul style="list-style-type: none"> <li>• Capacity needs will be assessed at regional level and training program will optimize the use of specialized training institutes across countries.</li> <li>• Knowledge management will be extended at regional level.</li> <li>• Quality enhancement services will be shared among countries.</li> </ul>

## Annex 3: Implementation Arrangements

### WEST AFRICA: Sahel Irrigation Initiative Support Project

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## **Project Institutional and Implementation Arrangements**

1. The SIIP has been prepared by national governments in coordination with the CILSS.<sup>68</sup> At the outset of the Dakar Forum, a Task Force on Irrigation of the six countries and international and regional partners was established to produce a Strategic Framework and an action plan aiming at achieving the Dakar Declaration goals.<sup>69</sup> The CILSS was mandated by the countries to coordinate this work and ensure the linkages with ECOWAS and WAEMU regional policies (plus Chad and Mauritania).
2. The SIIP will be funded through IDA with contributions from the six Governments and the beneficiaries. The project will support a regional approach to improve stakeholders' capacity and increase irrigated areas for the performance of irrigated systems in the six countries across the Sahel. This operation combines IDA funding for the CILSS and for countries to implement activities at the regional, national, and sub-national levels. Activities at these three levels complement each other according to the subsidiarity principle. Separate project FAs will be concluded with the CILSS and with the six participating countries, with funds disbursed directly through existing institutional structures.
3. SIIP implementation arrangements at regional and national levels will not support the establishment of new institutions but rely on and strengthen existing national institutions to enhance their implementation capacity and the institutionalization of the solution approach for irrigation development and management. This approach yields better institutional strengthening results.

## **Project Administration Mechanisms**

### ***REGIONAL IMPLEMENTATION - CILSS***

4. **The CILSS will be the overall program implementing agency and primarily responsible for regional coordination.** The project will be implemented under the oversight of the existing *Comité Régional des Programmes et Projets* (Regional Projects and Program Committee [CRP]). The CILSS will set up an RPCU for SIIP within the Executive Secretariat (SE-CILSS). The RPCU will be anchored at the PRA/ME, whose core functions include coordination of resource mobilization, regional programming and M&E services, regional capacity development and technical assistance, regional data generation, KM, and communication. The PRA/ME is also coordinating the regional partnership '*Coalition Mondiale pour l'Eau au Sahel*' (World Coalition for Water in Sahel) within which the 2iS fits.
5. **CILSS is eligible to receive regional IDA financing.** CILSS is a bona fide regional organization which has legal status and fiduciary capacity to receive grant funding and is already implementing a number of IDA-funded projects. CILSS is not eligible to receive an IDA credit because it has various sources of income apart from member States contributions, including project resources. The activities to be financed with the IDA grant are related to institutional cooperation

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<sup>68</sup> The CILSS includes the SE-CILSS in Ouagadougou, the AGRHYMET Regional Center in Niamey, and INSAH in Bamako.

<sup>69</sup> See P149507 files for Task Force outputs.

and the delivery of common services to the participating countries. Grant co-financing options have been explored but were not readily available.<sup>70</sup>

6. **The CILSS has benefited from two PPAs** which were used to hire specialist consultants on the various topics encompassed by the project (institutional development, irrigation, capacity building, social and environmental safeguards, M&E, and so on) and to finance the logistics of regional meetings and workshops, communication activities, and project administration.

7. **The CILSS** through its RPCU will coordinate and implement all the below listed tasks using the proceeds of the IDA grant:

- (a) coordinating the project annual planning process with the six countries to ensure the coherence between the regional and national levels activities, including capacity building plans;
- (b) monitoring the implementation of the entire project with a special focus on delays, problems, and bottlenecks (approval of progress and financial reports, decisions on follow-up activities presented) and on cross-cutting issues (gender);
- (c) making strategic decisions on implementation issues related to more than one country;
- (d) proposing updates to the regional project documents as need be to smoothen project implementation;
- (e) providing technical assistance to the countries on Components A and B through various SPs;
- (f) implementing KM activities including the administration of an information system, monitoring and evaluation functions, and regional and international networking;
- (g) establishing a communication strategy and implementing outreach activities for the project and for the irrigation sector as a whole;
- (h) overseeing audits (approval of the annual audit, overseeing follow-up on recommendations in the annual audit report presented by countries);
- (i) coordinating action research activities; and
- (j) administering a pool of high-level experts mobilized on a need basis and at countries' request to provide quality enhancement services for any irrigation project.

8. **A RTC** will be established by the SE-CILSS with representation from all countries to review project progress, contribute to the planning process, and discuss coordination issues. The RTC shall meet at least twice each Fiscal Year to undertake: (i) the review and approval of the draft Annual Work Plan and Budget (AWP&B); (ii) the assessment of Project progress against the current AWP&B and the approval of the semi-annual Project Reports; and (iii) the validation of any modification or update to the PIM. The RTC shall be chaired by the Recipient's Executive Secretary or his/her representative and shall be composed of, inter alia, the Regional Project Coordinator, the national project coordinators of each Participating Country, the permanent secretary of the CONACILSS of each Participating Country, representatives of ROPPA, and

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<sup>70</sup> AFD will be co-financing the Strategic Partner for irrigation Types 4 and 5 with a €1.5 million grant. CILSS will continue its fund raising effort throughout the project lifetime.

donors. Members of the existing Sahel Irrigation Initiative Task Force that helped design the project might be invited in this Committee.

9. **CILSS national committees** will be involved in project coordination to help make the link between national and regional levels. The permanent secretariats (*Secrétariat Permanent du Comité National du CILSS* -Permanent Secretariat for CILSS National Committee, SP-CONACILSS-) will monitor country-level activities, contribute to the national policy dialogue through advocacy and communication activities, and ensure consistency between various CILSS projects at the country level. Their involvement will help strengthen the overall monitoring of project results. In addition, CILSS will consider the creation of an international strategic advisory board to support its advocacy work.

10. The *Unité d'Appui au Management – Administration, Finance et Comptabilité* (Administrative Administration, Finance, and Accountability Management Support Unit, UAM-AFC) within the SE-CILSS will have the overall fiduciary responsibility for procurement and FM. Other administrative units will also support SIIP implementation with regard to human resources management (*Unité d'Appui au Management – Gestion des Ressources Humaines*, UAM-GRH), M&E and gender (UAM-SE-PVS-G<sup>71</sup>), and communication (UAM-CID<sup>72</sup>). Project staff will be hired to strengthen procurement and FM units (see procurement and FM sections below).

11. **The CILSS will also mobilize its technical centers, AGRHYMET and INSAH, to execute specific tasks delegated to them.** AGRHYMET will be responsible for information system administration, hydrological data management, support to water resources management, provision of satellite imagery based services to countries through collaboration with ongoing projects. INSAH will be responsible for KM platform administration and coordination and supervision of action research activities implemented by CILSS and the countries. The RPCU will work with SPs supporting the solutions improvement process and with others partners for the knowledge management and advocacy activities.

12. **Strategic Partners (SPs) will be contracted to provide technical assistance to the countries on specific tasks under the different project components.** Each of these “partners” are specialized in a cross-cutting thematic area or a type of irrigation. SPs are expected to add value to the project by building on their other ongoing programs in some or all of the six countries. The . The list of SP contracts and specific responsibilities assigned is provided in the following table.

**Table 3.1. List of SP contracts and Their Areas of Intervention**

<b>Partner</b>	<b>Specific Areas of Intervention</b>
SP Planning and Market Access	Component A: Support to planning and natural resources management improvement process (land and water) and related training; support to production systems analysis for improved access to market Component B: support to market access infrastructure and services
SP Irrigation Types 1 & 3	Component B: Support to Type 1 ( <i>bas-fonds</i> and flood recession schemes) and Type 3 (community based irrigation) solutions improvement process and related training

<sup>71</sup> M&E, Programming, Strategic Awareness, and Gender Support Unit

<sup>72</sup> Communication, Information, and Documentation Support Unit



Partner	Specific Areas of Intervention
SP Irrigation Type 2	Component B: Support to Type 2 ( <i>private smallholder irrigation</i> ) solutions improvement process and related training, with focus on irrigation technologies including solar pumping and on marketing strategies for equipment suppliers
SP Irrigation Types 4 & 5 COSTEA + CIRAD <sup>73</sup>	Component B: Support to Types 4 and 5 (large-scale irrigation public and PPP) solutions improvement process and related training, with focus on improvement of existing schemes. This SP will be co-financed by AFD.

13. The SPs’ main responsibility will be to train and support local entities in charge of implementing Component A planning activities and Component B irrigation solutions in the PIA. The SPs will prepare methodological documents and tools (including ICT tools, M&E and learning tools, and so on) and training material and implement a training-of-trainers program to ensure the scalability of the approach. They will progressively transfer their training skills to local training institutes, which will then be in a position to replicate the training sessions to reach more implementing entities. Training strategies detailing this approach will be prepared by the SPs during the first six months of their assignment, while pilot training sessions are conducted directly by the SPs with already identified national stakeholders and local operators for local development planning and irrigation solutions implementation. These strong linkages established with the national level will ensure adequate back and forth exchanges to build irrigation solutions on data, information, and knowledge gathered and developed at the country level.

14. SPs will sign a contract with the CILSS stipulating the required outputs, expected level of inputs, unit prices and fees, and expected contributions. The CILSS will make an advance payment and regular payments based on the submission of acceptable statements of expenditure and of contractual reports and outputs. Contracts will be signed for three years with progressive transfer of capacity to CILSS technical staff. The activities under these contracts will be programmed annually as part of the overall planning exercise coordinated by the CILSS. The work program of one year will be adjusted in accordance with the SP’s performance of the previous year.

15. **Pool of Experts.** CILSS will establish and finance a pool of high level experts mobilized on countries demand to provide quality enhancement services for studies and projects under implementation. This flexible facility is expected to be an efficient tool to improve the quality of studies and projects. The pool of expert will comprise of technical and institutional experts as well as environment and social safeguard specialists. Although no dam construction is foreseen under the project, dam safety specialists will also be included in the expert pool and would be mobilized in case the screening of subprojects under Component B reveals that some subprojects rely on existing dams for their water supply. Dam experts would conduct the required dam safety inspections.

16. **CILSS will establish and administer an information and knowledge management system that will sustain the solutions improvement process.** The CILSS will have an important role to play in coordinating and designing the overall architecture of the IT infrastructure to make sure that information systems, knowledge sharing and dissemination, ICT, and communication tools are well organized and structured. It is advisable to work as much as possible with open source systems and open data. Closed and licensed systems should be avoided in relation to

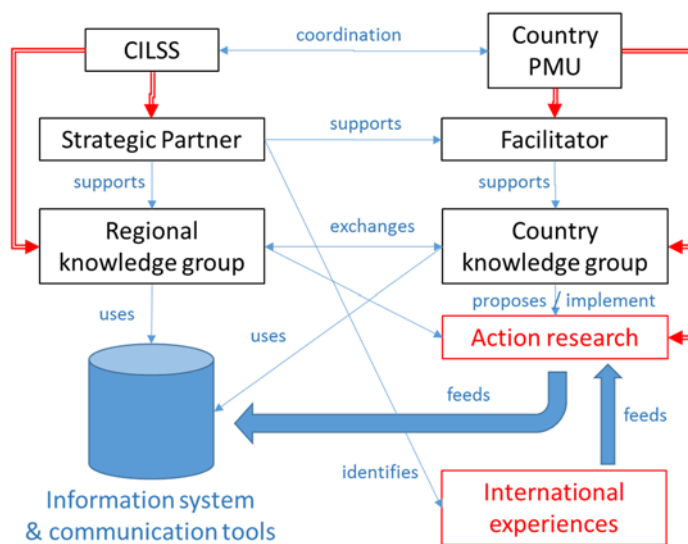
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<sup>73</sup> Centre international de Recherche Agricole pour le Développement (International Agriculture Research Center for Development).

ownership and availability of data and costs. Following an assessment of software available on the market, the CILSS has decided to use the AKVO software series, which is perfectly adapted to the project needs and is already deployed in several Sahel countries.

17. **Knowledge groups.** Stakeholders' involvement in knowledge generation and sharing is critical. Stakeholders will be actively involved in KM through knowledge groups established at both national and regional levels. The CILSS SPs will play a key role in facilitating these knowledge groups. Knowledge groups will be allocated a budget to compensate the participants for the costs they incur and to gather knowledge and information on the topics they are in charge of through specific activities. The knowledge groups will be mandated to work on improving the irrigation solutions for the five types of irrigation systems. Figure 3.1 shows the overall architecture of the KM system.

Figure 3.1. Irrigation Solutions Improvement Process



18. **Project Implementation Manual.** The CILSS is organizing the preparation of a detailed PIM, which will incorporate all operational details at the regional level, including technical activities (SP ToR, action research manual, and so on), M&E manual, safeguard instruments (Environmental and Social Management Framework and RPF), as well as administrative and fiduciary procedures. The Regional PIM will be approved by the World Bank before effectiveness. A draft version is available.

### COUNTRY-LEVEL IMPLEMENTATION - COMMON FEATURES

19. Though it will be adapted to each country's context, the institutional and implementation organization of the SIIP project at the country level will be based on common features that will include (a) a general implementation structure at the national level and (b) shared organizational arrangements for the implementation of irrigation solutions at local (project area) level.

#### At National Level

- **Line ministry.** Responsible for the overall coordination of the project.

- **National steering committee.** The national steering committee will be the governance body to provide policy guidance and oversight to the PMU throughout project implementation. It will be responsible for, among others, the review and approval of the draft AWP&B, the approval of the annual report, the assessment of implementation progress, and the validation of any change requested in the national PIM.
- **National technical committee.** Depending on the country, the steering committee may be complemented by a technical committee. The technical committee when it exists will be responsible to provide technical guidance to the PMU in implementing the project activities.
- **PMU.** Anchored within the line ministry in charge of the irrigation sector and headed by a national coordinator (civil servant, nominated by the line ministry), the PMU will include a set of core staff for the core activities of FM, disbursement, procurement, and M&E, and depending on countries' specificity and need, it may also include additional staff (such as technical experts, irrigation specialists, communication specialist, gender specialist, and so on). If not available within the ministry, these positions within the PMU will be filled through competitive recruitments.

20. The PMU will be responsible for the day-to-day coordination, FM (including channeling of the project's funds), procurement, M&E, reporting, and assessment of impacts of the project at the national level. The PMU will enter into different types of agreements with the relevant government entities, SAGI, professional bodies (like chambers of agriculture and producers organizations), and service providers. The PMU will in any case retain the overall fiduciary responsibility for all project activities.

At Subnational level (within the PIA)

21. Implementation support and M&E functions will be delegated to subnational government entities through "supervision and support agreements" (*protocoles de supervision et d'appui*). Regional chambers of agriculture will also be involved in these activities using the same kind of agreements. These agreements will lay out the objectives and expected results of the assignment and the estimated level of effort and other inputs. The agreements will notably cover the monitoring and performance assessment of the solutions operators. They will include the hiring of contractual staff by the implementing entities if deemed necessary. They will refer to the methodological approach and technological tools (ICT) to be used in the delivery of the services (like geomapping tools). The implementing entities will be provided the necessary equipment and training. With regard to financial flow, the agreements will provide for an advance payment followed by regular payments based on the submission of acceptable statements of expenditure and of agreed reports and outputs. Payments will only cover incremental costs generated from project activities. For other government offices not directly involved in project implementation, the line ministry will nominate a focal person responsible for the SIIP activities at regional offices level. Implementation performance will be reviewed at least annually by the PMU with the concerned directorates.

22. The relevant decentralized government services will implement—together with relevant professional bodies like Chambers of Agriculture—irrigation scheme inventories in the PIA and will monitor the performance of all existing schemes using appropriate ICT tools. They will also organize the monitoring of allocation and use of land and water resources with the relevant local entities. This will inform the local planning process for the implementation of which they will support the local collectives and report to existing committees mandated for that purpose. Activities related to extension and producers' advisory services will be generally carried out by regional chamber of agriculture or producer organizations working with solutions operators, under the oversight of decentralized government structures. All these activities will of course follow the specific approaches and regulations defined in each country as specified in the country PIM. Importantly, these entities will receive support and training from the CILSS SPs and will feed the project's regional M&E system with data they collect as part of their oversight responsibilities.

At local level (within the PIA)

23. **Beneficiaries' involvement.** It is essential in an irrigation solution that the users of the schemes' intended beneficiaries represented by the IWUO, are involved in the process at an early stage and give their written approval to contribute to the investments and to ensure commitment to scheme maintenance before the detailed design of works is undertaken. For Types 1 to 3, a demand-based approach will be followed by entrusting the requesting entity (local community or producer organization) with irrigation system ownership (*maîtrise d'ouvrage*). The process will be framed in a Subproject Agreement signed between the project and the IWUO. An operator will support the owner and facilitate the implementation of the agreement. For Types 4 and 5, the SAGI will be the entity in charge of the subproject for the state (*maître d'ouvrage délégué pour le compte de l'État, maître d'ouvrage*). Elements that need to be agreed upon with the beneficiaries for all Types of irrigation include (a) the proposed scheme layout; (b) the cost of the scheme management and the resulting water charges; (c) the cropping operation of the scheme, including an analysis of the technical and financial risks for the participants; (d) potential upstream and downstream agribusiness linkages and how it will affect the management of the respective schemes; and (e) expected benefits accruing to each household from the scheme.

24. **Selection criteria.** Subproject selection criteria will include (a) documented land and water use rights and/or allocation (preexisting or established under Component A); (b) sound business plan with clear market access strategy; and (c) approved applicable safeguard instruments (as stipulated in ESMF). The business plan shall be adapted to the various types of farming systems found on the irrigation scheme (small and large farms, female farmers and so on). The process will be described in the PIM for each country but follow common features for each solution. It will be the responsibility of the regional SP in charge of each solution to help the countries adapt the best regional practices to their own context and to facilitate the solutions improvement process.

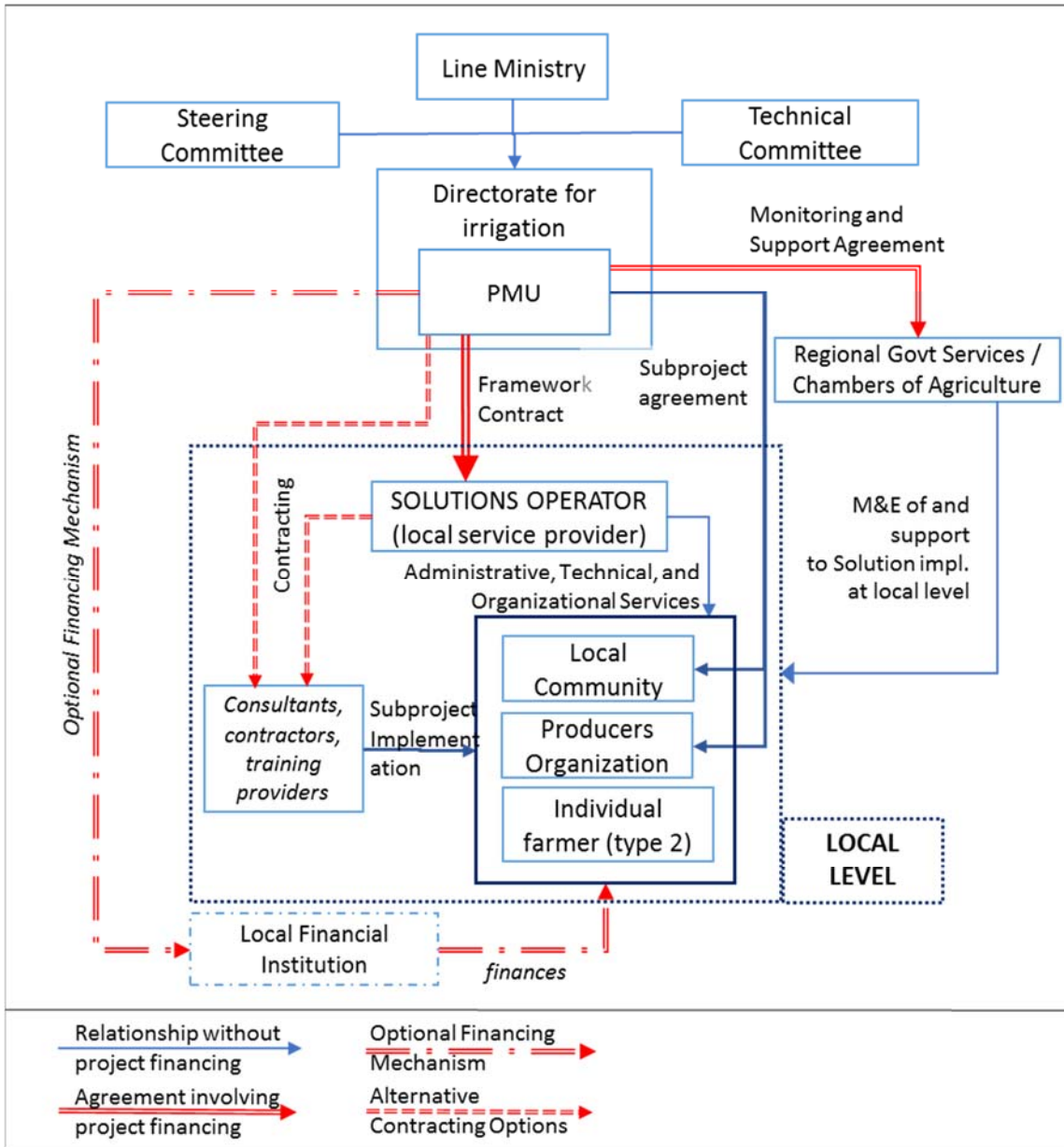
25. **Solutions Operators.** With regard to Types 1 to 3 irrigation systems, OSIs will provide administrative, technical, and organizational support to the IWUO. They will be selected by the PMU and sign framework contracts. Contract heads of terms have been developed based on regional best practices from the six countries and include the following features: (a) performance-based contracts with annual result review; (b) support to schemes' development and management and O&M; (c) assistance to mobilizing the investment finance from the project and from other sources including commercial banks and microfinance institutions; (d) assistance to agricultural

business development including value chain linkages, during at least two seasons following scheme construction; (e) sufficient contract duration (up to four years) depending on irrigation type and scheme size; (f) delegated fiduciary responsibility (*maîtrise d'ouvrage déléguée*) on behalf of the 'project owner' (local community or producer organizations) or advisory role (*assistant maître d'ouvrage*), depending on specific context; and (g) technical focus on one or more irrigation solutions. These contracts will be fine-tuned by the SP for each irrigation solution with a view to adjust the specifications, level of effort, and incentives to the specific best practices underlying the said solution.

