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Report No: PAD5473

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED SECOND ADDITIONAL GRANT

IN THE AMOUNT OF US$25 MILLION

FROM THE

GLOBAL AGRICULTURE AND FOOD SECURITY PROGRAM

TO THE

REPUBLIC OF SIERRA LEONE

FOR THE

WEST AFRICA FOOD SYSTEMS RESILIENCE PROGRAM PHASE 2 (P178132)

July 27, 2023

Agriculture and Food Global Practice
Western and Central Africa Region

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ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AF1	First Additional Financing
AfDB	African Development Bank
CBA	Cost-benefit analysis
CE	Citizen Engagement
CERC	Contingency Emergency Response Component
CILSS	Permanent Interstate Committee for Drought Control in the Sahel (Comité permanent inter-État de lutte contre la sécheresse au Sahel)
CORAF	West and Central African Council for Agricultural Research (Conseil de l'Afrique de l'Ouest et du Centre pour la recherche et le développement agricole)
CPF	World Bank's Country Partnership Framework
CRW-ERF	Crisis Response Window - Early Response Financing
CSA	Climate Smart Agriculture
E&S	Environmental and Social
ECOWAS	Economic Community of West African States
EFA	Economic and Financial Analysis
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESRC	Environmental and Social Risk Classification
ESS	Environmental and Social Standard
FAO	Food and Agriculture Organization of the United Nations
FCV	Fragility, Conflict and Violence
FSRP	Food Systems Resilience Program
GAFSP	Global Agriculture and Food Security Program
GBV	Gender Base Violence
GHG	Greenhouse gases
GM	Grievance Mechanism
GoSL	Government of Sierra Leone
IDA	International Development Association
ILM	Integrated Landscape Management
IPC	Integrated Food Security Phase Classification
IPCC	International Panel on Climate Change
IPMP	Integrated Pest Management Plan
IVR	Interactive Voice Response system
IVS	Inland Valley Swamp
LMP	Labor Management Plan

LUAs	Land User Associations
M&E	Monitoring & Evaluation
MAFS	Ministry of Agriculture and Food Security
MoGCA	Ministry of Gender and Children's Affairs
MPA	Multiphase Programmatic Approach
NaCSA	National Commission for Social Action
NaFFSL	National Federation of Farmers of Sierra Leone
NDC	Nationally Determined Contribution
NDPPCO	National Development Partner Programs Coordinating Office
PDO	Project Development Objective
PIU	Project Implementation Unit
QA-FSRP	Quick Action Food Security Response Plan
RPF	Resettlement Plan Framework
SEA/SH	Sexual Exploitation and Abuse/Sexual Harassment
SEP	Stakeholder Engagement Plan
SRI	System of Rice Intensification
UN	United Nations
WEAI	Women's Empowerment in Agriculture Index
WFP	World Food Program
WUAs	Water User Associations

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BASIC INFORMATION – PARENT (West Africa Food System Resilience Program (FSRP) Phase 2 - P178132)

Country	Product Line	Team Leader(s)		
Western and Central Africa	IBRD/IDA	Katie Kennedy Freeman		
Project ID	**Financing Instrument**	**Resp CC**	**Req CC**	**Practice Area (Lead)**
P178132	Investment Project Financing	SAWA4 (10130)	AFWRI (7960)	Agriculture and Food

Implementing Agency: Ministry of Agriculture and Forestry - Sierra Leone, Ministry of Agricultural Development - Chad, Ministry of Food and Agriculture - Ghana

Is this a regionally tagged project?	Country (ies)
Yes	Ghana, Sierra Leone, Chad

Bank/IFC Collaboration	Joint Level
Yes	Complementary or Interdependent project requiring active coordination

Approval Date	Closing Date	Expected Guarantee Expiration Date	Environmental and Social Risk Classification
29-Jul-2022	30-Sep-2028		Substantial

Financing & Implementation Modalities

[✓] Multiphase Programmatic Approach [MPA]	[✓] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[✓] Fragile within a Non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made disaster

[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on Expanded Implementation Support (HEIS)

Development Objective(s)

MPA Program Development Objective (PrDO)

To increase preparedness against food insecurity and improve the resilience of food systems in participating countries.

Project Development Objectives (Phase 002)

To increase preparedness against food insecurity and improve the resilience of food systems in participating countries.

Ratings (from Parent ISR)

	Implementation		Latest ISR
	21-Oct-2022	27-Feb-2023	24-Jul-2023
Progress towards achievement of PDO	S	S	S
Overall Implementation Progress (IP)	S	S	S
Overall ESS Performance	S	MS	S
Overall Risk	S	S	S
Financial Management	S	S	S
Project Management	S	S	S
Procurement	S	MS	MS
Monitoring and Evaluation	S	S	S

BASIC INFORMATION – ADDITIONAL FINANCING (Additional Financing to the Food System Resilience Program, Phase 2 Sierra Leone - P181088)

Project ID	Project Name	Additional Financing Type	Urgent Need or Capacity Constraints
P181088	Additional Financing to the Food System Resilience Program, Phase 2 Sierra	Scale Up	Yes

	Leone		
Financing instrument Investment Project Financing	Product line Recipient Executed Activities	Approval Date 21-Jul-2023	
Projected Date of Full Disbursement 29-Sep-2028	Bank/IFC Collaboration No		
Is this a regionally tagged project? No			

Financing & Implementation Modalities

[✓] Multiphase Programmatic Approach [MPA]	[ ] Series of Projects (SOP)
[✓] Fragile State(s)	[ ] Performance-Based Conditions (PBCs)
[ ] Small State(s)	[ ] Financial Intermediaries (FI)
[ ] Fragile within a Non-fragile Country	[ ] Project-Based Guarantee
[ ] Conflict	[✓] Responding to Natural or Man-made disaster
[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on, Enhanced Implementation Support (HEIS)
[✓] Contingent Emergency Response Component (CERC)	

Disbursement Summary (from Parent ISR)

Source of Funds