26. Service providers will be referenced in each country and for each solution as potential OSI in certain areas based on their past achievements, knowledge of the local context, and skills in social engineering (*ingénierie sociale*). They will undertake to approach individuals or groups of potential beneficiaries and help them prepare irrigation development funding requests. A training program targeted at local service providers will be organized by the PMU with the support from the SP to build their capacity in implementing these contracts. Where there is no capable service provider, exchanges with such providers from other countries will be organized as part of the capacity-building program. The project will aim at leaving at its end a cadre of skilled service providers who can facilitate the emergence of viable funding requests for irrigation investments and help the beneficiaries mobilize the financial support they need from public sources and from the financial institutions (commercial banks and microfinance institutions).

27. **Project Implementation Manual.** The detailed information on institutional and implementation arrangements at the national level including the implementation of technical activities, M&E, safeguard implementation, and administrative and fiduciary procedures will be detailed in the respective PIMs. Each participating country will therefore prepare a PIM that the World Bank will clear before effectiveness. However, all six countries' PIMs will follow a common framework based on the irrigation solutions.

**Figure 3.2. SIIP Implementation Arrangement for Irrigation Solutions at the Country Level**  
 (indicative: to be adjusted for each country and each Type of Irrigation System)



## *SUMMARY OF THE IMPLEMENTATION ARRANGEMENTS AT THE NATIONAL LEVEL FOR EACH COUNTRY*

### Burkina Faso

28. The MA, which is currently the MAAH, will be responsible for implementing the project in Burkina Faso. The project is classified as Category A, meaning that (a) a PMU will be created within the MAAH and (b) a civil servant will be nominated as a project coordinator. The PMU will be placed under the responsibility of the Secretariat General of the MAAH. The national coordinator will be assisted by a technical team comprising all relevant disciplines (that is, FM, procurement, accountant, M&E, communication, and irrigation experts). If not available within the ministry, these positions will be filled through competitive recruitments. Considering that the MAAH is already implementing four World Bank–funded projects with three separate project units—Agriculture Diversification and Market Development Project (P081567), Agricultural Productivity and Food Security Project (P114236), and one project unit for the Third Phase Community Based Rural Development Project (P129688) and West Africa Agricultural Productivity Program APL (WAAPP-1B) (P117148)—the MAAH will only hire the required staff after having considered using the capacity of these existing units.

29. In addition, at the regional level, the project will use the regional offices of *Direction Générale des Aménagements Hydrauliques et du Développement de l'Irrigation* (General Directorate for Hydraulic Infrastructure and Irrigation Development - DGAHDI), for the oversight, M&E, and if needed technical support of project activities in the targeted areas. The regional offices will sign an agreement with the PMU to this end.<sup>74</sup>

30. The specific implementation arrangements at the national level are as follows:

- (a) The MAAH will be responsible for the overall coordination of the SIIP-Burkina Faso.
- (b) The National SIIP Steering Committee will be the governance body to provide policy orientation, strategic guidance, and overall oversight to the PMU throughout project implementation. The SIIP Steering Committee will be chaired by the General Secretary of the MAAH (or designee), with the national coordinator serving as meeting rapporteur. The Steering Committee shall meet at least twice each fiscal year to undertake, among others, the review and approval of the draft AWP&B and the approval of the annual report and assess the progress in executing the current AWP&B.
- (c) The PMU located within the MAAH will be responsible for the day-to-day project coordination and management, procurement, M&E, reporting, and assessment of impacts of the project. The PMU will also sign agreements with each directorate involved in the project implementation (within the ministry) and with other relevant ministries' directorates, organizations such as the private sector, research centers, and NGOs entrusting responsibility for oversight, M&E, technical support, or implementation of the project's activities.

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<sup>74</sup> This agreement will include the recruitment of additional contractual staff as need be.

31. The specific implementation arrangements at the project area level are as follows:
- (a) **Regional offices.** The PMU will sign agreements with the existing regional technical offices of DGAHDI for the oversight and M&E of project activities and if needed provision of technical support in the regions. It will therefore use the *Direction Régionale de l'Agriculture et des Aménagements Hydrauliques* (regional DGAHDI offices) in the targeted regions. The regional offices will mainly be responsible for the technical support and M&E. For the purpose of the project, they will be reinforced with the recruitment of additional irrigation specialists where needed.
  - (b) **Local level.** The PMU will sign framework contracts with service providers (NGO, consultancy firm, specialized agency, and so on) for the implementation of project activities on the ground. The local service provider will work together with the communities and the regional DGAHDI offices to ensure that activities executed reflect the needs identified and standards agreed upon.
32. For the GPOBA-financed grant to be implemented by SOFITEX, the World Bank will sign a Recipient Executed Grant Agreement with Burkina Faso. Burkina Faso, in turn, will sign a Subsidiary Agreement with SOFITEX, and the World Bank shall also enter into a Project Agreement with SOFITEX. The PMU at the MAAH will provide oversight during project implementation.

#### Chad

33. The SIIP-Chad will be anchored at the *Secretariat General* of the MA which is currently the MPIEA, where the PMU will also be located. The PMU will be headed by a national coordinator (civil servant, nominated by the MA) assisted by a technical team comprising all relevant disciplines (that is, FM, procurement, accountant, M&E, communication, irrigation, and agronomy). If not available within the ministry, these positions will be filled through competitive recruitments in accordance with the respective ToR.
34. In addition, at the regional level, the project will use the regional offices (*Sub Division du Génie Rural et de l'Hydraulique Agricole* (Sub-Division of Rural Engineering and Water in Agriculture - SGRHA) of DGGRHA, *Régions de Développement Rural* (Rural development regions) of ANADER, and *Chambre Régionale d'Agriculture* (Regional Chamber of Agriculture) - CRA) for the oversight, M&E, and if needed technical support of project activities in the targeted areas. The regional offices will sign an agreement with the PMU to this end.<sup>75</sup>
35. The specific implementation arrangements at the national level are as follows:
- (a) The MA will be responsible for the overall coordination of the SIIP-Chad.
  - (b) The National SIIP Steering Committee will be the governance body to provide policy guidance and oversight to the PMU throughout project implementation. The SIIP Steering/Technical Committee will be chaired by the SG of the MA, with the national coordinator serving as the secretary. The Steering Committee shall meet at least twice

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<sup>75</sup> This agreement will include the recruitment of additional contractual staff as need be.



each fiscal year to undertake, among others, the review and approval of the draft AWP&B and the approval of the annual report and assess the progress in executing the current AWP&B.

- (c) The PMU located under the purview of the SG will be responsible for the day-to-day coordination and management, procurement, M&E, reporting, and assessment of impacts of the project. The PMU will also sign agreements with each concerned structure (within the ministry) or other relevant organizations such the private sector, research centers, and NGOs entrusting responsibility for oversight, M&E, technical support, or implementation of the project's activities.

36. The specific implementation arrangements at the project area level are as follows:

- (a) **Regional offices.** The PMU will sign agreements with DGGRHA, ANADER and CRA for the oversight and M&E by their regional offices of project activities and if needed provision of technical support in the regions. It will therefore use (i) the SGRHA for the project activities in the areas of land development and rural equipment; (ii) the RDR for land improvement and advisory services to producers; (iii) the CRA for support to producer organizations; and (iv) the *Institut Tchadien de Recherche Agronomique pour le Développement* (Chadian Institute of Agronomic Research for Development- ITRAD) for the supervision of research and development activities by the *Centre de Recherche d'Innovation et Production Technologique* (Research Center for Innovation and Technological Production - CRIPT).
- (b) **Local level.** The PMU will sign framework contracts with local service providers (NGO, consultancy firm, specialized agency, and so on) for the execution of project activities at the community levels. The local service provider will work with the communities to identify their specific activities' needs and execute them on their behalf.

## Mali

37. The SIIP-Mali will be anchored at the ATI of the MA, where the PMU will also be located. The ATI is a new and specialized entity of the MA in charge of land improvement. The ATI does not have prior experience in the implementation of World Bank-funded projects. The PMU will retain the overall fiduciary responsibility for all project activities and will be staffed accordingly. It will be responsible for the day-to-day coordination, FM (including channeling of the project's funds), procurement, M&E, reporting, and assessment of impacts of the project at the national level. The PMU will be headed by a national coordinator (nominated by the MA) assisted by a technical team comprising all relevant disciplines (that is, FM, procurement, accounting, M&E, communication, irrigation, and agronomy). If not available within the ministry, these positions will be filled through competitive recruitments.

38. In addition at the regional level, the project will use the regional offices (*Direction Régionale du Génie Rural* (Regional Directorate for Rural Engineering - DRGR), *Direction Régionale de l'Agriculture* (Regional Directorate for Agriculture) - DRA), CRA, and *Centre Régional de Recherche Agricole* (Regional Agricultural Research Center - CRRA) for the

oversight, M&E, and if needed technical support of project activities in the targeted areas. The regional offices will sign an agreement with the PMU to this end.<sup>76</sup>

39. The specific implementation arrangements at the national level are as follows:

- (a) The MA will be responsible for the overall coordination of the SIIP-Mali.
- (b) The National SIIP Steering committee will be the governing body to provide policy guidance and oversight to the PMU throughout project implementation. The progress related to small scale irrigation aspects will be also reviewed with the existing National Steering Committee of the PNIP (*Comité National d’Orientation et de Suivi, CNOS-PNIP*). The SIIP National Steering Committee will be chaired by the minister of agriculture (or designee), with the national coordinator serving as the secretary. The committee shall meet at least twice each fiscal year to undertake, among others, the review and approval of the draft AWP&B and the approval of the annual report and assess the progress in executing the current AWP&B.
- (c) The PMU located within the ATI will be responsible for the day-to-day coordination and management, procurement, M&E, reporting, and assessment of impacts of the project. The PMU will also sign agreements with each concerned structure (within the ministry) or other relevant organizations such as the private sector, research centers, consulting firms, and NGOs entrusting them with the responsibility for oversight, M&E, technical support, or implementation of the project’s activities.

40. The specific implementation arrangements at the project area level are as follows:

- (a) **Regional offices.** The PMU will sign agreements with the existing regional offices (DRGR, DRA, CRA, and CRRA) for the oversight and M&E of project activities and if needed provision of technical support in the regions. It will therefore use (i) the DRGR for the project activities in the areas of land improvement and rural equipment; (ii) the DRA for land development and advisory services to producers; (iii) the CRRA for rural advisory services and support to producer organizations; and (iv) the CRA for research and development activities.
- (b) **Local level.** The PMU will sign framework contracts with local service providers (NGO, consultancy firm, specialized agency, and so on) for the execution of project activities at the community levels. The local service provider will work with the communities to identify their specific activities’ needs and execute them on their behalf.

### Mauritania

41. The SIIP-Mauritania will be anchored at the DAA of the MA, where the PMU will also be located. The PMU will be headed by a national coordinator (nominated by the MA) assisted by a technical team comprising all relevant disciplines (that is, FM, procurement, accounting, M&E,

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<sup>76</sup> This agreement will include the recruitment of additional contractual staff as need be.

communication, and irrigation experts). If not available within the ministry, these positions will be filled through competitive recruitments.

42. In addition at the regional level, the project will use the regional offices of *Société Nationale pour le Développement et l'Équipement Rural* (National Company for Rural Development and Equipment - SONADER) and DAA for the oversight, M&E, and if needed technical support of project activities in the targeted areas. The regional offices will sign an agreement with the PMU to this end.<sup>77</sup>

43. The specific implementation arrangements at the national level are as follows:

- (a) The MA will be responsible for the overall coordination of the SIIP-Mauritania.
- (b) The National SIIP Steering Committee will be the governance body to provide policy guidance and oversight to the PMU throughout project implementation. The SIIP Steering Committee will be chaired by the minister of agriculture (or designee), with the national coordinator serving as the secretary. The Steering Committee shall meet at least twice each fiscal year to undertake, among others, the review and approval of the draft AWP&B and the approval of the annual report and assess the progress in executing the current AWP&B.
- (c) The PMU located within the DAA will be responsible for the day-to-day coordination and management, procurement, M&E, reporting, and assessment of impacts of the project. The PMU will also sign agreements with each concerned structure (within the ministry) or other relevant organizations such the private sector, research centers, and NGOs entrusting responsibility for oversight, M&E, technical support, or implementation of the project's activities.

44. The specific implementation arrangements at the project area level are as follows:

- (a) **Regional offices.** The PMU will sign agreements with the existing regional offices of SONADER and DAA for the oversight and M&E of project activities and if needed provision of technical support in the regions. It will therefore use the *Département Régional* (Regional Divisions) of SONADER for Brakna, Gorgol, and Trarza regions for the project activities in the *Zone Fleuve* (Senegal river) area and the *Délégation de l'Aménagement Rural* (Rural Infrastructure Delegation) for project activities outside *Zone Fleuve*. The regional offices will mainly be responsible for the technical support and M&E. For the purpose of the project, they will therefore be reinforced with the recruitment of irrigation specialists.
- (b) **Local level.** The PMU will sign framework contracts with local service providers (NGO, consultancy firm, specialized agency, and so on) for the execution of project activities at the community levels. The local service provider will work with the communities to identify their specific activities' needs and execute them on their behalf.

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<sup>77</sup> This agreement will include the recruitment of additional contractual staff as need be.

## Niger

45. The SIIP-Niger will be anchored at the DGGR of the FA which is currently the MAG/EL, where the PMU will also be located. The PMU will be headed by a national coordinator (nominated by the MAG/EL) assisted by a technical team comprising all relevant disciplines (that is, FM, procurement, accounting, M&E, communication, and irrigation experts). These positions will be filled through competitive recruitments.

46. In addition at the regional level, the project will use the regional offices of DRGR, *Direction Régionale de l'Environnement* (regional Division for Environment), and DRA for the follow-up of project activities in the targeted areas. The regional offices will sign an agreement with the PMU to this end.<sup>78</sup>

47. The specific implementation arrangements at the national level are as follows:

- (a) The MAG/EL will be responsible for the overall coordination of the SIIP-Niger.
- (b) The National SIIP Steering Committee will be the governance body to provide policy guidance and oversight to the PMU throughout project implementation. The SIIP Steering Committee will be chaired by the Secretary General (SG) of the Ministry of Agriculture and Livestock (or designee), with the national coordinator serving as the secretary; other members of the Steering Committee include Initiative 3N (*Les Nigériens Nourrissent les Nigériens* – Niger people feed Niger people), Ministry of Water and Sanitation, Ministry of Plan, Ministry of Finance, Ministry of Land Planning and Community Development, Ministry of Environment, *Institut National de la recherche Agronomique du Niger* (National Institute for Agronomic Research in Niger - INRAN), *Réseau National des Chambres d'Agriculture du Niger* (National Network of Chambers of agriculture – RECA), *Office National des Aménagements Hydro agricoles* (National Agency for Irrigation Infrastructure – ONAHA), General Directorate for Agriculture, SP-CONACILSS, and Abdou Moumouni University. The Steering Committee shall meet at least twice each fiscal year to undertake, among others, the review and approval of the draft AWP&B and the approval of the annual report and assess the progress in executing the current AWP&B.
- (c) The PMU located within the DGGR will be responsible for the day-to-day coordination and management, procurement, M&E, reporting, and assessment of impacts of the project. The PMU will also sign agreements with each concerned structure (within the ministry) or other relevant organizations such as the private sector, CGIAR Centers, and NGOs entrusting responsibility for either technical support or implementation of the project's activities.

48. The specific implementation arrangements at the project area level are as follows:

- (a) **Regional offices.** The PMU will sign agreements with the existing regional offices of the DGGR for the follow-up of project activities in the regions. It will therefore use

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<sup>78</sup> This agreement will include the recruitment of additional contractual staff as need be.

the four DRGRs for Agadez, Dosso, Tillabiri, and Diffa.<sup>79</sup> The regional offices will mainly be responsible for the technical support and M&E. For the purpose of the project, they will therefore be reinforced with the recruitment of irrigation specialists.

- (b) **Local level.** The PMU will sign framework contracts with local service providers (NGO, consultancy firm, and so on) for the execution of project activities at the community level. The local service provider will work with the communities to identify their specific activities' needs and execute them on their behalf.

## Senegal

49. The SIIP-Senegal will be anchored at the Ministry of Agriculture which is currently the MARE, where the PMU will also be located. The PMU will be headed by a national coordinator (civil servant, nominated by the SG-MARE) assisted by a technical team comprising all relevant disciplines (that is, FM, procurement, accounting, M&E, communication, and irrigation experts). These positions will be filled through competitive recruitments.

50. In addition, at the regional level, the project will work with SAED, *Société de Développement Agricole et Industriel* (Agricultural and industrial Development Company – SODAGRI), ANIDA, *Office des Forages* (Borehole Company - OFOR), *Direction des Bassins de Rétenion et des Lacs Artificiels* (Directorate for Retention Reservoirs and Artificial Lakes - DBRLA), and *Office du Lac du Guiers* (Lake Guiers Development Office - OLAG) for the oversight, M&E, and if needed technical support of project activities in the targeted areas. These agencies will sign an agreement with the PMU to this end.<sup>80</sup>

51. The specific implementation arrangements at the national level are as follows:

- (a) The Ministry of Agriculture and Rural Equipment will be responsible for the overall coordination of the SIIP-Senegal.
- (b) The National SIIP Steering Committee will be the governance body to provide policy guidance and oversight to the PMU throughout project implementation. The SIIP Steering Committee will be chaired by the minister of agriculture (or designee), with the national coordinator serving as the secretary. The Steering Committee shall meet at least twice each fiscal year to undertake, among others, the review and approval of the draft AWP&B and the approval of the annual report and assess the progress in executing the current AWP&B.
- (c) The PMU located within the SG-MARE will be responsible for the day-to-day coordination and management, procurement, M&E, reporting, and assessment of impacts of the project. The PMU will also sign agreements with each concerned structures (within the ministry) or other relevant organizations such the private sector, research centers, and NGOs entrusting responsibility for oversight, M&E, technical support, or implementation of the project's activities.

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<sup>79</sup> In Diffa, specific arrangements will be devised to cope with security constraints.

<sup>80</sup> This agreement will include the recruitment of additional contractual staff as need be.

52. The specific implementation arrangements at the project area level are as follows:
- (a) **Regional level.** The PMU will sign agreements with SAED, SODAGRI, and ANIDA for the oversight and M&E of project activities and if needed provision of technical support in the regions. It will therefore work with SAED for the project activities in the *Vallée* (Senegal River area) with SODAGRI for the project activities in the Casamance region, with ANIDA and DBRLA for the project activities in the *Bassin Arachidier* area, and with OFOR for some activities in the *Bassin Arachidier* and Casamance. For the purpose of the project, these agencies will therefore be reinforced with the recruitment of key specialists.
  - (b) **Local level.** The PMU will sign framework contracts with local service providers (NGO, consultancy firm, and specialized agency including OFOR, DBRLA and OLAG) for the execution of project activities at the community level. The local service provider will work with the communities to identify their specific activities' needs and execute them on their behalf.

## **Financial Management, Disbursements, and Procurement**

### ***Financial Management***

53. An FM assessment was conducted on the FM arrangements for the SIIP. The assessment was done on the PMUs at the national level that are the SG-MARE in Senegal, DGGR of the MAG/EL in Niger, MAAH in Burkina Faso, ATI of the MA in Mali, SG-MPIEA in Chad and the DAA of the MA in Mauritania. At the regional level, CILSS/RPCU was assessed, which will serve as the regional coordinating institution for the project. An FM assessment was also conducted at SOFITEX, which will implement the Grant from GPOBA allocated to Burkina Faso.

54. The objective of the assessment was to determine whether the implementing entities have acceptable FM arrangements in place that satisfy the World Bank's IPF Directive and Policy. These arrangements will ensure that the implementing entities (a) use project funds only for the intended purposes in an efficient and economical way; (b) prepare accurate and reliable accounts as well as timely periodic IFRs; (c) safeguard assets of the project; and (d) have acceptable auditing arrangements. The FM assessment was carried out in accordance with the FM Manual for World Bank IPF Operations that became effective on March 1, 2010 but was issued (retrofitted) on February 4, 2015.

55. **Institutional and Implementation Arrangements.** At the regional level, the RPCU at the CILSS will get into an agreement with SPs to implement the project. At the country level, the PMUs will have agreements with financial institutions in Mali (Rural Finance Institution) and Niger (Investment Fund for Food Security and Nutrition) to implement the project. In all countries, the PMUs will have agreements with decentralized government institutions through which subproject funds for local project owners could go through and will have to be accounted for. The PMUs will also have agreements with professional bodies, regional chamber of agriculture, solutions operator (local service provider), and SAGI that could receive funds to implement the project. In addition, the PMUs will have subproject agreements with local collectives and producer organizations who will be the local project owners to receive funds and implement the project.

56. In all the above cases, the agreements should ensure there are adequate FM arrangements to ensure funds are accounted for. They should include (a) opening a bank account for the project and communicating the signatories to the PMU; (b) submission of the project's budget and work plan before the beginning of the financial year for approval; (c) submission of quarterly financial reports for the project within 45 days after the end of the reporting period to account for project funds; and (d) allowing the project's accountants, internal and external auditors to examine their books of accounts. To ensure that these arrangements are going to be complied with, the RPCU and PMUs will have to conduct assessments (especially for the institutions) to ensure that at the minimum, these sub-implementing entities do have an accountant and satisfactory accounting policies and procedures in place. All these arrangements will have to be documented in the PIM under the FM arrangements. Fiduciary staff of these sub-implementing entities will also have to be trained to ensure that they adequately account for project funds.

57. The CILSS, SOFITEX and the MAs in the six countries will be responsible for maintaining satisfactory FM arrangements throughout the life of the project. These institutions will constitute the operational links with the World Bank (IDA) on matters related to the implementation of the project.

58. Fiduciary Safeguards Applicable to CILSS. Following an institutional and financial audit of CILSS, the following actions have been identified by the World Bank from among a range of recommendations as being critical to resolving the fiduciary weaknesses and to building CILSS institutional capacity:

- a. preparation and audit of CILSS institutional financial statements for FY10-FY16, including reconciling fixed asset register to general ledger and reviewing the accounts receivable and accounts payable balances such that they are accurate and complete;
- b. strengthening of the internal audit function by updating the audit charter and internal audit manual and conducting a risk mapping;
- c. establishment of a functional audit committee including preparation of the audit committee charter/guidelines;
- d. preparation and adoption of an institutional risk management and anti-fraud policy including monitoring mechanism;
- e. strengthening internal audit and finance and accounting departments.

59. These measures have been added to the FM Action Plan and reflected as dated covenants in the FA between CILSS and the World Bank (IDA).

60. **Budgeting arrangements.** All the implementing entities will prepare annual budgets based on their work plans and thereafter submit them to the World Bank at least two months before the beginning of the project's fiscal year for review and approval. The budgets will follow budgeting guidelines in the respective entity's FM Manuals and PIMs. The specific details of each entity's FM Manual are included in Table 3.2 under the accounting arrangements. All budgets should be approved by the Steering Committees before the financial year they relate to begins.

During the financial year, budgets will be monitored on a quarterly basis using IFRs. The IFRs will compare the budget and actual expenditure and significant variances will need to be explained. These IFRs will be expected to be submitted within 45 days after the end of the calendar quarterly period to the World Bank.

### **Accounting Arrangements**

61. **Accounting policies and procedures.** Except for the CILSS and SOFITEX, all the PMUs for the countries have to prepare an FM Manual as part of the PIM that is acceptable to the World Bank. However, the RPCU of the CILSS and SOFITEX need to include FM aspects related to the project in its PIM. This will be a condition of effectiveness. Additional details are in Table 3.2.

62. **Accounting staff.** All Financial Management Specialists (key FM staff) have to be recruited before effectiveness to account for project funds. They include the Project Accountant for Mauritania; Finance Officer for both Burkina Faso and Senegal; FM Specialist for Niger and Chad; and Principal Accountant for Mali. SOFITEX will appoint an accountant from existing staff or recruit one for the project. This will be a condition of effectiveness.

63. Additional Accountants will need to be recruited within three months after effectiveness. They include the Accountant for the CILSS, Burkina Faso, Senegal and Niger; Assistant Accountant for Mali and Mauritania; and Principal Accountant and Assistant Accountant for Chad. All accounting staff, where necessary, will be trained in World Bank FM and Disbursement guidelines. Additional staffing details are in Table 3.2.

64. **Accounting information systems.** Except for the CILSS, all the countries and SOFITEX have to acquire an accounting information system to account for project funds within three months after effectiveness. Additional details in Table 3.2.

65. **Accounting standards.** SYSCOHADA accounting standards will be used by all the implementing entities as they are in the OHADA region. CILSS is encouraged to comply with International Public Sector Accounting Standards.

**Table 3.2. Accounting Arrangements**

<b>Institution</b>	<b>Staffing</b>	<b>FM Manual</b>	<b>Information System</b>
RPCU CILSS/RPCU	The Project has a Finance Officer and an accountant is being recruited. These will report to the Financial Controller.	There is a Manual of Administrative, Finance and Accounting procedures. However, project FM requirements will be documented in the PIM.	Have TOM2PRO which is adequate for the project.
Burkina Faso MAAH/PMU	Finance Officer and Accountant to be recruited to account for the project's funds.	There is no FM Manual which needs to be developed as part of the PIM before effectiveness.	No computerized accounting information system. This needs to be acquired within 3 months of effectiveness.
Burkina Faso SOFITEX	Accountant to be appointed from existing staff or recruited.	There is a manual for Administrative, Finance and Accounting Procedures. However, project FM requirements will be documented in the PIM.	No computerized accounting information system. This needs to be acquired within 3 months of effectiveness.



<b>Institution</b>	<b>Staffing</b>	<b>FM Manual</b>	<b>Information System</b>
Mali Agence d'aménagement des Terres et de Fourniture de l'Eau d'Irrigation (ATI) of the MA - PMU	Principal Accountant and Assistant Accountant to be recruited to account for project funds.	There is no FM Manual which needs to be developed as part of the PIM before effectiveness.	No computerized accounting information system. This needs to be acquired within 3 months of effectiveness.
Niger DGGR PMU	FM Specialist and Accountant to be recruited to account for the project's funds.	There is no FM Manual which needs to be developed as part of the PIM before effectiveness.	Existing accounting information system is not adequate and new software will need to be acquired within 3 months after effectiveness.
Senegal Ministries of Agriculture and Equipment Rural – PMU	Finance Officer and Accountant to be recruited to account for the project's funds.	There is no FM Manual which needs to be developed as part of the PIM before effectiveness. PDIDAS FM Manual of procedures is a good basis to use to develop the project's FM Manual.	No computerized accounting information system. This needs to be acquired within 3 months of effectiveness. PDIDAS accounting information system (TOM2PRO) could be used.
Mauritania DAA of the MA – PMU	Recruit a Project Accountant by effectiveness and an Assistant Accountant within 3 months after effectiveness.	There is no FM Manual which needs to be developed as part of the PIM before effectiveness.	No computerized accounting information system. This needs to be acquired within 3 months of effectiveness.
Chad SG-MPIEA - PMU	Recruit a Financial Management Specialist by effectiveness as well as a Principal Accountant and an Assistant Accountant within 3 months of effectiveness.	There is no FM Manual which needs to be developed as part of the PIM before effectiveness.	No computerized accounting information system. This needs to be acquired within 3 months of effectiveness.

### ***Internal Control and Internal Audit Arrangements***

66. **Internal controls.** The internal control policies and procedures for all implementing entities except for the CILSS and SOFITEX, will be documented in the FM Manual as part of the PIM. This will be a condition of effectiveness. Given that all the countries PMUs are being formed, there were no audit reports to review risks that could impact on the project. With respect to the CILSS, the review of internal and external audit reports noted that it was essential for CILSS to have an audit committee to follow up and address audit issues with CILSS management. Secondly, CILSS needs to incorporate budget allocations in their accounting system in order to monitor budget execution and identify significant variances that should be followed up and addressed.

67. **CILSS Audit and additional fiduciary measures.** A financial, institutional, organizational and human resource management audit on CILSS was commissioned by the Council of Ministers and funded by USAID. The external auditor expressed an adverse opinion on CILSS Executive Secretariat, adverse opinion on AGRHYMET and qualified opinion on INSAH's financial statements as of November 30, 2016. An action plan/road map to strengthen the institutional systems of CILSS Executive Secretariat that will host the RPCU was prepared by CILSS and discussed with Development Partners including the World Bank. Key actions that will reform CILSS as an institution have been included as dated covenants under this project, to be achieved within three months after effectiveness. They include preparing the backlog of financial

statements for FY10-FY16 and ensuring they are audited; addressing the issues that led to the qualifications of the audit reports particularly in relation to reconciling the fixed asset register to the general ledger and reviewing accounts receivable and accounts payable balances to ensure they are accurate and complete; strengthening the internal audit function by improving its systems to comply with international standards by updating the audit charter and internal audit manual that should be approved by the Council of Ministers as well as conducting an institutional risk mapping to facilitate risk based auditing; establish a functional audit committee that involves preparing an audit committee charter that should be approved by the Council of Ministers; and preparing and adopting an institutional risk management and anti-fraud policy, as well as associated monitoring mechanisms.

68. Furthermore, CILSS will commit to the following additional measures to strengthen FM systems: (i) use of direct payments for contractual payments, where appropriate; (ii) submitting quarterly audited interim financial reports to the World Bank within 45 days after the end of the quarter by an external auditor acceptable to the World Bank; (iii) emphasizing in the audit terms of reference the audit of a large sample of expenditure dependent on the risk profile of CILSS and undertaking an annual information systems audit; (iv) submitting quarterly internal audit reports to the World Bank within 45 days after the end of the quarter; (v) submitting annual entity audited accounts of CILSS within six months after the end of the financial year by an auditor acceptable to the World Bank; and (vi) conducting an in-depth review whenever requested by the World Bank on risky project expenditures by an acceptable consultant other than the external auditor that should be funded under the project.

69. **Internal audit.** The RPCU of the CILSS and the PMU of the countries will have to recruit a qualified and experienced internal auditor for the project within three months after effectiveness. The project has multiple implementing entities at both regional and country level and to ensure the systems put in place are operating as designed, there is need to have an internal auditor to regularly conduct audits using a risk based approach. For SOFITEX, its Directorate of Internal Audit and Management Control “*Direction de l’Audit Interne et du Contrôle de Gestion*” will conduct internal audits of the project.

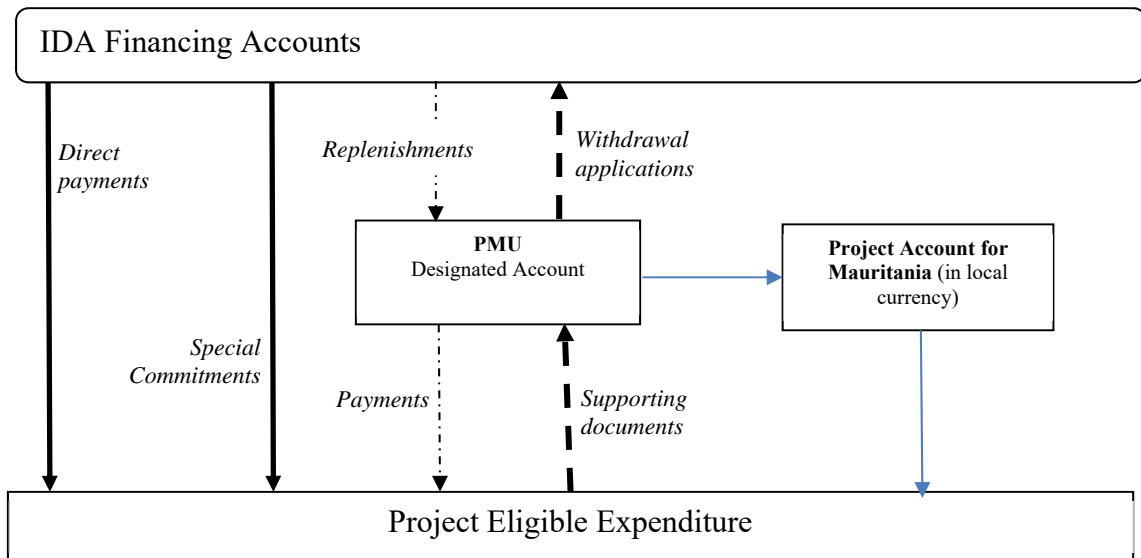
70. **Governance and Anti-corruption (GAC) arrangements.** To enhance transparency and accountability, the implementing entities have to put the project’s budget and audited financial statements on their website. A complaint handling mechanism has to be established and made functional by each national implementing entity plus SOFITEX, to improve on service delivery. This will ensure that the beneficiaries who are not receiving services as planned can have a mechanism to raise their complaints such that they are followed up and addressed. With respect to dealing with fraud and anti –corruption, the World Bank Anti-Corruption Guidelines referred to in the FA will apply.

### ***Funds Flow Arrangements***

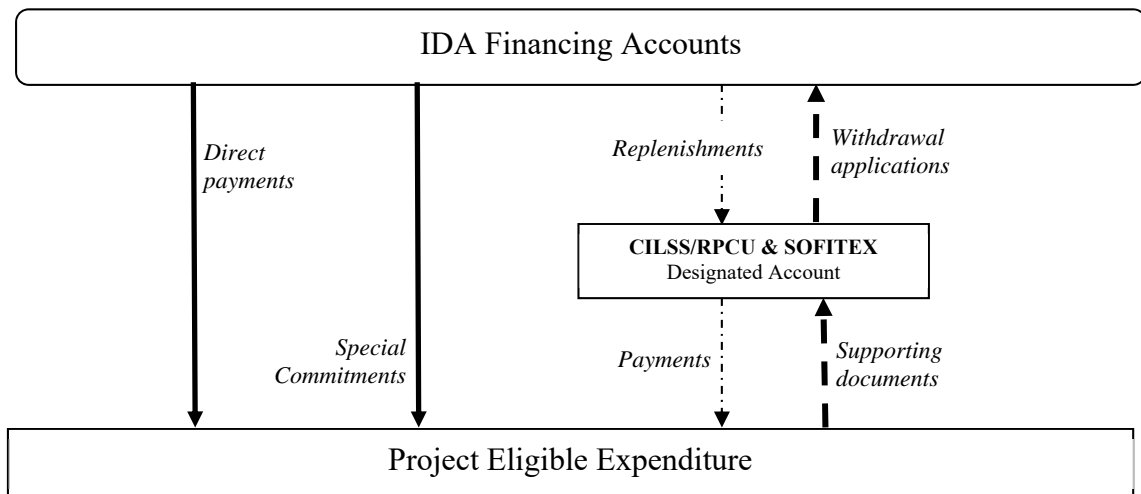
71. **Designated and project accounts.** All implementing entities will open a Designated Account (DA) denominated in CFA francs (XOF) except for Mauritania whose DA will be in United States Dollars, in which funds from the World Bank will be received for project implementation. The DA will be maintained in either the central bank or a commercial bank acceptable to the World Bank. Burkina Faso PMU will open a CFAF denominated DAs at the

Central Bank of West African Countries “BCEAO” and The PMU in Mauritania will open its DA at the Central Bank of Mauritania. The CILSS/RPCU, SOFITEX and the PMUs for Niger, Mali, Chad and Senegal will open their CFAF-denominated DA at a commercial bank. Funds from the DA in Mauritania in US\$ will be transferred into a project account denominated in local currency to facilitate project implementation. The signatories to the DA should be in line with the FM Manual/PIM of the implementing entities and they should be submitted to the World Bank between the signing of the project and its effectiveness. The DA will be utilized to pay the project’s eligible expenditure. As explained under the institutional and implementation arrangements, sub-implementing entities will have to open a project accounts in which they will receive funds that have to be accounted to either the CILSS/RPCU or country PMU.

**Figure 3.3. Funds Flow Diagram for Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal**



**Funds Flow Diagram for the CILSS and SOFITEX**



72. **Disbursements.** All the implementing entities will receive funds from the World Bank using transaction based disbursement procedures whereby statement of expenditure are used to report on the use of advances for eligible project expenditures. Under this mechanism the initial

advance disbursed to the designated account (DA) upon effectiveness and subsequent advances will be disbursed to the implementing entity monthly upon submission of SOE reporting on the use of the initial/previous advance. Details with respect to this method that include the maximum advanced limits (Designated Account Ceiling) will be included in the Disbursement Letter. Other methods of disbursement that can be used by all the implementing entities include direct payments, reimbursements and special commitments (letters of credit). If ineligible expenditures are found to have been made from the Designated and/or Project Accounts, the Borrower will be obligated to refund the same. If the Designated Account remains inactive for more than six months, the World Bank may reduce the ceiling of the DA. All implementing entities may move from transaction to report based disbursements upon confirmation of satisfactorily meeting the financial management covenants in the FA.

73. **Financial reporting arrangements.** All implementing entities except for the CILSS/RPCU will prepare quarterly un-audited IFRs in form and content satisfactory to the World Bank, which will be submitted to the World Bank within 45 days after the end of the quarter to which they relate. The IFRs for CILSS/RPCU will be audited. The formats and contents of the IFRs were agreed with the World Bank at negotiations. The contents of the IFRs for all implementing entities will include the following information to account for project funds:

- Statement of Sources and Uses of Funds;
- Statement of Uses of Funds by Project Activity/Component; and
- Bank statements for both the Designated Account, Project Account (where applicable) and related bank reconciliation statements.

74. All implementing entities will also prepare the project's annual financial statements within three months after the end of the accounting year. The audited financial statements will be required to be submitted to the World Bank within six months after the end of the fiscal year.

75. **External audit arrangements.** The external audit of the project's funds can be audited by either the Supreme Audit Institution of a country or an independent private audit firm acceptable to the World Bank. The cost of hiring an independent private audit firm will be met by the project. All audits should be carried out in accordance with International Standards on Auditing or International Standards for Supreme Audit Institutions issued by the International Organization for Supreme Audit Institutions. All external audit ToR for each implementing entity will be agreed with the World Bank before recruitment of the auditor. The external audit ToR for CILSS should emphasize the audit of a large sample of expenditure depending of the risk assessment and an information systems audit should be annually done. The project's external auditors should be appointed within six months after effectiveness. CILSS Executive Secretariat will also submit to the World Bank, its entity audited financial statements and management letter within six months after the end of the financial year. Audit reports for the project together with management letters should be submitted to the World Bank within six months after the end of the Government's or the SOFITEX/CILSS's fiscal year. Audit reports will be publicly disclosed by the WBG in accordance with the World Bank's disclosure policy.

**Table 3.3. FM Action Plan**

<b>Implementing Entity</b>	<b>Action</b>	<b>Responsibility</b>	<b>Due Date</b>
All Implementing Entities	Agree on IFRs Formats and External Audit ToR.	RPCU/CILSS, SOFITEX and MA /PMUs for all countries	Done at Negotiations
All countries	Prepare a project FM Manual that is acceptable to the World Bank. This will be part of the PIM.	MA /PMUs for all countries	By Effectiveness using PPA
RPCU/CILSS and SOFITEX	Prepare a PIM that is acceptable to the World Bank. The PIM will address gaps in the existing FM Manuals to reflect project specific requirements.	RPCU/CILSS and SOFITEX	By Effectiveness using PPA
SOFITEX, Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Recruit qualified and experienced Financial Management Specialist. These include: Finance Officer for both Burkina Faso and Senegal; FM Specialist for Niger and Chad; Principal Accountant for Mali; and Project Accountant for Mauritania and SOFITEX.	SOFITEX and MA/ PMUs for Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	By Effectiveness using PPA
CILSS, Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Recruit additional Accountant to account for project funds. These include: Accountant for the CILSS, Burkina Faso, Senegal and Niger; Assistant Accountant for Mali and Mauritania; and for Chad a Principal and Assistant Accountant.	CILSS and MA / PMUs for Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Within three months after effectiveness using PPA (Dated covenant)
SOFITEX, Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Acquire a computerized accounting software and train staff to effectively use the software.	SOFITEX and MA/ PMUs for Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Within three months after effectiveness using PPA (Dated covenant)
CILSS, Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Recruit a qualified and experienced internal auditor to strengthen internal control systems.	CILSS and MA/ PMUs for Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Within three months after effectiveness using PPA (Dated covenant)
All Implementing Entities	Appoint an external auditor for the project.	CILSS, SOFITEX and MA/ PMUs for Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Within six months after effectiveness (Dated covenant)
All Implementing Entities	Establish a functional complaint handling mechanism to improve on the service delivery of the project.	SOFITEX and MA/ PMUs for Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Within six months after effectiveness (Dated covenant)
All Implementing Entities	Include on the implementing entity's websites project budget and audited financial statements.	CILSS, SOFITEX and MA/ PMUs for Burkina Faso, Niger, Mali, Chad, Mauritania & Senegal	Monitored during implementation

<b>Implementing Entity</b>	<b>Action</b>	<b>Responsibility</b>	<b>Due Date</b>
CILSS	prepare and furnish to the Association its institutional financial statement covering the Fiscal Years 2010-2016 audited by an external auditor acceptable to the Association.	CILSS Executive Secretariat, AGRHYMET and INSAH	Within three (3) months after the effectiveness
CILSS	Submit evidence, satisfactory to the Association, that the Recipient has taken all action required: (i) to reconcile its fixed asset register to its general ledger; and (ii) to review the accounts receivable and accounts payable balances such that they are accurate and complete.	CILSS Executive Secretariat, AGRHYMET and INSAH	Within three (3) months after the effectiveness
CILSS	Finalize the carrying out of a risk mapping exercise, satisfactory to the Association, which shall in the future facilitate risk based internal auditing.	CILSS Executive Secretariat, AGRHYMET and INSAH	Within three (3) months after the effectiveness
CILSS	Approve, through its Council of Ministers, and thereafter adopt for its operations, an updated internal audit charter and internal audit manual consistent with applicable international standards, both satisfactory to the Association.	CILSS Executive Secretariat, AGRHYMET and INSAH	Within three (3) months after the effectiveness
CILSS	Approve, through its Council of Ministers an audit committee charter, and thereafter set up a functional audit committee that ensures audit issues are being addressed by CILSS's management and the committee has records of its meetings documented in its minutes.	CILSS Executive Secretariat, AGRHYMET and INSAH	Within three (3) months after the effectiveness
CILSS	Adopt an institutional risk management policy and anti-fraud policy and procedures aimed to improve governance arrangements, both satisfactory to the Association, and establish suitable associated monitoring mechanisms therefor.	CLSS Secretariat	Within three (3) months after the effectiveness
CILSS	Strengthen the Internal Audit and Finance and Accounting Departments in a manner acceptable to the Association.	CLSS Secretariat	Within three (3) months after the effectiveness

Implementing Entity	Action	Responsibility	Due Date
CILSS	Additional FM requirements to be reflected in the FA include: (i) submitting quarterly audited interim financial reports to the World Bank within 45 days after the end of the quarter by an external auditor acceptable to the World Bank; (ii) submitting quarterly internal audit reports to the World Bank within 45 days after the end of the quarter; (iii) submitting annual entity audited financial statements of CILSS within six months after the end of the financial year by an auditor acceptable to the World Bank; and (iv) conducting an in-depth review whenever requested by the World Bank on risky project expenditures by an acceptable consultant other than the external auditor that should be funded under the project. Important to note is that the annual entity and project audited financial statements will include an information systems audit.	CILSS Executive Secretariat	Financial Covenants in FA to be met during project implementation
CILSS	Additional FM requirements to be emphasized in the Disbursement Letter is the use of direct payments for contractual payments, were appropriate.	CILSS Executive Secretariat	Direct payment clause to be emphasized in Disbursement Letter

76. **Financial covenants.** Financial covenants are the standard ones set forth in Section 5.09 of the General Conditions and in the Disbursement and Financial Information Letter. In addition, all participating countries have undertaken as follows: (i) not later than three (3) months after the Effective Date, to install a computerized system acceptable to the Association to support the accounting under the project and train its staff to effectively use said system; and (ii) not later than six (6) months after the Effective Date, to recruit an external auditor, under terms of reference and with qualifications and experience satisfactory to the Association, to oversee the accounting functions of the PMU.

77. **Implementation Support Plan.** FM implementation support missions will be carried out twice a year for all the implementing entities based on their substantial FM residual risk rating. Implementation Support will also include desk reviews such as the review of the IFRs and audit reports. In-depth reviews and forensic reviews may be done were deemed necessary. The FM implementation support will be an integrated part of the project’s implementation reviews.

78. **Conclusion.** The conclusion of the assessment is that the FM arrangements in place meet the World Bank’s (IDA’s) minimum requirements under IPF Directive and Policy and therefore are adequate to provide, with reasonable assurance, accurate and timely information on the status

of the project required by the World Bank (IDA). The overall FM risk is high but upon application of mitigation measures the residual risk rating will be substantial for all the implementing entities under the project.

## ***Procurement***

### Common Provisions

79. Procurement under the proposed project will be carried out in accordance with the World Bank guidelines: “Guidelines: Procurement of Goods, Works and Non- Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers” dated January 2011 revised July, 2014, “Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers” dated January 2011 revised July, 2014, and the “Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants” dated October 15, 2006 revised in January 2011, and other provisions stipulated in the FA.

80. All procuring entities as well as bidders, and service providers, that is, suppliers, contractors and consultants shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with Paragraphs 1.16 of the Procurement Guidelines and Paragraphs 1.23 of the Consultants Guidelines.

81. **Procurement of goods, works, and non-consulting services.** Procurement will be done under International Competitive Bidding (ICB), Limited International Bidding, or National Competitive Bidding (NCB) using the World Bank’s Standard Bidding Documents. Shopping in accordance with Paragraph 3.5 of the Procurement Guidelines will be used to procure readily available off-the-shelf goods of values not exceeding US\$100,000; and for simple civil works not exceeding US\$200,000. The shopping thresholds for the purchase of vehicles and fuel may be increased up to US\$500,000, based on circumstances and with the World Bank approval. Direct contracting may be used when necessary if agreed in the procurement plan in accordance with the provisions of Paragraphs 3.7 and 3.8 of the World Bank’s Procurement Guidelines.

82. **Selection and employment of consultants.** Whenever possible, the selection method will be Quality-and-Cost-Based Selection (QCBS). The following six additional methods may be used when appropriate: Quality-Based Selection (QBS); Selection under a Fixed Budget (FBS); and Least-Cost Selection (LCS); Selection Based on Consultants’ Qualifications; Single Source Selection (SSS) (firm and individual), and Selection of Individual Consultants.

83. SSS may be employed with prior approval of the World Bank and will be in accordance with Paragraphs 3.8–3.11 of the Consultant Guidelines. All services of individual consultants will be procured under contracts in accordance with the provisions of Paragraphs 5.1–5.6 of the Consultant Guidelines.

84. **Community participation in procurement.** The project will finance sub-projects for community-based businesses, in irrigation areas. Procurement of items for the implementation of demanded sub-projects will be carried out in accordance with the provisions of the Paragraph 3.19 of the Procurement Guidelines and the simplified procurement procedures referred in the project



implementation manual. The PIM shall describe in sufficient details all procurement arrangements, methods, and procedures including the roles, the responsibilities, and the extent of participation of the community in general, simplified steps for all applicable methods of procurement, provisions for any technical or other assistance required by the community, payment procedures, and procedures for maintenance of records, simplified forms of contracts to be used, roles and oversight functions, etc.

85. **Selection of UN agencies.** Agencies of the United Nations may be single-sourced in accordance with Paragraphs 3.10 of the Procurement Guidelines and 3.15 of the Consultant Guidelines when there may be situations in which procurement directly from agencies of the UN, following their own procurement procedures may be the most appropriate method of procurement or they are uniquely or exceptionally qualified to provide technical assistance and advice in their area of expertise.

86. Operating costs financed by the project are incremental expenses, including office supplies, vehicles O&M, maintenance of equipment, communication costs, supervision costs (that is, transport, accommodation, and per diem), and salaries of locally contracted staff. They will be procured using the procurement procedures specified in the Project Financial and Accounting Manual.

87. **Procurement documents.** At all level the procurement will be carried out using the World Bank's Standard Bidding Documents or Standard Request for Proposal (RFP) respectively for all ICB and the selection of consultants. For NCB, the requirements for each country are set below.

88. **Advertising.** The CILSS in concertation with countries is required to prepare and submit to the World Bank an aggregate General Procurement Notice (GPN). The World Bank will arrange for its publication in UN Development Business (UNDB) online and on the World Bank's external website. The General Procurement Notice shall contain information concerning the Borrowers, amount and purpose of the credit, scope of procurement reflecting the Procurement Plans, and the names, telephones (or fax) number, and address(es) of the Borrower's agency(ies) responsible for procurement, and the address of a widely used electronic portals with free national and international access or websites where the subsequent Specific Procurement Notices will be posted. If known, the scheduled date for availability of prequalification or bidding documents should be indicated. The related prequalification or bidding documents, as the case may be, shall not be released to the public earlier than the date of publication of the General Procurement Notice.

89. In the case of ICB or LIB, invitations to prequalify or to bid, as the case may be, shall be advertised as Specific Procurement Notices in at least one newspaper of national circulation in the Borrower's countries, or in the official gazettes, or on a widely used websites or electronic portals with free national and international access, in English, French, or Spanish, or at the option of the Borrowers, in a national language. Such invitations shall also be published in UNDB online. Notification shall be given in sufficient time to enable prospective bidders to obtain prequalification or bidding documents and prepare and submit their responses. The World Bank will arrange the simultaneous publication of all Specific Procurement Notices prepared and submitted by the Borrowers on the World Bank's external website.

90. In the case of NCB, the complete text of advertisement shall be published in a national newspaper of wide circulation in the National Language, or in the official gazette, provided that it is of wide circulation, or on a widely used website or electronic portal with free national and international access. The Borrower may publish a shorter version of the advertisement text, including the minimum relevant information, in the national press provided that the full text is simultaneously published in the official gazette or on a widely used website or electronic portal with free national and international access. Notification shall be given to prospective bidders in sufficient time to enable them to obtain relevant documents.

91. To obtain expressions of interest (EOIs), the Borrowers shall include a list of expected consulting assignments in the General Procurement Notice, and shall advertise a request for expressions of interest (REOI) for each contract for consulting firms in the national gazette, provided that it is of wide circulation, or in at least one newspaper, or technical or financial magazine, of national circulation in the Borrower's country, or in a widely used electronic portal with free national and international access in English, French, or Spanish. Requests for Expressions of Interests for all consulting services costing the equivalent of US\$300,000 and above shall be published in UNDB online.

92. **Procurement arrangements for training and workshops.** For all training activities, before the training can be undertaken, the IA shall prepare and submit for World Bank approval, annual training plans and budgets. These will include the objectives of the training, targeted participants, format of delivery and the qualifications of the resource persons as well as the expected impacts of the training. When the training is to be outsourced, the procurement of the trainer or the training institution shall be integrated in the project procurement plan and agreed with the World Bank. Similarly, the procurement of venues for workshops and training materials will be done by comparing at least three price quotations. Report by the trainee upon completion of training would be required.

93. **Filing and record keeping.** At each level (the CILSS and countries), the Procurement Procedures Manual will set out the detailed procedures for maintaining and providing readily available access to project procurement records, in compliance with the FA. The Implementing Agencies will assign one person responsible for maintaining the records. The logbook of the contracts with unique numbering system shall be maintained.

94. The signed contracts as in the logbook shall be reflected in the commitment control system of the Borrower's accounting system or books of accounts as commitments whose payments should be updated with reference made to the payment voucher. This will put in place a complete record system whereby the contracts and related payments can be corroborated.

95. **Procurement Plans** were developed and agreed at negotiations with each participating country, CILSS and SOFITEX. These plans cover the first 18 months of the project. They will be available in the project database for each participating country, and a summary will be disclosed on the World Bank's external website once the project is approved by the Board. The Procurement Plans will be updated annually or as required to reflect the project's actual implementation needs and improvements in institutional capacity. All Procurement Plans and their updates or modifications shall be subject to the World Bank's prior review and no objection before implementation.

96. **Procurement Prior Review Thresholds:** Procurement methods and World Bank review requirements for the procurement risk rated Substantial are summarized in tables below.

**Procurement Prior Review Thresholds (US\$ millions)**

Type of procurement	High risk	Substantial risk	Moderate risk	Low risk
<b>Works (including turnkey, supply &amp; installation of plant and equipment, and PPP)</b>	5	10	15	20
<b>Goods, information technology and non-consulting services</b>	1.5	2	4	6
<b>Consultants: firms</b>	0.5	1	2	4
<b>Consultants: individuals</b>	0.2	0.3	0.4	0.5

*Note:*

All ToR for consulting services will be subject to IDA's prior review, regardless of the estimated contract amount but due to their sensitivity. All justification to direct contracting and Single Source Selection for contract below the World Bank prior review thresholds shall be subject to World Bank's no objection with the PP.

\*These thresholds are for the purposes of the initial procurement plan for the first 18 months. The thresholds will be revised periodically based on re-assessment of risks. All contracts not subject to prior review will be post-reviewed.

\*\* Short lists of consultants for services estimated to cost less than US\$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of Paragraph 2.7 of the Consultant Guidelines. However, if foreign firms have express interest, they will not be excluded from consideration.

<b>Thresholds for Procurement Approaches and Methods (US\$ thousands)</b>								
<b>As of June 15, 2016</b>								
Country	Works			Goods, IT and non-consulting services			Shortlist of national consultants	
	Open international ≥	Open national <	RfQ ≤	Open international ≥	Open national <	RfQ ≤	Consulting services <	Engineering & construction supervision ≤
<b>Burkina Faso and CILSS</b>	5,000	5,000	200	1,000	1,000	100	200	400
<b>Chad</b>	10,000	10,000	200	1,000	1,000	100	100	300
<b>Mali</b>	15,000	15,000	200	3,000	3,000	100	200	400
<b>Mauritania</b>	10,000	10,000	200	1,000	1,000	100	100	300

<b>Niger</b>	5,000	5,000	200	500	500	100	100	200
<b>Senegal</b>	15,000	15,000	200	1,000	1,000	100	300	500

97. **Procurement supervision.** In addition to the prior review and supervision to be carried out by the World Bank, at least two supervision missions each year and one visit to the field to carry out post review of procurement actions are recommended.

98. **Post-review procurement.** Post reviews can be done either by IDA’s specialists or by independent consultants hired under the IDA project according to procedures acceptable to the World Bank to ascertain compliance with procurement procedures as defined in the legal documents. Procurement post reviews should cover at least 20 percent of contracts subject to post review for the high risk level. Post review consists of reviewing technical, financial, and procurement reports carried out by the recipient’s executing agencies and/or consultants selected. The threshold levels for various methods of procurement may be revised based on the assessment results.

99. A PIM will be produced and will be submitted to World Bank for review. It will define the project’s internal organization and its implementation procedures (for each participating country and for the CILSS), and will include, among other things, all the relevant procurement procedures.

100. Overall regional coordination will be the responsibility of the CILSS. The fiduciary capacities of the CILSS (including that of procurement) have been regarded positively by the World Bank for small projects, yet while the CILSS is recognized for its technical skills, it is felt that there are some limitations to its capacity to provide services to participating countries, and as a result implementation of procurement for each participating country will be handled within each country. The following paragraphs summarize the procurement capacity of the CILSS and each of the individual implementing agencies.

CILSS

101. A procurement capacity assessment of the CILSS has found that it has a procurement unit established within the financial department. The CILSS also uses an established manual of procedures, which under revision, but the procurement procedures are not well described in the manual and most seriously there are no apparent provisions for resolving complaints. The procurement unit is managed by a Procurement Specialist with a master’s degree in Law. This individual previously worked at the former national *Direction Générale des Marchés Publics* (Public Procurement general Directorate), and he has some limited experience in World Bank procurement procedures. The procurement unit shall hire a procurement specialist to manage projects founded by the World Bank with relevant knowledge and experiences. It is useful to note that the CILSS has already implemented projects from the World Bank (PRAPS and Building Resilience through Innovation, Communication, and Knowledge Services) and other donors like the AfDB, United States Agency for International Development (USAID), ACIDI (Canadian International Development Agency), EU, GEF, and AFD.

102. **Weaknesses and procurement risk.** The main weaknesses identified during the assessment are (a) the limited experience of the procurement staff of the CILSS in the World Bank

procurement procedures; and (b) lack of an acceptable procurement system, including a complaint mechanism. The overall risk for the project at the CILSS level is evaluated as **substantial**.

**Table 3.4. Action Plan for Strengthening the CILSS Procurement Capacity**

No.	Key Risks	Mitigation Actions	By Whom	By When
1	Lack of a procurement procedures manual	Finalize the PIM of procedures, including a complaint mechanism, with section on procurement detailing out all applicable procedures, instructions and guidance for handling procurement, the SBDs and other standard procurement documents to be used.	CILSS	Before credit effectiveness
2	Lack of procurement specialist with relevant knowledge and experience in World Bank procurement procedures	Hire a procurement specialist proficient on the World Bank procurement procedures on competitive basis.	CILSS	No later than three months after effectiveness
3	Lack of Procurement Plan (PP)	Draft a PP for the project first 18 months to be approved by the World Bank.	CILSS	Completed before negotiations
4	Inadequate communication leading to delays in the drafting of ToR, and technical specifications as well as poor cost estimation	Strengthen the flow of communication between the project team and CILSS technical structures by avoiding bureaucratic procedures and set up periodic meetings.	Project team/technical structures	Throughout project implementation
5	Timeouts in the implementation of some activities, mainly evaluation committee management and contracts award	Close monitoring and exercise quality/control on all aspects of the procurement process, including evaluation, selection, and contract award	Procurement specialist and project coordinator	Throughout project implementation

### Burkina Faso

103. The procurement assessment conducted in the MAAH noted that this ministry has a Procurement Department (the Direction des Marchés Publics, DMP), which supervises all procurement activities of the MAAH. The DMP is particularly responsible for (a) finalizing procurement documents prepared by the Financial Department or the technical structures; (b) preparing the advertisement notices, and (c) presiding over tender committees and drafting contracts for approval. The tender committee comprises both internal and external members. The DMP is staffed with procurements specialists with limited experience in the World Bank procurement procedures.

104. The procurement assessment shows that (a) the DMP is not sufficiently staffed and is overloaded; (b) the existing staff have limited qualifications, limited procurement skills, and insufficient experience in the World Bank procurement procedures; (c) the Tender committee is not trained in the World Bank procurement procedures; and (d) there are significant time delays in the procurement process.

105. **Assessments of the risks and the related mitigation measures.** Proposed corrective measures agreed to mitigate the risk are summarized in Table 3.5:

**Table 3.5. Risk Mitigation Measures**

Action to Be Undertaken	Time Frame	Responsible
1. Elaboration and submission of a procurement plan to the World Bank.	Final version cleared during negotiations.	PMU/MAAH
2. Update the Procurement Manual of the APFSP, as part of the PIM, to include mainly the procurement methods to be used in the project along with their step-by-step explanation as well as the key role to be played by IA.	Three months after project effectiveness.	PMU/MAAH
3. Train and coach the MAAH specialists responsible for assuring technical aspects of procurement by the PMU.	Three months after project effectiveness.	PMU/MAAH
4. Identify the root cause of procurement delays at national level and propose appropriate solutions (global).	Six months after project effectiveness.	DCMP
5. Establish performance indicator of procurement process for all stakeholders involved in the project implementation.	Twelve months after project effectiveness.	DCMP

106. The prevailing risk can be improved to Moderate provided the above corrective measures are implemented.

107. **Implementation of the procurement.** Procurement will be carried out by the procurement unit within the Agricultural Productivity and Food Security Project (APFSP-P114236), which is a well-established PMU. The APFSP has considerable experience in implementation of World Bank–financed projects. The APFSP’s PMU has a procurement manual, which will need to be updated according to the revised procurement guidelines and to take into account the new project. The existing archiving system is acceptable. While the PMU will have the full responsibility of the administrative matters of procurement, the technical matters (preparation of the technical specifications, ToR, and evaluation of bids) will remain with the MAAH’s technical departments.

#### Chad

108. The Procurement arrangements for the project have been designed with consideration of the weakness of national procurement rules and procedures, and past experience in procurement carried out under other World Bank–financed projects.

#### Reference to National Procurement Regulatory Framework

109. The Chad last Country Procurement Issue Paper (CPIP) was carried out in 2006 were to (a) prepare and approve a public procurement code; (b) carry out a survey of the existing capacity on procurement; (c) make a needed assessment of the institutional and human capacity requirements for public procurement in the country; (d) prepare an action plan for the procurement reform; and (e) implement the new code.

110. **The Government has adopted a new procurement code signed by the President of the Republic on December 17, 2015.**

111. **In this regard, the Government has taken the following steps:** (a) adopted an action plan based on the finding of the Country Procurement Assessment Review; (b) set up a new legal and regulatory framework under the new Procurement Code; (c) issued procurement regulations and Standard Bidding Documents; and (d) created a regulatory body for public procurement (ARMP); and (e) created a procurement control body in the central level (DGCMP) and the units in the regions level.

112. **The current regulation governing Public Procurement in Chad** is the Decree No. 2417/PR/PM/2015 dated December 17, 2015 and its rules for applying [Decree No 2418/PR/PM/2015 (organization and functioning of the Procurement control Body); Decree No 2419/PR/PM/2015 (Organization and functioning of the Procurement Regulatory Body) and the Decree No 2420/PR/PM/2015 (procurement prior review threshold, control and approbation) dated December 17, 2015].

113. **Procurement of goods, works, and non-consulting services.** Procurement will be done under ICB, Limited International Bidding, or NCB using the World Bank's Standard Bidding Documents for all ICB and National Standard Bidding agreed with or satisfactory to the World Bank. Shopping in accordance with Paragraph 3.5 of the Procurement Guidelines will be used to procure readily available off-the-shelf goods of values not exceeding US\$100,000; and for simple civil works not exceeding US\$200,000. The shopping thresholds for the purchase of vehicles and fuel may be increased up to US\$200,000, based on circumstances and with the World Bank approval. Direct contracting may be used when necessary if agreed in the procurement plan in accordance with the provisions of Paragraphs 3.7 and 3.8 of the World Bank's Procurement Guidelines.

114. The project will be implemented by the PMU which will be embedded in SG. The PMU will be headed by a National Coordinator (recruited under competitive process or nominated by the MA) assisted by a technical team comprising of all relevant disciplines (that is, FM, procurement, accounting, M&E, communication, irrigation and agronomy). If not available within the Ministry, these positions will be filled through competitive recruitments. To accommodate the workload of the procurement specialist, he will be supported by a procurement assistant.

115. The procurement team's main tasks will be (a) preparing and/or submitting procurement documents that require World Bank review and/or clearance and national control body approval; (b) contributing to the preparation of AWP&Bs, semiannual and annual progress reports, and midterm and completion review reports; and (c) updating and implementing the procurement plan and submitting to the World Bank. The coordination and oversight of the procurement activities of the project will be done by the procurement specialist of the PMU assisted by the procurement assistant recruited under the project.

#### Procurement Arrangements for Training and Workshops

116. For all training activities, before the training can be undertaken, the PMU shall prepare and submit for World Bank approval, annual training plans and budgets. These will include the

objectives of the training, targeted participants, format of delivery and the qualifications of the resource persons as well as the expected impacts of the training. When the training is to be outsourced, the procurement of the trainer or the training institution shall be integrated in the project procurement plan and agreed with the World Bank. Similarly, the procurement of venues for workshops and training materials will be done by comparing at least three price quotations. Report by the trainee upon completion of training would be required.

#### Assessment of the Capacity to Implement Procurement

117. Procurement capacity assessment is carried out to determine the institutional and management arrangements that would ensure proper execution of the project. The assessment is focused primarily on the capacity and internal arrangements of the Borrower and the executing agency to carry out by itself procurement planning and implementation, or otherwise proposed alternative arrangements to ensure transparent and efficient implementation.

118. **PMU assessment.** The PMU procurement assessment has been carried out by the World Bank Procurement Specialist based in the Chad Office on November 7, 2016. Since the PMU to implement procurement actions for the project is not yet been set up, a real capacity assessment of the capacity was not possible. However, procurement issues and risks for the implementation of the project that were identified include (a) lack of designated/recruited staff dedicated to the project implementation, in particular the procurement specialist; (b) lack of a procurement procedures manual; (c) lack of procurement plan; (d) inadequate communication between the PMU and the technical structures (DGGRHA, ANADER and CRA) that may lead to delays in the drafting of ToR, and technical specifications as well as poor cost estimation; (e) timeouts in the implementation of some activities, mainly in bids/proposals evaluation committee management and contracts awards; and (f) lack of a dedicated archiving room with a trained staff for its management.

119. The overall procurement risk for the proposed project is considered high mainly due to the fact that the staff is not designated nor recruited. To mitigate the risks identified in the procurement assessment, an action has been prepared, in consultation with the Borrower. With the implementation of the proposed measures of the action plan and the support of the World Bank team, the overall procurement risk will be rated Moderate.

**Table 3.6. Action Plan for Strengthening Procurement Capacity**

No.	Key Risks	Mitigation Actions	By Whom	By When
1	Lack of designated/recruited staff dedicated to the project implementation	Hire or designed a national project coordinator.	MA	Before credit effectiveness
		Hire a procurement specialist proficient on the World Bank procurement procedures and a procurement assistant adequately experienced in use of the World Bank procedures, on competitive basis.	SG	No later than three month after effectiveness
2	Lack of a procurement procedures manual	Develop a PIM of procedures with section on procurement detailing out all applicable procedures, instructions and guidance for handling procurement, the SBDs and other	SG	Before credit effectiveness



No.	Key Risks	Mitigation Actions	By Whom	By When
		standard procurement documents to be used. The PIM will outline the interaction between the project's stakeholders responsible for procurement.		
3	Lack of Procurement Plan (PP)	Draft a PP for the project first 18 months to be approved by the World Bank.	SG	Completed at negotiations
4	Inadequate communication leading to delays in the drafting of ToR, and technical specifications as well as poor cost estimation	Strengthen the flow of communication between the PMU and technical structures by avoiding bureaucratic procedures and set up periodic meetings.	PMU/technical structures/MA	Throughout project implementation
5	Timeouts in the implementation of some activities, mainly evaluation committee management and contracts award	Close monitoring and exercise quality/control on all aspects of the procurement process, including evaluation, selection, and contract award.	Procurement specialist and project coordinator	Throughout project implementation
6	Lack of a dedicated archiving room with a trained staff for its management	Provide adequate space and equipment for the procurement archive and set up an adequate filling system for project records to ensure easy retrieval of information/data.	Project coordinator	No later than six months after the beginning of the project implementation
		Designate or recruit an officer to be responsible for data management		

## Mali

120. The Procurement arrangements for the project have been designed with consideration of the weakness of national procurement rules and procedures, and past experience in procurement carried out under other World Bank–financed projects.

### Reference to National Procurement Regulatory Framework

121. **The Mali last Country Procurement Assessment Review (CPAR) was carried out in 2007 and an assessment of the quality of the national procurement system based on the Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD/DAC) “Methodology of national Procurement Systems Assessment” was carried out on September 2011 under EU funding.** The assessment of the procurement regulation highlighted that the existing procurement principles and most of the procedures needed to be strengthened. The recommended actions include (a) strengthening of the legislative and regulatory framework; (b) strengthening of the institutional and management capacity; and (c) reinforcing the integrity and transparency of procurement.

122. **In this regard, the Government has taken the following steps:** (a) adopted an action plan based on the finding of the Country Procurement Assessment Review; (b) set up a new legal and regulatory framework under the new Procurement Code; (c) issued procurement regulations and Standard Bidding Documents; and (d) created a regulatory body for public procurement (ARMDS) and established procurement control units in regions and technical ministries, including the MEF.

123. **In addition, on 2013 under the initiative of the WAEMU Commission, the World Bank funded a study on how to boost budget execution for a greater development impact.** Data suggested that a significant part of the capital investment budgets of WAEMU member states is underspent. The World Bank undertook the 2013 study to provide a comprehensive review of the systems, processes and practices used by finance and procurement to manage capital expenditure and to identify practical recommendations that would allow countries to enhance the levels of budget execution. The country report of Mali recommended a series of actions to reduce the huge delays of procurement process in Mali and to improve the value of money. The regional action plan of this study was approved on February 28, 2014 when the WAEMU ‘*Comité d’Experts*’ (Experts Committee) met in Burkina Faso. Mali had already implemented some measures of the action plan before its approval by the WAEMU Council of Ministers held in June 28, 2014 in Dakar.

124. **A Prime Ministerial Decree (Decree No. 2014-0256/PM-RM) passed on April 10, 2014 determined the authorities in charge of concluding and approving contracts and raised the threshold for concluding and approving for all authorities.** In theory, this decree shortened the procurement cycle for number of contracts. The subsequent ministerial decree signed on April 25, 2014, confirmed the new thresholds for concluding and approving contracts and reduced the time limit for the different stages of the procurement cycle. Particularly, as a major change, the April 25 decree removed the double review by the Government/donors for contracts subject to the prior review of donors (Decree No. 2014-1323/MEF-SG). These different measures aim to reduce the procurement cycle and to boost the budget execution.

125. **The current regulation governing Public Procurement in Mali is Decree No. 2015-0604 /P-RM dated September 25, 2015 and its rules for applying Decree No 2015-3721/MEF-SG dated October 22, 2015.** These new provisions (a) confirmed the elimination of the double review of Government/donors for contracts subject to the prior review of donors; (b) extended the code to all contracts regardless of amount; and (c) presented new procurement methods.

126. **The World Bank has assessed country procurement regulation and found the principles and most of the procedures in compliance with World Bank procurement standards.** In general, it is considered that the country’s new procurement procedures do not conflict with the World Bank’s Procurement Guidelines. However, in any conflict cases, the World Bank’s provisions shall prevail. Nevertheless, to ensure that the NCB procedure for goods and works to become acceptable to the World Bank, some special provisions are required regarding advertising, access by foreign bidders to participate in NCB, limiting domestic preference, deadlines for submission of bids, evaluation and contract award process, Standard Bidding Documents, fraud and corruption clauses in bidding documents, inspection by the World Bank, and obstructive practices, and debarment under the national system. The special provisions are outlined below.

127. **NCB will be acceptable to the World Bank subject to the procedures below and as reflected in the FA.**

- (a) **Advertising.** The GPN would be advertised in the UNDB online and on the World Bank’s external website; specific invitation to bids would be advertised in at least one

national widely circulated newspapers or on a widely used website or electronic portal of the recipient with free national and international access.

- (b) **Standard Bidding Documents.** All Standard Bidding Documents to be used for the project shall be found acceptable to IDA (the Association) before their use during the implementation of the project.
- (c) **Eligibility.** No restriction based on nationality of bidder and/or origin of goods shall apply. Foreign bidders shall be allowed to participate in NCB without restriction and shall not be subject to any unjustified requirement, which would affect their ability to participate in the bidding process. Recipient's government-owned enterprises or institutions shall be eligible to participate in the bidding process only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not dependent agencies of the recipient.
- (d) **Bid preparation.** For emergency cases declared by the recipient, the evidence of such emergency must be transmitted to the Association. This must be recognized by the Association and the Association has to grant its approval for less time for the bids submission.
- (e) **Preferences.** No preference shall be given to domestic and/or the WAEMU countries' bidders; to domestically/WAEMU area manufactured goods; and to bidders forming a joint venture with a national firm or proposing national subcontractors or carrying out economic activities in the territory of the recipient.
- (f) **Fraud and corruption.** In accordance with the World Bank Procurement Guidelines, each bidding document and contract shall include provisions stating the World Bank's policy to sanction firms or individuals found to have engaged in fraud and corruption as set forth in the Paragraph 1.16 (a) of the Procurement Guidelines.
- (g) **Right to inspect and audit.** In accordance with Paragraph 1.16 (e) of the Procurement Guidelines, each bidding document and contract financed from the proceeds of the financing shall provide that (a) the bidders, suppliers, and contractor and their subcontractors, agents personnel, consultants, service providers or suppliers, shall permit the Association, at its request, to inspect their accounts, records and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Association and (b) the deliberate and material violation by the bidder, supplier, contractor or subcontractor of such provision may amount to obstructive practice as defined in Paragraph 1.16 (a) (v) of the Procurement Guidelines.
- (h) **Suspension and debarment.** The cases of suspension/debarment under the recipient system shall result from fraud and corruption as set forth in Paragraph 1.16 (a) of the Procurement Guidelines and approved by the Association, provided that the particular suspension/debarment procedure afforded due process and that the suspension/debarment decision is final.

128. **Procurement of goods, works, and non-consulting services.** Procurement will be done under ICB, Limited International Bidding, or NCB using the World Bank's Standard Bidding Documents for all ICB and National Standard Bidding agreed with or satisfactory to the World Bank. Shopping in accordance with Paragraph 3.5 of the Procurement Guidelines will be used to procure readily available off-the-shelf goods of values not exceeding US\$100,000; and for simple civil works not exceeding US\$200,000. The shopping thresholds for the purchase of vehicles and fuel may be increased up to US\$500,000, based on circumstances and with the World Bank approval. Direct contracting may be used when necessary if agreed in the procurement plan in accordance with the provisions of Paragraphs 3.7 and 3.8 of the World Bank's Procurement Guidelines.

129. The project will be implemented by the PMU which will be embedded in ATI. The PMU will be headed by a National Coordinator (nominated by the MA) assisted by a technical team comprising of all relevant disciplines (that is, FM, procurement, accounting, M&E, communication, irrigation and agronomy). If not available within the Ministry, these positions will be filled through competitive recruitments. To accommodate the workload of the procurement specialist, he will be supported by a procurement assistant.

130. The procurement team's main tasks will be (a) preparing and/or submitting procurement documents that require World Bank review and/or clearance and national control body approval; (b) contributing to the preparation of AWP&Bs, semiannual and annual progress reports, and midterm and completion review reports; and (c) updating and implementing the procurement plan and submitting to the World Bank. The coordination and oversight of the procurement activities of the project will be done by the procurement specialist of the PMU assisted by the procurement assistant recruited under the project.

#### Assessment of the Capacity to Implement Procurement

131. Procurement capacity assessment is carried out to determine the institutional and management arrangements that would ensure proper execution of the project. The assessment is focused primarily on the capacity and internal arrangements of the Borrower and the executing agency to carry out by itself procurement planning and implementation, or otherwise proposed alternative arrangements to ensure transparent and efficient implementation.

132. **Assessment of ATI.** ATI procurement assessment has been carried out by the World Bank procurement specialist based in Mali Office on November 4, 2016. Since the PMU to implement procurement actions for the project is not yet been set up, a real capacity assessment of the capacity was not possible. However, procurement issues and risks for the implementation of the project that were identified include (a) lack of designated/recruited staff dedicated to the project implementation, in particular the procurement specialist; (b) lack of a procurement procedures manual; (c) lack of procurement plan; (d) inadequate communication between the PMU and the technical structures (DRGR, DRA, CRA, and CRRA) that may lead to delays in the drafting of ToR, and technical specifications as well as poor cost estimation; (d) timeouts in the implementation of some activities, mainly in bids/proposals evaluation committee management and contracts awards; and (e) lack of a dedicated archiving room with a trained staff for its management.

133. The overall procurement risk for the proposed project is considered high mainly due to the fact that the staff is not designated nor recruited. To mitigate the risks identified in the procurement assessment, an action has been prepared, in consultation with the Borrower. With the implementation of the proposed measures of the action plan and the support of the World Bank team, the overall procurement risk will be rated Moderate.

**Table 3.7. Action Plan for Strengthening Procurement Capacity**

No.	Key Risks	Mitigation Actions	By Whom	By When
1	Lack of designated/recruited staff dedicated to the project implementation	Nominate a national project coordinator.	MA	Before credit effectiveness
		Hire a procurement specialist proficient on the World Bank procurement procedures and a procurement assistant adequately experienced in use of the World Bank procedures, on competitive basis.	ATI	No later than three month after effectiveness
2	Lack of a procurement procedures manual	Develop a PIM of procedures with section on procurement detailing out all applicable procedures, instructions and guidance for handling procurement, the SBDs and other standard procurement documents to be used. The PIM will outline the interaction between the project's stakeholders responsible for procurement.	ATI	Before credit effectiveness
3	Lack of Procurement Plan (PP)	Draft a PP for the project first 18 months to be approved by the World Bank.	ATI	Completed at negotiations
4	Inadequate communication leading to delays in the drafting of ToR, and technical specifications as well as poor cost estimation	Strengthen the flow of communication between the PMU and technical structures by avoiding bureaucratic procedures and set up periodic meetings.	PMU/technical structures/MA	Throughout project implementation
5	Timeouts in the implementation of some activities, mainly evaluation committee management and contracts award	Close monitoring and exercise quality/control on all aspects of the procurement process, including evaluation, selection, and contract award.	Procurement specialist and project coordinator	Throughout project implementation
6	Lack of a dedicated archiving room with a trained staff for its management	Provide adequate space and equipment for the procurement archive and set up an adequate filing system for project records to ensure easy retrieval of information/data.	Project coordinator	No later than six months after the beginning of the project implementation
		Designate or recruit an officer to be responsible for data management		

### Mauritania

134. **NCB.** The procurement procedure to be followed for NCB shall be the open competitive bidding procedure set forth in the Public Procurement Code 2010-044 of July 22, 2010, of Mauritania (the 'Code'), provided that such procedure shall be subject to the provisions of section

I and Paragraphs 3.3 and 3.4 of the Procurement Guidelines and the following additional provisions:

- (a) Bidding documents acceptable to the World Bank shall be used.
- (b) Eligibility to participate in a procurement process and to be awarded a World Bank–financed contract shall be as defined under section I of the Procurement Guidelines; therefore, no bidder or potential bidder shall be declared ineligible for contracts financed by the Association for reasons other than those provided in section I of the Procurement Guidelines. Foreign bidders shall be allowed to participate in NCB procedures, and foreign bidders shall not be obligated to partner with local bidders to participate in a procurement process.
- (c) Bidding shall not be restricted to preregistered firms, and foreign bidders shall not be required to be registered with local authorities as a prerequisite for submitting bids.
- (d) No margins of preference of any sort (for example, on the basis of bidder nationality, origin of goods, services or labor, and/or preferential programs) shall be applied in the bid evaluation.
- (e) Joint venture or consortium partners shall be jointly and severally liable for their obligations. Bidders shall be given at least (30) days from the date of publication of the invitation to bid or the date of availability of the bidding documents, whichever is later, to prepare and submit bids. Bids shall be submitted in a single envelope.
- (f) An extension of bid validity, if justified by exceptional circumstances, may be requested in writing from all bidders before the original bid validity expiration date, provided that such extension shall cover only the minimum period required to complete the evaluation and award a contract but not exceeding 30 days. No further extensions shall be requested without the prior written concurrence of the World Bank.
- (g) All bids (or the sole bid if only one bid is received) shall not be rejected, the procurement process shall not be cancelled, and new bids shall not be solicited without the World Bank’s prior written concurrence.
- (h) Qualification criteria shall be applied on a pass or fail basis.
- (i) Bidders shall be given at least 28 days from the receipt of notification of award to submit performance securities.
- (j) In accordance with the Procurement Guidelines, each bidding document and contract shall include provisions stating the World Bank's policy to sanction firms or individuals found to have engaged in fraud and corruption as set forth in the Procurement Guidelines.
- (k) In accordance with the Procurement Guidelines, each bidding document and contract shall include provisions stating the World Bank's policy on inspection and audit of

accounts, records and other documents relating to the submission of bids and contract performance.

- (l) Evaluation committee should include two specialists in the matter at least and should never include any tender committee members.

### Procurement Arrangements

135. **Procurement of works.** Civil works (irrigations schemes) contracts are foreseen under the project.

136. **Procurement of goods.** Goods to be procured under the project in an amount equal or above US\$1,000,000 equivalent shall be procured through ICB. Goods orders shall be grouped into larger contracts wherever possible to achieve greater economies of scale. Contracts with an amount lower than US\$1,000,000, but equal to or above US\$100,000 may be procured through NCB. Contracts with an amount below US\$100,000 may be procured using shopping procedures in accordance with Paragraph 3.5 of the Procurement Guidelines and based on a model request for quotations satisfactory to the World Bank. Shopping consists of the comparison of at least three price quotations in response to a written request. Direct contracting may be used in exceptional circumstances only with the prior approval of the World Bank and regardless of the amount, in accordance with Paragraphs 3.7 and 3.8 of the Procurement Guidelines.

137. **Procurement of non-consulting services.** Procurement of non-consulting services, such as services for organizing workshops, training, data collection, transport services, and maintenance of office equipment, will follow procurement procedures similar to those stipulated for the procurement of goods, depending on their nature. The applicable methods shall include ICB, NCB, shopping, and direct contracting.

138. **Assessment of procurement capacity of the implementing agency and risks.** The Mauritanian Procurement Code is regulated by Law No 2010-044 of July 22, 2010 and its regulation (several decrees and bylaws issued by the prime minister and the MEF). This code was developed and reviewed with IDA assistance. In general, the country's procurement procedures do not conflict with the World Bank's guidelines. However, procurement practices allow IDA procedures to take precedence over any contrary local regulation or practice.

139. **Assessment of DAA.** DAA Procurement assessment has not yet been carried out by World Bank procurement specialist based in Mauritania due to the separation of the two (2) Ministries agriculture and livestock which locate the regional PRAPS/MR financed by IDA funds. The procurement assessment into PRAMS of DAA in the MA should be conducted formally as soon as possible.

140. **The overall procurement risk is rated high.** The key risks for procurement are (a) inadequate capacity of staff in procurement practice and knowledge of World Bank procurement policies and procedures and the ministry's Tender Committee to handle the volume of procurement for their respective activities under the project; (b) possible delays in the procurement process and poor quality of contract deliverables; and (c) absence of clear procedure for contracts with amounts below the threshold of the law (US\$33,000).

141. To address the above risks, the following mitigation measures should be put in place: (a) development of a procurement procedural manual, approved by the World Bank; (b) recruitment of a procurement consultant with experience in IDA-specific procurement procedures which should provide technical assistance in procurement for the first two years of the project and training for staff involved in procurement under the project; and (c) implementation of the Capacity-building Action Plan prepared by the project and approved by the World Bank for departments/ministries involved in project implementation with a focus on procurement and contract management capacities.

142. With the implementation of the proposed measures of the action plan and the support of the World Bank team, the residual procurement risk should be rated Substantial.

**Table 3.8. Action Plan for Strengthening Procurement Capacity**

No.	Key Risks	Mitigation Actions	By Whom	By When
1	Lack of designated/recruited staff dedicated to the project implementation	Nominate a national project coordinator.	MA	Before credit effectiveness
		Hire a procurement specialist proficient on the World Bank procurement procedures and a procurement assistant adequately experienced in use of the World Bank procedures, on competitive basis.	DAA	No later than three month after effectiveness
2	Lack of a procurement procedures manual	Develop a PIM of procedures with section on procurement detailing out all applicable procedures, instructions and guidance for handling procurement, the SBDs and other standard procurement documents to be used. The PIM will outline the interaction between the project's stakeholders responsible for procurement.	DAA	Before credit effectiveness
3	Lack of Procurement Plan (PP)	Draft a PP for the project first 18 months to be approved by the World Bank.	DAA	Completed at negotiations
4	Inadequate communication leading to delays in the drafting of ToR, and technical specifications as well as poor cost estimation	Strengthen the flow of communication between the PMU and technical structures by avoiding bureaucratic procedures and set up periodic meetings	PMU/technical structures/MA	Throughout project implementation
5	Timeouts in the implementation of some activities, mainly evaluation committee management and contracts award	Close monitoring and exercise quality/control on all aspects of the procurement process, including evaluation, selection, and contract award.	Procurement specialist and project coordinator	Throughout project implementation
6	Lack of a dedicated archiving office room with a trained staff for its management	Provide adequate space and equipment for the procurement archive and set up an adequate filling system for project records to ensure easy retrieval of information/data.	Project coordinator	No later than six months after the beginning of the project implementation
		Designate or recruit an officer to be responsible for data management.		



## Niger

143. **Requirement for National Competitive Bidding.** Works, goods and non –consulting services contracts will use NCB procurement methods in accordance with national procedures using Standard Bidding Documents acceptable to IDA and subject the additional requirements:

- Each bidding document and contract financed out of the proceeds of the Financing shall provide that: (A) the bidders, suppliers, contractors and their subcontractors, agents, personnel, consultants, service providers, or suppliers shall permit the Association, at its request, to inspect all accounts, records and other documents relating to the submission of bids and contract performance, and to have said accounts and records audited by auditors appointed by the Association; and (B) the deliberate and material violation of such provision may amount to an obstructive practice as defined in Paragraph 1.16 (a)(v) of the Procurement Guidelines.
- Invitations to bid shall be advertised in national newspapers with wide circulation.
- The bid evaluation, qualification of bidders and contract award criteria shall be clearly indicated in the bidding documents.
- Bidders shall be given adequate response time (at least four weeks) to submit bids from the date of the invitation to bid or the date of availability of bidding documents, whichever is later.
- Eligible bidders, including foreign bidders, shall be allowed to participate.
- No domestic preference shall be given to domestic contractors and to domestically manufactured goods.
- Bids are awarded to the bidder with the lowest bid evaluated proven this bidder is qualified.
- Fees charged for the bidding documents shall be reasonable and reflect only the cost of their printing and delivery to prospective bidders, and shall not be so high as to discourage qualified bidders.

144. **Assessment of the capacity of the agency to implement procurement.** The Agency that has been identified for implementation of the project would be the *Direction Générale du Génie Rural* through FA. A PMU through this agency will be set. Procurement activities will be carried out by the PMU under the responsibility of the MA. These activities will be supported within the Ministry by the Procurement Directorate (DMP) and the Technical directorate in their respective area of competency. The project unit will carry out the following activities in close collaboration with the respective beneficiaries: (a) preparing and updating the Procurement Plan (PP); (b) preparing bidding documents, draft RFPs, evaluation reports, and contracts in compliance with World Bank procedures; (c) monitoring the implementation of procurement activities; (d)

developing procurement reports; and (e) seeking and obtaining approval of national entities and then IDA on procurement documents as required.

145. An assessment of the capacity of the MA, to implement procurement activities of the project was carried out during the project preparation and finalized during the appraisal. The assessment reviewed the organizational structure of the Ministry, the procurement capacities (past procurement experience, staff in charge of procurement, tools including manuals, procurement reporting, filing, use of software, and so on) the interaction between the different ministries and agencies involved in the implementation of the project.

146. The key risks for procurement are (a) the insufficient of proficient procurement staff to implement procurement actions on time and in line with World Bank procurement procedures; (b) the staff involved in the project who may not have experience with complex technical procurement will be responsible for process control and approval; (c) inadequate communication and interaction between the technical directorates/beneficiaries, the Procurement Directorate in the Ministry, and the PMU, which may lead to delays in procurement processes and poor estimation of the costs; and (d) poor filing which can lead to loss of documents. Overall, all these risks can cause misprocurement, possible delays in evaluation of bids, and technical proposals leading to implementation delays, poor quality of contract deliverables and reputational risks to the World Bank and the project.

147. **The overall project risk for procurement is rated Substantial.** The residual risk is assessed as Moderate after the following measures are adopted:

- A qualified and experienced procurement specialist to be located at PMU will be appointed to fully support all procurement activities for the project, notably to ensure quality control and compliance with World Bank procedures.
- A manual of administrative, financial, and accounting procedures will be developed to clarify the role of each team member involved in the procurement process of the project and the maximum delay for each procurement stage, specifically with regard to the review, approval system, and signature of contracts.
- The PMU will monitor closely the procurement plans and will exercise quality control on all aspects of the procurement process, including evaluation, selection and award on a monthly basis.
- A workshop will be organized at the beginning of the project to train/update all key stakeholders involved in procurement on World Bank procurement procedures and policies. Hands-on training of identified high level staff on the World Bank procurement procedures will be organized during the life of the project.
- An adequate filing system will be set up for the project records at the level of PMU. The project will finance appropriate equipment and the Procurement specialist will ensure compliance with bank procurement filing manual.

148. **Table 3.9 summarizes the agreed action plan:**

**Table 3.9. Action Plan Mitigations Measures**

<b>Risk</b>	<b>Action</b>	<b>Responsibility</b>	<b>Date</b>
1- The insufficient of proficient procurement staff to implement procurement actions on time and in line with the World Bank procurement procedures.	Recruit a qualified procurement specialist to support all the procurement activities of the project.	MA/DGGR	Three months after effectiveness
2- staff involved in the project who may not have experience with complex technical procurement will be responsible for process evaluation, control and approval.	Organize a workshop to update/train all involved actors in the World Bank procurement procedures.	DGGR/PMU-	Three months after effectiveness
3- Inadequate communication and interaction between the executing agency , the procurement Unit, the PMU which may lead to delays in procurement processes and poor estimation of the costs.	Develop Project Manual to clarify the role of each team member involved in the procurement process of the project and the maximum delay for each procurement stage, specifically with regard to the review, approval system, and signature of contracts. Closely monitoring of procurement plans and exercise quality control on all aspects of the procurement process, including evaluation, selection and award on a monthly basis.	PMU	By effectiveness
4- Poor filing which can lead to loss of documents.	Improve the filing system at the level of PMU to ensure compliance with World Bank procurement filing manual.	PMU	During the life of the project
		PMU/Procurement specialist	During the life of the project

## Senegal

### Institutional Arrangements for Procurement

149. The project will be implemented at two levels: national and regional. At the national level, a new PMU will be set up in the General Secretary of the Ministry of Agriculture and Rural Equipment. The PMU will have fiduciary responsibility and coordinate all the project's activities. The Ministry has already hosted bank financed project, and currently Sustainable and Inclusive Agribusiness Project is under implementation, but because of the workload, a procurement specialist with strong experience in procurement will recruited and dedicated to the procurement activities of the project.

150. At the regional level, the PMU will sign agreements with SAED, SODAGRI, ANIDA, OFOR, DBLRA, OLAG for the oversight and M&E of project activities and if needed provision of technical supports in the regions. It is agreed that only SAED and SODAGRI will be implementing agencies and carry out procurement activities. SAED and SODAGRI are currently implementing agencies for Sustainable and Inclusive Agribusiness Project. The World Bank procurement team updated the assessment of the two structures and found that, globally, the adequate arrangements are in place to support the implementation of this additional project.

## Procurement Approval Process

151. The Ministry of Agriculture and Rural Equipment's Procurement Unit (*Cellule de Passation de Marchés - CPM*) which is in charge of bid opening, evaluation, and contract award, whereas the CPM will be responsible of quality control of Procurement transactions at the national level. After the public bids opening meeting forms, an ad hoc technical evaluation committee composed of subject matter specialists, user departments, and procurement specialist evaluate tenders and submit the reports to a Procurement Cell for review/approval and recommend award.

152. SODAGRI and SAED have their own decision making mechanism clearly described in their internal manuals and in the national procurement law. The Directorate of the both structure approve contract regardless the amount.

153. In accordance with the National Procurement code and its Regulation and depending of the thresholds the contract shall be submitted to prior review of the *Direction du Contrôle de Marchés* (DCPM) before the contract award.

154. **Filing and record keeping.** The Procurement Procedures Manual will set out the detailed procedures for maintaining and providing readily available access to project procurement records, in compliance with the Loan Agreement. The Implementing Agencies will assign one person responsible for maintaining the records. The logbook of the contracts with unique numbering system shall be maintained.

155. The signed contracts as in the logbook shall be reflected in the commitment control system of the Borrower's accounting system or books of accounts as commitments whose payments should be updated with reference made to the payment voucher. This will put in place a complete record system whereby the contracts and related payments can be corroborated.

156. **Procurement risk rating.** The project procurement risk before the mitigation measures is "Substantial". The risk is reduced to a residual rating of "moderate" upon consideration of successful implementation of the mitigation measures. The risks and mitigation measures are provided at the end of this annex.

157. **Procurement strategy.** The procurement strategy should be linked to the project implementation strategy at the country and the regional level ensuring proper sequencing of the activities. It needs to consider procurement capacity for carrying procurement and managing contract implementation, and governance aspects need to be considered in designing the procurement strategy on the one hand and adequacy, behavior and capabilities of the market to respond to the procurement on the other hand. The irrigation sector activities require strong technical capability to prepare proper technical specifications and consider in the procurement strategy to avert lack or inadequate market response. This capability will be improved using the general implementation arrangements described above for the entire project.

158. **Procurement Manual.** Procurement arrangements, roles and responsibilities, methods and requirements for carrying out procurement shall be elaborated in detail in the Procurement Manual which may be a section of the PIM. The PIM shall be prepared by the Borrowers and agreed with the World Bank not later than within three months from the project effectiveness.

159. **National Competitive Bidding (NCB) procedure.** The procurement method designated as *Appel d'Offres Ouvert* to be acceptable to IDA and used for NCB, the following special requirements will need to be followed: (a) bids shall be advertised in national newspapers with wide circulation; (b) bid evaluation, bidder qualification and award criteria shall be specified clearly in the bidding documents; (c) bidders shall be given minimum four weeks following the date of the invitation to bid or the date of availability of the bidding documents, whichever is later to prepare and submit bids; (d) bids shall be awarded to the lowest evaluated bidder; (e) eligible bidders, including foreign bidders, shall not be precluded from participating; and (f) no preference margin shall be granted to domestic contractors. In addition, the following provisions of the national procurement code will not apply: (a) 3.4c(i) related to the procurement of fuel for vehicles for the public administration, and 3.4c(iii) referring to the procurement of hotel services; if such goods and services need to be procured reference will be done to the relevant methods described in the Procurement Guidelines; (b) 52 containing the possibility of excluding foreign bidders' participation in direct contracting; (c) 76 2(b) and 2(c) involving political decisions in the use of direct contracting in the context of emergency; and (d) 108 related to quality control and possible price reduction.

160. **Bidding documents.** Procurement for works, goods and non-consulting services will be carried out using the World Bank's SBD for all ICB for goods and works and for Standard RFP for the selection of consultants through competitive procedures. In the case of NCB, the National SBD developed can be used subject the World Bank's provisions for fraud and corruption is added.

161. **World Bank's procurement implementation support and supervision.** Project execution is the Borrower's responsibility. Striving to cultivate strong and frank partnerships with staff of the Borrowers, the World Bank will provide the Borrowers with procurement implementation support which shall include advice and assistance taking into consideration project features and the risk profile, and as reasonably required. In addition, procurement support shall be provided during the World Bank's supervision missions held at least once a year.

162. The Borrowers will hire individual consultants or engage with other institutions in their country, such as, the Supreme Audit Institution as agreed with the World Bank to carry out procurement review and help the Borrowers identify any issues and correct them for the continued procurement. The review will also include review of the record keeping system, its adequacy and completeness. If any of the procurement and contract management or record is not available, the World Bank may take appropriate remedial measures, including declaring misprocurement.

163. To ensure that any potential irregularities are identified early and to avert their recurrence, the arrangements for this review shall be done early. The first review should be carried out after the first few procurement processes have been completed, which are not subject to prior review. The following reviews should be carried out at least once a year. The percentage sample of the reviewed contracts shall be 15 percent. The Borrower shall submit the Review Report to the World Bank. The World Bank may choose to ask for selected source documents of the reviewed procurement.

**Table 3.10. Procurement Risk Assessment and Mitigation Action Plan**

Procurement Risk	Mitigation Measure	Responsibility and Deadline	Risk Level Initial/Residual
Senegal			Substantial/Moderate
<b>MA</b>			
Insufficient procurement capacity	<ol style="list-style-type: none"> <li>1. Hiring a project procurement specialist with procurement with adequate qualifications and experience to address the workload activities.</li> <li>2. Train staff of the Ministry Procurement Body (CPM and CM) in the World Bank procurement procedures.</li> </ol>	MA Three month after Project effectiveness	
The Procedures Manual is not up to date	Prepare Procedures manual for project implementation	MA Project effectiveness	
SBD for NCB	Prepare implementation a sample of bidding document with the World Bank's provisions for Fraud and Corruption.	PMU/MA Three months after project effectiveness	

### **Environmental and Social (including Safeguards)**

164. The ESMF, PMP and RPF developed by each of the six countries describe how environmental and social impacts are going to be identified and appropriately mitigated. Each irrigation subproject will be screened for impact at the identification stage in accordance with the procedure described in the ESMF and RPF, including guidance for the necessary subsequent safeguards instruments to be developed and a clear allocation of responsibilities. The ministry in charge of environment in each country will provide oversight and will be involved in the decision making process in line with the country's ESIA regulatory framework. Training programs will be developed by the PMU in each country, in consultation with the concerned departments at the ministry in charge of environment and with the World Bank's environmental and social safeguards specialists, to build capacity of local decentralized services in charge of implementing the screening process and of following up on the implementation of the safeguards instruments. Necessary specifications will be included in the solution operators' ToR for them to ensure the implementation of mitigation plans at local (subproject owner) level, and specific environmental and social clauses will be included, if and as needed, in the service providers' contracts. Each PMU will hire an environmental and social safeguard specialist to supervise the implementation of the ESMF, PMP and RPF; oversee the organization of training activities; coordinate with the other concerned structures as per the agreed distribution of responsibilities; and ensure that environmental and social aspects are taken into consideration in all project's activities.

165. When a subproject proposed for financing under the project shall rely on the performance of an existing dam in the territory of a participating country, before proposing such subproject for financing, if and as determined by the Association on a case by case basis, the participating country shall: (i) arrange for one or more independent dam specialists: (A) to inspect and evaluate the safety status of the existing dam, its appurtenances, and its performance history; (B) to review and evaluate the dam owner's operation and maintenance procedures; and (C) to provide to the

Association a written report of findings and recommendations for any remedial work or safety-related measures necessary to upgrade the existing dam to an acceptable standard of safety; or (ii) if the owner of the existing dam is an entity other than the participating country, the participating country shall enter into agreements or arrangements satisfactory to the Association providing for the aforementioned measures to be undertaken by dam's owner. Thereafter, the participating country shall prepare, as the case may be, a Dam Safety Plan comprising, *inter alia*, any additional dam safety measures and/or remedial work as identified by independent experts acceptable to the Association and any other measures that have been determined by the Association, including, as the case may be: (i) the preparation of terms of reference for a panel of dam experts; (ii) for high-hazard cases involving significant and complex remedial work, the employment of a panel of independent experts; and (iii) if a panel of independent experts has been required, convening panel meetings periodically during project implementation and retaining the said panel until the completion of any dam safety measures or remedial work

166. The World Bank task team will ensure close supervision of safeguard aspects of the project through twice-yearly supervision missions including the presence of safeguard specialists on the team. With regard SOFITEX Grant, the ESMS will be updated to incorporate any new impacts on environmental and social issues as a result of implementing the project activities, and compliance will be jointly monitored by the World Bank and IFC project teams.

### **Monitoring and Evaluation**

167. M&E will be undertaken at two levels for the SIIP: (a) at the regional level by the CILSS and (b) at national levels by the six participating countries. The CILSS has overall responsibility for coordinating the project M&E. It will also be responsible for providing training to the countries and will ensure timely production of quality data and information from all countries. Local stakeholders (decentralized government services, operators, and so on) will be responsible for data collection. Each PMU (national and regional) will have an M&E specialist to supervise data collection. On top of that, CILSS will have a data management specialist in charge of data quality control. The CILSS will receive evaluation and progress reports from all of the countries and will share results and best practices across the Sahel.

168. M&E activities for the SIIP will (a) generate information on the project's progress; (b) analyze and aggregate data generated at the regional, national, and local levels; and (c) feed the CILSS information system to document and disseminate key lessons to users and stakeholders across Sahelian countries together with the communication function of the SIIP. The M&E system will incorporate a feedback mechanism to as to collect stakeholders and project beneficiaries satisfaction. This information will be publicly accessible through interactive websites. The CILSS will receive evaluation and progress reports from all of the countries and will be able to share results and best practices across the Sahel. The project level M&E will draw on and strengthen national and regional systems to monitor results and needs across the Sahel, as per the Sahel Initiative and consistent with the CILSS mandate. The SIIP will put special emphasis on mapping project interventions and results through geocoding of activities and overlay with key development indicators. This information will be accessible through platforms along the lines of the Mapping for Results initiative. The CILSS will use its SP-CONACILSS to oversee the M&E system and strengthen regional harmonization.

169. A gender assessment study will be undertaken at the start of the project to help embedding gender in the activities and improve monitoring related to gender. Because little official data is available to set up baselines and targets for the first PDO indicator (proportion of female beneficiary), the figures indicated in the Results Framework must be reviewed and improved at project mid-term, using data collected during the first three years, to better reflect the situation of the six countries.

170. Tools based on GIS (Geographical Information System) and satellite imagery will be used to complement data collection to feed M&E reporting. GIS and remote sensing tools will contribute to the baseline condition and monitor it throughout project implementation. There are several open source tools currently being developed like Collect Earth<sup>81</sup> and the FAO water productivity database.<sup>82</sup> Opportunities for earth observation services (based on satellite imagery) are also being explored with the European Space Agency. These tools would allow assessing changes accurately and cost-effectively, namely land use and crop management patterns as well as agricultural expansion in the project area and beyond. It will also allow to reduce agricultural water productivity gaps. The project will finance training on selected tools for project counterparts in each country and for the CILSS. An SP will be in charge of these training activities and will work closely with AGRHYMET's remote sensing team to build their own training capacity. It is expected that these tools would eventually be made accessible in all countries to target government staff at both national and decentralized levels as well as civil society representatives (researchers, farmer representatives and so on). During the first year, the project will provide the necessary hardware to set up small computer labs and conduct initial training courses to familiarize participants with appropriate GIS and remote sensing tools.

171. A baseline survey of the project area will be implemented at the start of the project, making use of already existing ICTs tools. The baseline survey will be done initially on the area of intervention for the first year of the project and progressively extended to new areas as per annual work plans. This baseline study in the six countries will gather data related to the irrigation areas but many social and environmental data related to farmers and water and agricultural services, needed for the implementation of the project. Tools based on GIS and satellite imagery will allow an assessment of the project area to be conducted in each country. To facilitate sharing of knowledge and complement learnings from one country to the other, Regional Cross-country Knowledge Sharing and Learning Workshops will be held periodically during project implementation. Participants will present their baseline results and discuss challenges and lessons learnt. Also in the second year, the SP will hold the first results-based assessment at country level using relevant M&E tool. At this stage, comparisons with the baseline information will be possible and each country will have a better grasp of project progress up to that date. The final country assessment will enable project teams to evaluate the evolution of the project. These results will be shared during the final regional workshop, where participants can discuss lessons learnt and the way forward.

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<sup>81</sup> Used for land M&E, Collect Earth is a free, open source and user-friendly desktop application developed by the Forestry Department of FAO for sampling-based data collection through augmented visual interpretation. See for reference: <http://www.openforis.org/tools/collect-earth.html>.

<sup>82</sup> part of the ongoing FAO project: Using remote sensing in support of solutions to reduce agricultural water productivity gaps (Land and Water Department of FAO).



## Annex 4: Implementation Support Plan

### WEST AFRICA: Sahel Irrigation Initiative Support Project

#### Strategy and Approach for Implementation Support

1. The strategy for supporting project implementation will focus on successfully mitigating the risks identified at various levels and supporting the risk management proposed in the Systematic Operations Risk-Rating Tool; it will consist of (a) implementation support missions carried out jointly with FAO when technical needs arise and (b) technical assistance in areas of weaknesses and where new approaches/procedures have been introduced.
2. **Implementation support missions.** The supervision strategy will use a number of instruments to review progress and respond to implementation issues; including the following:
  - (a) **Joint Review and Implementation Support (JRIS) missions.** The World Bank task team will conduct semiannual review and implementation support missions to review overall SIIP implementation performance and progress toward the achievement of the PDO. Support from technical partners, such as FAO, will be sought when needed.
  - (b) **MTR.** An MTR will be carried out midway in the implementation phase. It will include a comprehensive assessment of the progress in achieving SIIP objectives as laid out in the Results Framework. The MTR will also serve as a platform for revisiting design issues that may require adjustments to ensure satisfactory achievement of the project's objective.
  - (c) **Other reviews.** Each year, the World Bank and the line ministry in each country will consider the need for additional analytical, advisory, and knowledge sharing activities and/or third-party reviews. Third-party reviews will be especially useful for follow-up of SIIP activities in areas affected by conflict. Such reviews will be planned for over and above the semiannual JRIS missions.
  - (d) **Implementation completion.** At the close of the project, each Government, CILSS, and the World Bank will carry out separate implementation completion reviews to assess the success of the project and draw lessons from its implementation.
3. **SIIP task team set up.** Arrangements made at preparation phase will be maintained during implementation support involving a regional task team leader (TTL) based in Washington, a country-based TTL, as well as country-based co-TTLs in SIIP countries, to the extent possible. The regional TTL will be supported by one operational officer. This arrangement will enhance interaction with SIIP countries and improve monitoring of progress. Available FAO-World Bank Collaborative Program budget will be considered for FAO support to project implementation support/supervision, as FAO was a key partner in project implementation. The World Bank is also seeking a possible Trust Fund budget to strengthen supervision activities on top of the World Bank budget.

4. **Objective of implementation support mission.** The implementation support and oversight missions will have the combined aim of reviewing the quality of implementation, providing solutions to implementation problems, and assessing the likelihood of achieving the PDO. More specifically, they will (a) review implementation progress by component, including institutional development aspects; (b) provide solutions to implementation problems as they arise; (c) review with the PMU the action plan and disbursement programs for the next six months; (d) review the project's fiduciary aspects, including disbursement and procurement; (e) verify compliance of project activities with the World Bank's environmental and social safeguard policies; (f) review case studies and survey results to measure results indicators to determine progress toward the PDO against the targets set within the Results Framework and the quality of implementation; and (g) review the quality of capacity-building activities, which are crucial for an effective implementation of the program. The missions will combine some field visits (whenever feasible, taking the security situation into account); field-based focus group discussions and interactive workshops with stakeholders for feedback; and regional workshops, as well as national workshops to highlight implementation issues, pick up emerging implementation lessons, and share mission recommendations, including agreements on actions moving forward. It will also include reviews of quarterly/annual reports and various studies.

5. **Technical assistance.** Implementation support will include technical support from the World Bank, FAO, and possibly other bilateral/multilateral agencies for critical aspects of the project, for ensuring proper FM/procurement, as well as for monitoring social and environmental safeguards. The objective of the technical support will be to help the project teams internalize good practices and resolve implementation bottlenecks as they are identified during JRIS missions. Technical assistance will include training workshops to develop core resource teams within implementing units and project teams, helping finalize manuals, and reviewing and advising on ToR for required studies and technical support missions.

### **Implementation Support Plan**

6. **Technical support.** Some of the irrigation solutions contemplated under the project are relatively complex, especially with regard to ensuring that the activities to be funded actually result in expected efficiency improvements. In addition to the World Bank's core supervision team, the FAO Investment Center, as well as a number of consultants may be periodically mobilized to provide technical assistance to implementing agencies in the form of hands-on training and mentoring.

7. **Focus of support.** The first two years of implementation will see more technical support and later the focus will change to more routine monitoring of progress, troubleshooting, and assessments based on the Results Framework. The implementation support missions to each country will be on a semiannual basis, followed by regional workshops to discuss and exchange views on progress and challenges for each country. The support missions will be complemented by regular short visits by individual specialists to follow up on specific thematic issues as needed.

8. **Fiduciary support.** Fiduciary teams based in each of the six World Bank country offices (procurement and FM specialists) will closely supervise the project's fiduciary management. They will participate in the twice-yearly implementation support missions, facilitate capacity building

for the project’s fiduciary, and at least once a year the procurement staff will organize a post review of procurement activities.

9. During implementation support missions, the project FM specialist, based in the country office, will review the FM systems, including capacity for continued adequacy; evaluate the quality of the budgets and implementing agencies’ adherence thereto; review the cycle of transaction recording until the end of report generation; evaluate the internal control environment, including the internal audit function; review IFRs and/or annual financial statements; follow up on ageing of the advance to the designated account; follow up on both internal and external audit reports; and periodically assess the project’s compliance with the FM manual as well as the FA.

10. On procurement, the World Bank will provide implementation support to the client through a combination of prior and post reviews, procurement training to project staff and relevant implementing agencies, and periodic assessment of the project’s compliance with the procurement manual. Implementation support missions will be geared toward (a) reviewing procurement documents; (b) providing detailed guidance on the World Bank’s Procurement Guidelines; and (c) monitoring procurement progress against the detailed Procurement Plan. Following the recommendations of the fiduciary assessments of the implementing agencies, and in addition to the prior review supervision to be carried out from World Bank offices, the semiannual supervision missions will include field visits, of which at least one mission will involve post review of procurement actions.

11. **Safeguards.** The World Bank specialists in social and environmental safeguards respectively based in the field and in Washington (with assistance from other safeguards colleagues based in the field) will have responsibility for supervising safeguard activities. Each year, they will conduct supervision of the project’s safeguard activities, participate in regional meetings to discuss findings, and draft action plans to improve implementation. IFC and World Bank safeguard specialists will collaborate closely for the supervision of the GPOBA-funded SOFITEX project in Burkina Faso.

12. **Main focus of implementation.** Table 4.1 summarizes the main focus of implementation during the life of the project.

**Table 4.1. Main Focus of Implementation**

<b>Time</b>	<b>Focus</b>	<b>Skills Needed</b>
First 12 months	<ul style="list-style-type: none"> <li>• Project start up</li> <li>• Support to implementation activities (sensitization, community consultations and planning, ownership creation, institution building, strengthening implementation capacity, including M&amp;E)</li> <li>• Guidance on applying safeguard instruments</li> <li>• Development of impact evaluation methodology and oversight of baseline survey</li> <li>• Procurement, FM, M&amp;E, and safeguards training of staff at all levels</li> </ul>	<ul style="list-style-type: none"> <li>• TTL+ operations officer + Co-TTLs</li> <li>• Irrigation engineer</li> <li>• Land specialist</li> <li>• Water resources specialist</li> <li>• ICT specialist</li> <li>• FM</li> <li>• Procurement</li> <li>• Environment</li> <li>• Social development</li> <li>• Communications</li> <li>• M&amp;E</li> </ul>

Time	Focus	Skills Needed
	<ul style="list-style-type: none"> <li>Establishing coordination mechanisms with complementary projects</li> </ul>	
12-48 months	<ul style="list-style-type: none"> <li>Monitoring implementation performance including progress</li> <li>Review strength of grassroots institutions, quality of participatory processes, and capacity-building initiatives</li> <li>Review of annual work plans and disbursement schedule</li> <li>Review quality of quarterly/annual reports, data, and various produced studies</li> <li>Assess quality of implementation process and data collected</li> <li>Review of audit reports and IFRs</li> <li>Review adequacy of the FM system and compliance with FM covenants</li> <li>Assess quality of safeguards instruments as they are applied</li> </ul>	<ul style="list-style-type: none"> <li>TTL+ operations officer + Co-TTLs</li> <li>Irrigation engineer</li> <li>Land specialist</li> <li>Water resources specialist</li> <li>ICT specialist</li> <li>FM</li> <li>Procurement</li> <li>Environment</li> <li>Social development</li> <li>Communications</li> <li>M&amp;E</li> </ul>

13. **Skills mix required.** Table 4.2 summarizes the proposed skill mix and number of staff weeks during project implementation. It is anticipated that this will change over time as demand increases.

**Table 4.2. Proposed Skill Mix**

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
TTL	20	4	Washington-based
Irrigation engineer	12	2	Washington-based
Land specialist	8	2	Washington-based
Water resources specialist	8	2	Washington-based
ICT specialist	6	2	Consultant
Operations officer	10	2	Washington-based
Co-TTLs	36	18	Country office-based and Washington-based
Procurement specialists	6	2	Country office-based
FM specialists	6	2	Country office-based
Environmental safeguard specialist	2	2	Washington-based
Social safeguard specialist	2	2	Country office-based
M&E specialist	4	2	Washington-based
Communication specialist	2	1	Country office-based
Gender specialist	4	2	Washington-based

14. **Role of other partners.** The role of partners and their expected inputs are summarized in Table 4.3.

**Table 4.3. Role of Partners**

<b>Name</b>	<b>Institution/Country</b>	<b>Role</b>
Commissioners	ECOWAS and WAEMU	Chair the CRP
Executive secretary	CILSS	Project oversight at regional level Ensure overall achievement PDO
Project coordinators	Each SIIP country and CILSS	Project level Coordination at national /regional levels Ensure achievement of PDO at national/regional levels
Director, investment center	FAO	Ensure provision of skills mix to support quality of project implementation
Coordinators of World Bank projects (Sahel Initiative) and other development partners in irrigation related projects in SIIP countries	Each SIIP country and CILSS Mainly World Bank/AECID/ AfDB/AFD/Belgian Cooperation /Canadian Cooperation/ EU/GIZ- KfW/USAID/ Swiss Cooperation	Ensure synergies and complementarities Contribute to project implementation/supervision Ensure that each SIIP country will set up a mechanism to implement joint action plans to reduce duplication of efforts and promote shared vision
SP-CONACILSS	Each SIIP country	Project steering and regional harmonization Overseeing M&E system

*Note:* AECID = *Agencia Española de Cooperación Internacional para el Desarrollo* (Spanish International Cooperation Agency for Development); GIZ = German Agency for International Cooperation; KfW = Kreditanstalt für Wiederaufbau.

## Annex 5: Economic and Financial Analysis

### WEST AFRICA: Sahel Irrigation Initiative Support Project

#### Description of Project Benefits and Beneficiaries

##### Area to Be Developed

1. The main focus of the SIIP will be investments in irrigation scheme Types 1, 2, 3, and 4 as well as studies conducted and funds raised for irrigation scheme of all types. The SIIP is expected to develop or rehabilitate 23,230 ha (Table 5.1) of irrigation schemes. In addition, the project will prepare or update feasibility studies for 50,000 ha. This EFA is based on the assumption that 17,100 ha will be new schemes and 6,130 ha (26 percent) will be rehabilitated.

**Table 5.1. Number of Hectares Developed (New and Rehabilitated) by Type of Irrigation System OK**

Model	Rehabilitated Schemes (ha)	New Schemes (ha)	Total (ha)
Type 1: Improved rainwater harvesting in lowland areas	3,100	5,290	8,390
Type 2: Individual smallholder irrigation	0	7,545	7,745
Type 3: Small- and medium-size irrigation managed by producers' groups and communities	2,530	4,260	6,790
Type 4: Large-scale irrigation schemes	500	0	500
Type 5: Commercial irrigation under PPP arrangements	0	0	0
<b>Total</b>	<b>6,130</b>	<b>17,100</b>	<b>23,230</b>

##### Project Beneficiaries

2. It is expected that 23,230 ha will provide benefits to over 58,000 farmer households. It is also expected that by the end of the project 35 percent of them or 20,300 will be female-headed households or women farmers. The number of beneficiary households is based on a general assumption that, depending on the type of irrigation, two or four beneficiary households cultivate on 1 ha (Table 5.2). Given the estimated median household size across the six countries of 6,<sup>83</sup> the total number of beneficiaries reached through the irrigation activities is estimated at 350,000. In addition, it is assumed that approximately one job will be created upstream or downstream in the targeted value chains for four farmer households involved in irrigation activities. In total close to 15,000 jobs will be created in non-family farm labor, input supply, processing and marketing of produce, maintenance of equipment, and so on. The total number of beneficiaries of the project will be at least 72,000 households or 430,000 household members. OECD (2011)<sup>84</sup> states that irrigation schemes are granting only small plots to households to allow the highest possible number of households to gain access to the land. In particular, in irrigation schemes for horticulture (some Types 2 and 3 schemes), the number of beneficiaries will most probably be higher than four per hectare.

<sup>83</sup> Own calculation based on [http://www.euromonitor.com/medialibrary/PDF/Book\\_WEF\\_2014.pdf](http://www.euromonitor.com/medialibrary/PDF/Book_WEF_2014.pdf), p. 2 (2012); World Economic Fact Book 2014.

<sup>84</sup> OECD, "West African Challenges / the 2008 rice crisis: shock and new challenges," (June 2011), p.9.

**Table 5.2. Number of Households per Hectare of Irrigated Land**

Model	Number of Beneficiary Households per Hectare	Number of Beneficiary Households
Type 1: Improved rainwater harvesting in lowland areas	2	19,620
Type 2: Individual smallholder irrigation	4	10,680
Type 3: Small- and medium-size irrigation managed by producers' groups and communities	4	26,300
Type 4: Large-scale irrigation schemes	2	2,000
Type 5: Commercial irrigation under PPP arrangements	2	0

3. The type of beneficiary household the EFA focuses on is a smallholder farmer living in rural areas who is most likely living under the national poverty line. Data presented in Table 5.3 show that the majority of rural population in the project countries is considered poor. At the national level the poverty headcount ratio at US\$1.90 a day also shows high levels of poverty. A regional USAID study identifies three broad categories of producers that are largely consistent with the project context: (a) small-scale farmers who produce rice as a subsistence crop using a low-risk, low-input, low-yield strategy; (b) small-scale farmers who are increasingly producing rice or vegetables as a cash crop, possibly as part of an irrigation scheme or as contract growers or outgrowers; (c) larger-scale commercial farmers.<sup>85</sup> While farm holding sizes differ across the six countries, it is assumed that each household owns 2.5 ha on average of which 2 ha is cultivated.

**Table 5.3. Overview of Poverty Situation in All Six Countries**

Country	Year	Rural Poverty Headcount Ratio at National Poverty Lines (% of Rural Population)	Poverty Headcount Ratio at National Poverty Lines (% of Population)	Poverty Headcount Ratio at US\$1.90 a Day (2011 Purchasing Power Parity) (% of Population)
Burkina Faso	2009	52.8	46.7	55.3
Mali	2010	50.6	43.6	49.3
Mauritania	2008	59.4	42.0	10.9
Niger	2011	55.2	48.9	50.3
Senegal	2011	57.1	46.7	38.0
Chad	2011	52.5	46.7	38.4

Source: [www.ruralpovertyportal.org/country/statistics/tags/burkina\\_faso](http://www.ruralpovertyportal.org/country/statistics/tags/burkina_faso) ;

<http://data.worldbank.org/indicator/SI.POV.DDAY/countries/TD?display=graph>

Note: As differences in the cost of living across the world evolve, the global poverty line has to be periodically updated to reflect these changes. Since 2008, the last update, US\$1.25 has been used as the global line. As of October 2015, the new global line is US\$1.90.

## Project Benefits

4. While substantial benefits of the project are expected to come from improving the enabling institutional environment as well as the capacity-building efforts (mainly Components A and C), which will affect over time the competitiveness of the entire irrigation subsector, this analysis focuses on measurable and foreseeable benefits generated by irrigated agriculture (Component B).

<sup>85</sup> Adopted from USAID West Africa Rice Value Chain Analysis (2009), p.35.

Direct and measurable benefits are (a) a more reliable and increased amount of harvests per year and per hectare (from one to two harvests per year), based on increased annual crop intensity on areas developed by the project as well as on higher crop yields; (b) changes in cropping pattern, away from low-yielding sorghum to cultivation of more high-value crops such as rice, vegetables, cowpea, and so on. It is assumed that Components A and C created the enabling environment to achieve and sustain the targeted yields under Component B.

5. Unmeasurable and indirect effects are (a) potentially better health conditions of project beneficiaries as they will have access to more nutritious food; (b) a reduced length of the hunger season and improved food security; (c) time savings resulting from a reduced distance of the water source from beneficiaries' farm plots; (d) improved knowledge and skills of project beneficiaries in managing irrigation schemes; and (e) institutional strengthening of public and private services in the field of irrigation, land tenure, and so on at national, regional, and local levels.

6. Nonmonetary effects of the project are (a) an increased amount of greenhouse gas (GHG) emissions (for details see economic analysis/environmental impact) and (b) better management of soils in most cases that can prevent erosion and soil deterioration.<sup>86</sup> An effort has been made to include effects generated from externalities in the economic analysis, namely, the emission of GHGs due to land use changes as well as increased yet more efficient fertilizer use. Fuel consumption is expected to increase; however, the project will promote the use of solar pumps where feasible. Water use will also increase, yet with increased efficiency. To verify and track future developments of environmental benefits, particular efforts will have to go into strengthening the M&E capacity at the sector level.<sup>87</sup>

## **Description of Financial Crop and Farm Models**

### **Selection and Basic Assumptions of Crop and Farm Models**

7. For each of the five types of irrigation schemes, a farm model was developed on the basis of crop models (rice, onion, tomato, Irish potato, cowpea, sorghum). Given the multitude of types of irrigation in the Sahel region, the challenge of the EFA was to select for each of the five types a farm model that can be considered as representative. The selected models are based on information from irrigation schemes in the six countries.

8. Underpinning the financial and economic analysis based on crop models is the assumption that all six countries have further incentive to grow larger quantities of rice and that urbanization leads to a growing demand for vegetables. The main reason for this is the political will expressed by Governments to reduce import dependency and that production still lags far behind the demanded quantities (Table 5.4). Secondary literature confirms that in 2011, West Africa only produced enough rice to cover 60 percent of its needs and that 40 percent is imported.

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<sup>86</sup> SDG target 15.3 “By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world”

<https://sustainabledevelopment.un.org/sdg15>

<sup>87</sup> This refers in particular to the EX-ACT software.



**Table 5.4. Rice Production, Import, and Consumption in Project Countries**

Country	Production of Paddy Rice (tons/year)*	Rice Imports (tons/year)**	Rice Consumption (kg/person/year)***	% Rice Production of Consumption****
Burkina Faso	305,382	439,080	31	36
Mali	2,211,920	108,558	93	98
Mauritania	202,000	182,600	40	82
Niger	13,400	383,170	18	3
Senegal	436,153	1,123,550	91	21
Chad	330,000	1,016	11	143
<b>Total</b>	<b>3,498,855</b>	<b>2,237,974</b>		<b>59 (Median)</b>

Sources: \* FAOSTAT (<http://faostat.fao.org>) 2013; \*\* FAOSTAT 2013; \*\*\* AFC International Consultant, Initiative pour l'Irrigation au Sahel – Plan d'Action Global, Octobre 2015, p. 93 mixed with USDA Grain and Feed Annual 2015 for Burkina Faso, Mali, Senegal; \*\*\*\* own calculations based on rice @ 65 percent of paddy and population figures from Economic Intelligence Unit 2014.

### **Without-Project (WOP) Situation**

9. In a WOP situation of the financial models, smallholder farmers operate either under a low input-low output scheme with one harvest of sorghum per year, or they manage an inefficient and underperforming irrigation scheme with one season of rice. Water and fertilizer are used inefficiently. Fertilizer use is typically low, resulting in low yields. The result of these conditions is that families suffer from food insecurity and go through lean periods every year. The health and nutrition situation is deteriorating as the household income is instable and low. The level of resilience among the project area population is very low. Household members are therefore often dependent on off-farm income to purchase the staple food rice. All excess produce, if any, is sold on the local market with no possibility of bulking and reaching higher-level markets to obtain higher prices.

### **With-Project (WIP) Situation**

10. The project will develop some 23,230 ha and provide agricultural support as well as capacity building for better management and maintenance of the selected irrigation schemes. Rehabilitation of 1 ha of land takes less than one year and is undertaken during the dry season. This allows the farmer to cultivate the land during the next rainy season. In case of expansion it is assumed that smallholders cultivate low-yielding, rain-fed sorghum during the wet season before the project intervention. In case of rehabilitation, the smallholders will start out with inefficiently irrigated rice during the wet season. After rehabilitation the smallholders are expected to cultivate rice or vegetables during the rainy season and vegetables, cowpea, or rice during the dry season (Table 5.5). Water and fertilizer use will increase but be more efficient. While the project will work with 64,000 beneficiary households, it is assumed that only 80 percent will reap the 100 percent of increased net benefits. It is assumed that farmers know what the local market wants, and with the project support they choose the right crops. It is assumed, however, that the price of perishable vegetables (tomato, onion) will decrease 30 percent due to additional supply. Rehabilitation costs per hectare are assumed to make up 40 percent to 60 percent of the investment costs in new schemes.

**Table 5.5. Rice Production, Import, and Consumption in Project Countries**

Type of irrigation	Without Project		With Project	
	No Irrigation	Scheme to Be Rehabilitated	Rainy Season	Dry Season
Type 1	Sorghum	Rice	Rice	Onion, tomato, cowpea
Type 2	Sorghum	Rice	Rice or vegetables	Onion, tomato
Type 3	Sorghum	Rice	Rice or vegetables	Onion, tomato, cowpea
Type 4	Sorghum	Rice	Rice	Rice
Type 5	Sorghum	Rice	Rice	Onion, potato

11. The increase of paddy rice production by irrigation scheme type is summarized in Table 5.6. These assumptions are confirmed, for example, for the case of Senegal, where rain-fed lowland (*bas-fonds*) rice cultivation contributes to around 30 percent of national rice production with average yields of 1–2 t/ha.<sup>88</sup>

**Table 5.6. Rice Paddy Yields Comparing Without (WOP) and With (WIP) Project Situation by Irrigation Type**

Model	Expansion (kg/ha)		Rehabilitation (kg/ha)	
	WOP	WIP	WOP	WIP
Type 1: Improved rainwater harvesting in lowland areas	0	3,800	2,000	3,800
Type 2: Individual smallholder irrigation	0	5,000	2,000	5,000
Type 3: Small- and medium-size irrigation managed by producers' groups and communities	0	5,000	2,500	5,000
Type 4: Large-scale irrigation schemes	0	7,200	4,000	7,200
Type 5: Commercial irrigation under PPP arrangements	0	7,200	4,000	7,200

*Note:* The production in the second season is always assumed to be 11 percent less. For the analysis a 5 percent paddy loss has been included for the WIP situation and 10 percent for the WOP situation.

12. The beneficiary households will ensure the maintenance for the irrigation schemes. Within the project analysis period it is assumed that initial investment items/assets do not need to be replaced. This of course requires proper maintenance, an element which will be part of the quality control activities, institutional capacity building, and training under the project. In addition, IWUO will be put in place.

## Financial Analysis

13. Table 5.7 provides an overview of the incremental production and revenues by crop. These crop models are used to develop farm models for the irrigated land. Table 5.8 summarizes the key performance indicators of the financial farm models (NPV, IRR, incremental net benefit) for 1 ha of each type of irrigation. For each of them, the scenario of rehabilitation and a new investment is analyzed. The financial analysis uses a financial discount rate of 4 percent in real terms and values family labor at the same rate as unskilled farm labor (CFAF 1,000 per day). Financial IRR is the profitability indicator indicating the 'alternative financial returns or opportunity costs to the investor'. Given the very scarce investment alternatives of the rural poor, the rate of interest paid

<sup>88</sup> Paper in FAO/IFAD publication 'Rebuilding West Africa's Food Potential' 2013: "Smallholder participation in value chains: The case of domestic rice in Senegal," p.394–395.

to saving accounts in the local banks was chosen.

**Table 5.7. Incremental Revenue and Production**

Item	Unit	Rice Paddy Expansion	Rice Paddy Rehabilitation	Onion	Tomato	Potato	Cowpea
Incremental revenue	FCA/ha	332,772	166,079	1,031,400	999,640	420,350	90,120
Incremental revenue	US\$/ha	569	284	1,763	1,709	719	154
Incremental revenue (price -10%)	US\$/ha	512	256	1,587	1,538	647	139
Incremental revenue (price -20%)	US\$/ha	455	227	1,410	1,367	575	123
Incremental production	Tons/ha	4.4	1.6	23	18	25	0.6

**Table 5.8. Overview of Financial IRR and NPV by Irrigation System Type [1 ha]**

Model	Expansion	Rehabilitation	Expansion	Rehabilitation	Expansion	Rehabilitation
	Incremental net benefits at household level = IRR and NPV		Incremental net benefits per family labor day NPV/family labor day		Break even analysis = Years of production needed to recover investment costs	
<b>Type 1</b>	69% US\$5,820	94% US\$8,598	US\$57 (153 days)	US\$56 (153 days)	Year 5	Year 4
<b>Type 2</b>	16% US\$5,387	27% US\$7,063	US\$12 (165 days)	US\$24 (165 days)	Year 10	Year 7
<b>Type 3</b>	34% US\$7,613	48% US\$7,214	US\$52 (146 days)	US\$49 (146 days)	Year 7	Year 5
<b>Type 4</b>	6% US\$2,761	9% US\$1,789	US\$9 (206 days)	US\$14 (204 days)	50% in Year 10	Year 10
<b>Type 5</b>	10% US\$175	15% US\$1,425	US\$1 (326 days)	US\$4 (324 days)	Year 9	Year 6

14. Overall, the irrigation models are financially viable for the five types. Schemes of Type 1 are financially interesting because of the rather low initial investment cost per hectare. The models for Types 2 and 3 assume the cultivation of rice during the rainy season and vegetables and cowpea during the dry season, which is a conservative scenario. In case schemes of Types 2 and 3 are used for vegetables all year round (vegetable gardens for women), the profitability of these schemes is much higher. The profitability of Type 4 schemes (2 rice crops per year) is rather modest, in particular given the high initial investment cost.

15. As of today, over 50 percent of the rural population lives under the national poverty line, and therefore it is not surprising that the WOP household income data are rather low. However, the project will lift many households above the poverty line.<sup>89</sup>

### Use of Inputs and Production Costs

16. In the Sahel region, the use of improved seeds and fertilizers barely figures in most farm

<sup>89</sup> SDG target 2.3: “By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment “? <https://sustainabledevelopment.un.org/sdg2>.

operations, particularly for staple foods. As a result, staple crop yields are among the lowest in the world and the region is heavily dependent on food imports. About 6–7 kg/ha of fertilizer is now being used because of spending on public subsidy programs, a figure that is still well below the target of 50 kg of nutrients per ha set by the Africa Union. And if applied, the vast majority of fertilizer is not used on food staples. Surprisingly still, with correct use of improved seeds and fertilizer, West African farmers could easily double or triple their yields of most major crops. For a comparison of estimated yield increase by crop, see Table 5.6. What is encouraging is that while still depending on fertilizer imports, local fertilizer production is growing. The World Bank paper from 2015 states that it is still very limited and dominated by blending companies that use imported ingredients. However, Mali supplies the entire 15,000 tons of fertilizer required by Burkina Faso for its subsidy program for cereals.

17. Given the large dependency on imports, it is not surprising that import tariffs are very low. Farmers generally use traditional rice seeds, although from 2009 improved rice seeds such as Nerica varieties are increasingly being adopted. What one has to bear in mind is that technology adoption (fertilizer use or paddy processing) will only become profitable if there is a market for absorbing the surplus created. In poorly connected markets, increased production volumes might not reach broader markets, and local market flooding will cause adverse effects through rapidly falling prices.<sup>90</sup>

18. While the average production costs for 1 ha of rice based on model assumptions are as outlined in the table below, production of a ton of paddy costs US\$210 in Senegal and US\$180 in Mali.<sup>91</sup>

**Table 5.9. Cost of Production and Labor**

	<b>WOP</b>	<b>Year 1</b>	<b>Full Production</b>
CFAF - labor	170,150	195,841	212,937
CFAF total - with labor	245,822	778,255	374,731
US\$ - labor	291	335	364
US\$ - total with labor	420	1330	641
<b>US\$ - total without labor</b>	<b>129</b>	<b>995</b>	<b>277</b>
% of labor of total costs	69%	25%	57%

## **Economic Analysis**

### **Assumptions**

19. An economic analysis was prepared over 20 years as it represents the useful life of the most durable investment item, based on the financial crop models and aggregating the results with project assumptions. An average VAT of 18 percent was used as conversion factor for imported/traded equipment and inputs unless more detailed information was available for a particular item. The exchange rate used in the COSTAB software as well as in the models is CFAF 585 for US\$1. While Mauritania is not using the West African CFA franc, all calculations are

<sup>90</sup> Adopted from paper in FAO/IFAD publication ‘Rebuilding West Africa’s Food Potential’ 2013: “Smallholder participation in value chains: The case of domestic rice in Senegal.”

<sup>91</sup> OECD, “West African Challenges / the 2008 rice crisis: shock and new challenges,” 2011, p. 4.

carried out in this currency. Where necessary, the conversion has been done at a rate of 0.6 Mauritanian ouguiya per CFA franc. A conversion factor of 0.75 has been applied to unskilled and family labor to illustrate the opportunity costs of labor, starting from a financial price per person-day of CFAF 1000. This assumption was found to represent the current unemployment and underemployment. A conversion factor of 0.83 for rice, 0.97 for urea, and 1.26 for DAP<sup>92</sup> fertilizer have been calculated. Important information underpinning the calculation of conversion factors is that West Africa’s transport costs are notoriously high and are estimated to account for almost a third of the fertilizer retail price in Mali. Further to this, Burkina Faso, Niger, and Senegal have been subsidizing fertilizer up to 50 percent of the retail price since 2008/09.<sup>93</sup> Based on available documentation, the import parity price was calculated for the port of Côte d’Ivoire as this is one of the main access points for rice imports into West Africa.<sup>94</sup> According to the latest World Bank guidance the social discount rate was computed using the average real growth rate for the six project countries. An equivalent of 8 percent social discount rate was selected for the 4 percent average growth rate.<sup>95</sup> The domestic price numeraire was used, that is, all economic prices expressed at an equivalent domestic market price level. As a good practice, the shadow exchange rate was computed to adjust the market exchange/official exchange rate for distortions from import duties and other trade barriers. It is done to calculate the ratio of economic price of foreign currency to its market price. Since the median over all six countries was 0.97, it was decided to round it off to one (<http://www.adb.org/sites/default/files/page/149401/conversion-economic-prices-2014.pdf>).

**Table 5.10. Summary of Assumptions Taken for the Economic Analysis**

Conversion factors for imported goods	General: 18% = 0.82 Rice: 0.83 DAP: 1.26 Urea: 0.97
Economic value of unskilled and family labor corresponding to opportunity cost of labor in the region	750
Social discount rate or long-term opportunity cost of capital	8%
Exchange rate for CFAF to US\$	585
Annual CO <sub>2</sub> equivalent emission (tonnes)	0.8

20. The adoption rate of 80 percent was used for the analysis.

21. The effect on GHG emissions was simulated with EX-ACT and results show that the project will be emitting GHG, mainly because of the high incremental fertilizer use and absence of counter measures, for example, planting more biomass/trees and so on. Water, fuel, and fertilizer use will increase but be more efficient. This has already been captured in the financial crop models.

### Economic Benefits and Costs

22. Table 5.11 shows the economic costs, benefits, and cash flow of the project. From Year 7 onward, the incremental economic cash flow of the project, including environmental benefits, will

<sup>92</sup> diammonium phosphate

<sup>93</sup> Adapted from World Bank paper “Towards an Integrated Market for Seeds and Fertilizer in West Africa” (2015); p. 13.

<sup>94</sup> Adapted from OECD paper June 2011 “West African Challenges/the 2008 rice crisis: shock and new challenges” - based on fieldwork in 2010.

<sup>95</sup> Source: Economic Intelligence Unit real GDP growth.

be US\$26.3 million per year.

**Table 5.11. Economic Cash Flow of the Project (US\$, thousands)**

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7–20
Economic costs [without double-counting of infrastructure]	9,726	18,128	20,145	10,050	3,059	1,503	1,716
Economic net incremental benefits (including EX-ACT)	(9,730)	(51,590)	(46,262)	(20,890)	16,104	24,461	26,326

### IRR, NPV, and Sensitivity Analysis

23. The economic IRR of the project is 15.5 percent. The NPV is US\$81.9 million. These indicators show the economic sustainability of the project as an investment project (See Table 5.12 for details).

**Table 5.12. Summary of Results**

Economic IRR (20 years)	15.5%
NPV (20 years @ 8%)	US\$81.9 million
NPV per beneficiary household	US\$1,021
Benefit-cost ratio	2.4
Beneficiary households total	80,200
Total Project cost per beneficiary household	US\$2,380

24. Sensitivity analysis assessed the effect of variations in benefits and costs and for lags in the realization of benefits. The results are presented below in Table 5.13. All tested scenarios are linked to the risks matrix. The sensitivity analysis shows that the project remains economically viable under the indicated assumptions.

**Table 5.13. Sensitivity Analysis**

Scenario	EIRR	NPV US\$ million	Link to risk analysis
Delay of all activities by two years	12.8% [switching value at approximately 5 years delay]	47.9	This scenario can occur if the political and governance situation worsens.
Lower yields -rice 20% lower -all crops 10% lower	12.7% 11.6%	50.1 37.5	If technical designs are not sound the available water quantity may be lower or less reliable.
50% decrease in projected irrigated area	9.1% [switching value at approximately 45%]	7.7	Should the project not upgrade the institutional capacity for implementation and sustainability, such a scenario is possible.

Scenario	EIRR	NPV US\$ million	Link to risk analysis
High value crops (tomato, onion) are only grown on 80% of the designated area [type 1-3]	10.4%	19.3	
50% overall adoption rate	11.3% [switching value at approximately 40%]	26.2	
20% lower output prices due to lower quality	8.2%	1.6	This can result from less reliable rainfall or increased competition in the project area [in the latter case it is more a project design issue].
Extreme climatic conditions lead to yield variability: -recurrent shock after three years which reduces yield by 30% -recurrent shock after three years which reduces yield by 15% and reduces all yield level by 10%	9.8% 8.8%	15.9 7.8	Shocks can be that too much time elapses between annual rainfall, extreme temperatures, drought, flooding or too high intensity rainfall.

## Environmental Impact

25. One additional element considered in this economic analysis is to quantify environmental externalities with the help of EX-ACT, which is an appraisal system developed by the FAO providing ex ante estimates of the impact of agriculture and forestry development projects, programs, and policies on the carbon balance. EX-ACT is a land-based accounting system, estimating carbon stock changes (that is, emissions or sinks of CO<sub>2</sub>) as well as GHG emissions per unit of land, expressed in equivalent tons of CO<sub>2</sub> per hectare and year. The tool helps project designers estimate and prioritize project activities with high benefits in economic and climate change mitigation terms.<sup>96</sup> To generate results, data have to be inserted for six topic modules, corresponding to the type of project. In this case, the land use change and crop management modules as well as the input modules were completed. For its default values EX-ACT uses data from the Intergovernmental Panel on Climate Change and/or region-specific coefficients (Tier 2). Similar to the economic analysis, this tool compares the situation without and with the project.

26. For all climate smart projects, EX-ACT provides ex ante evaluation of the impact of agriculture, forestry, and other land use projects on GHG emissions and carbon sequestration. This tool can also be used to account for the negative effects that many of the common interventions aiming at increasing productivity have on natural resources. This mitigation action complements the aspects of the SIIP on adaptation and resilience. Adaptation to climate change involves making

<sup>96</sup> For more information see: <http://www.fao.org/tc/exact/ex-act-home/en/>.

changes that strengthen local capacities to anticipate, avoid, absorb, accommodate, or recover from the effects of such hazards, for example, droughts and floods (= resilience). Table 5.14 summarizes the main area assumptions used for the carbon balance calculation.

**Table 5.14. Assumptions Used for EX-ACT Analysis**

	Initial Land Use	ha	Final Land Use
<b>Rehabilitation</b>			
	Inefficiently irrigated rice (wet season only) <ul style="list-style-type: none"> <li>• 150 days cultivation period</li> <li>• Straw exported (or burnt?)</li> </ul>	6,130	Optimally flooded rice <ul style="list-style-type: none"> <li>• 150 days cultivation period (the less days the less carbon emission because methane emissions are calculated by daily emission factors x cultivation period)</li> <li>• Straw exported (or incorporated into the soil)</li> </ul>
	Set aside (dry season only) <sup>97</sup>	6,130	Annual crops/vegetables/cereals with <ul style="list-style-type: none"> <li>• Improved agronomic practices<sup>98</sup></li> <li>• Nutrient management</li> <li>• No till/residue management</li> <li>• Water management</li> <li>• Manure application</li> </ul>
<b>Expansion</b>	Low input and output sorghum grown = annual crop (wet season only)	17,100	Optimally flooded rice
	Set aside (dry season only)	17,100	Annual crops/vegetables/cereals - or optimally flooded rice
<b>Total land</b>	Wet season	23,230	
<b>Total land</b>	Dry season	23,230	

27. Further to this, the following assumptions were taken:

- (a) Tropical dry climate
- (b) As project area is in lowlands, soil has more clay so analysis opted for low-activity clays<sup>99</sup>
- (c) Rice water regime during cultivation period: intermittently flooded
- (d) Rice water regime before cultivation period: non-flooded pre-season < 180 days

<sup>97</sup> EX-ACT technical guidelines for version 4, p.28 “set aside represents temporary set aside of annual cropland and therefore is also set at the same level as annual crop”.

<sup>98</sup> EX-ACT technical guidelines for version 4, p.45 for definitions.

<sup>99</sup> One of the major problems associated with extended cultivation of low-activity clay soils is the maintenance of favorable soil physical conditions and the control of soil erosion. Significant changes in soil chemical and biological properties also occur following forest or bush fallow clearing and cropping. Soil organic matter declines sharply during the first few years under cropping and the effect is more pronounced with intensive continuous cropping. Although soil fertility problems on the low-activity clay soils can be corrected by liming and appropriate fertilization, socioeconomic constraints often limit the application of these crop production technologies in many areas of tropical Africa. Currently, Sub-Saharan Africa's per capita and per hectare fertilizer use is very low compared with that of other regions. There is a need to develop integrated soil fertility management systems for the region based on better utilization of local nutrient sources. Such systems should be supplemented with external inputs, wherever that is feasible and affordable. [<http://www.fao.org/wairdocs/ilri/x5546e/x5546e04.htm>]



- (e) Incremental fuel consumption for operation of irrigation schemes
- (f) Amounts used for pesticides, fungicides, and insecticides were not included
- (g) The annual use of fertilizer (tons per year) were estimated as follows:

**Table 5.15. Use of Fertilizer for EX-ACT Analysis (tons per year)**

	At the Start of the Project	WOP	WIP
Urea (46.7% of N per default)	45	45	2,000
Other N-fertilizers (18% N)	0	0	378
N-fertilizer in irrigated rice (15% N per crop models)	0	0	436

Note: <http://nmsp.cals.cornell.edu/publications/factsheets/factsheet44.pdf>.

28. As explained in the financial analysis section, beneficiaries in the project area of 23,230 ha use only the wet season to cultivate inefficiently irrigated rice or low-yielding sorghum in the WOP situation. The land is therefore already used for cropping and is simply set aside during the dry season. Under the project, the development of irrigation schemes enables beneficiary households to cultivate the land twice per year and also to shift production to higher-value vegetables. Cropping intensity will increase as well as the use of fertilizer, water, fuel, and pesticides.

29. The analysis considers that 6,130 ha of inefficiently irrigated rice will be turned into 6,130 ha under improved crop management of irrigated rice. Further it assumes that 6,130 ha will be turned from set-aside land during the dry season into 6,130 ha of annual crops such as tomato, onions, potatoes, and cowpeas as well as optimally irrigated rice. This applies to the share of project area where the focus will be on rehabilitating existing irrigation schemes. In case of newly developed irrigation schemes, the analysis assumes that the land was previously used for low-input-low-output sorghum production during the wet season (17,100 ha). This land was set aside during the dry season. Under the project the 17,100 ha in the wet season will be used for optimally irrigated rice. The same area during the dry season will be turned from set-aside land into annual crops such as tomato, onions, potatoes and cowpeas or optimally irrigated rice.

30. As illustrated in Figure 5.1, EX-ACT indicates the following impacts on GHG emissions and carbon stock changes:

**Figure 5.1. EX-ACT Detailed Results Overview**

Components of the project	Gross fluxes			Share per GHG of the Balance					Result per year		
	Without	With	Balance	CO <sub>2</sub>			N <sub>2</sub> O	CH <sub>4</sub>	Without	With	Balance
	All GHG in tCO <sub>2</sub> eq	Positive = source / negative = sink		Biomass	Soil	Other					
<b>Land use changes</b>											
Deforestation	0	0	0	0	0	0	0	0	0	0	0
Afforestation	0	0	0	0	0	0	0	0	0	0	0
Other LUC	0	55,292	55,292	0	55,292	0	0	0	0	2,765	2,765
<b>Agriculture</b>											
Annual	0	-506,845	-506,845	0	-506,845	0	0	0	0	-25,342	-25,342
Perennial	0	0	0	0	0	0	0	0	0	0	0
Rice	334,991	804,987	469,996	0	0	0	0	469,996	16,750	40,249	23,500
<b>Grassland &amp; Livestocks</b>											
Grassland	0	0	0	0	0	0	0	0	0	0	0
Livestocks	0	0	0	0	0	0	0	0	0	0	0
<b>Degradation &amp; Management</b>	0	0	0	0	0	0	0	0	0	0	0
<b>Inputs &amp; Investments</b>	10,081	490,461	480,380			276,457	203,922		504	24,523	24,019
<b>Total</b>	<b>345,072</b>	<b>843,895</b>	<b>498,823</b>	<b>0</b>	<b>-451,553</b>	<b>276,457</b>	<b>203,922</b>	<b>469,996</b>	<b>17,254</b>	<b>42,195</b>	<b>24,941</b>
<b>Per hectare</b>	<b>9</b>	<b>22</b>	<b>13</b>	<b>7.1</b>	<b>-11.7</b>	<b>7.1</b>	<b>5.3</b>	<b>12.1</b>			
<b>Per hectare per year</b>	<b>0.4</b>	<b>1.1</b>	<b>0.6</b>	<b>0.4</b>	<b>-0.6</b>	<b>0.4</b>	<b>0.3</b>	<b>0.6</b>	<b>0.4</b>	<b>1.1</b>	<b>0.6</b>

31. The project activities will lead to carbon emissions of 498,823 tons of CO<sub>2</sub>-equivalent throughout the 20-year analysis or 0.6 tons of CO<sub>2</sub>-equivalent per hectare per year. The social value of carbon or social value of the effort to reduce carbon emissions according to the World Bank Guidance Note of 14 July 2014 starts at US\$30 in 2015 and increases to US\$80 in real terms by 2050. Total quantified benefits over the period of 20 years are minus US\$22,201,620.<sup>100</sup>

32. While the carbon emission is positive in this case, it is only a very low level. Yet, due to lack of information it excludes values related to the fuel consumption of the irrigation schemes and other uses (car use and flight emissions), which will add to the carbon emissions of the project. As can be seen in Table 5.15, rice cultivation is not a big emitter in the project countries when compared to livestock activities, for example (enteric fermentation).

**Table 5.16. Overview of Relative Emissions by Sector**

Area	Burkina Faso	Mauritania	Mali	Niger	Senegal	Chad
Burning - crop residues (%)	0.2	0.03	0.2	0.01	0.1	0.1
Burning – savanna (%)	14.1	4.2	25.6	1.3	33.7	41.8
Crop residues (%)	1.8	0.3	1.5	2.6	1.0	0.7
Cultivation of organic soils (%)	0.0	0.0	0.0	0.0	0.0	0.0
Enteric fermentation (%)	43.0	56.3	38.3	55.5	34.0	33.0
Manure applied to soils (%)	1.6	0.5	0.6	0.7	0.8	0.3
Manure left on pasture (%)	32.6	33.9	27.6	36.8	26.0	21.7
Manure management (%)	3.7	2.7	1.8	2.7	2.2	1.5
Rice cultivation (%)	2.0	1.7	3.0	0.3	1.4	0.7
Synthetic fertilizers (%)	0.9	0.3	1.4	0.1	0.8	0.2

Source: FAOSTAT 1990–2012.

### **Rationale for Public Sector Provision/Financing, if Applicable**

33. Most of the outputs financed by the project under all the three components, A, B and C, will be public goods, will involve externalities, or will increase economies of scale. The project is based on a holistic approach addressing all aspects of irrigation development, including the strengthening of the institutions involved in the irrigation subsector, the regulatory framework, and research and KM activities for the irrigation subsector. More specifically, institutional improvements under Component A will have far-reaching and positive impacts that cannot be achieved by the private sector. Irrigation investments under Component B will be used as examples of the innovative intervention approaches that will provide practical demonstration of conditions necessary for successful irrigation systems and hence create spillover effects. The project will build a conducive environment (e.g., basic public infrastructure, clear water management rules) to incentivize private investments based on innovative partnership approaches, with spillover benefits for smallholder farmers. The objective will be to support the demand for private services to reach the necessary scale for the suppliers and service providers to break even and develop

<sup>100</sup> Positive emissions are negative benefits.

business without further support. This is the reason project interventions will be concentrated in limited areas where the necessary scale can be achieved. Component C will support project coordination and trainings that will contribute to building capacity of the overall sector.

### **Value Added of World Bank's Support**

34. **The WBG is in a unique position to use a wealth of knowledge and ongoing relationships with regional and national stakeholders.** The 2iS will amplify the impact on ongoing efforts in the Sahel and build on earlier analytical work conducted at regional<sup>101</sup> and subregional<sup>102</sup> levels by the WBG with various partners. The WBG is already substantially involved in irrigation development projects in the Sahel region through both Development Program Financing and Investment Program Financing. There are ongoing IDA projects financing irrigation activities in all six countries, and IFC has a number of projects in the pipeline as described in the JIP. IFC is also supporting other related initiatives, such as an advisory project promoting the development of leasing.<sup>103</sup> The World Bank also has a permanent dialogue with the regional economic communities (ECOWAS and WAEMU) in support of the CAADP<sup>104</sup> and several projects or technical assistance with the transboundary basin organizations for Senegal, Niger, the Volta River Basin and Lake Chad,<sup>105</sup> as well as a regional project for agricultural productivity. In return, the results of the proposed project will help the design and implementation of the next generation of AWM interventions financed by the WBG, other donors, and the private sector.

35. **In addition, the WBG has a unique convening power, which is critical to achieve the paradigm shifts promoted by the project.** The added value of the World Bank to support this project is based on: (a) its ability to maintain a high-level policy dialogue with states and a wide range of stakeholders to enable the necessary changes; (b) its ability to position itself as a coordinator of bilateral and multilateral donors and to engage with the private sector; and (c) its capacity as a development bank to articulate technical and funding issues, knowing that innovation in financial approaches will be critical to achieve the Dakar Declaration goals. Finally, the World Bank is able to provide regional funding and therefore sustain the regional momentum required to support this initiative among six countries.

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<sup>101</sup> In 2007, the World Bank partnered with the African Development Bank (AfDB), FAO, IFAD, and IWMI to produce a reengagement strategy for AWM in Sub-Saharan Africa. It was followed by the establishment of a business plan for the Africa region of the World Bank, which was successfully implemented from 2008 to 2012. There remains, however, much to do to improve the performance and accelerate the development pace as recognized by the Dakar Declaration.

<sup>102</sup> Notably a study titled "Lessons Learned in the Development of Smallholder Private Irrigation for High-Value Crops in West Africa" by the World Bank with IFAD and FAO, which was complemented by a study conducted by IFC regarding the financing of smallholder private irrigation.

<sup>103</sup> Africa Leasing Facility Program (ALF II).

<sup>104</sup> The World Bank is managing a multi-donor trust fund designed to support African institutions involved in CAADP implementation to build their institutional capacity. The multi-donor trust fund notably supports the ECOWAS.

<sup>105</sup> Senegal - *Projet de Gestion Intégrée des Ressources en Eau*; Niger - Water Resource Management and Sustainable Ecosystem Management project Phase 1 and Phase 2A; Volta River Basin - *Système d'Alerte Précoce* (Early Warning System); Lake Chad - Technical Assistance.

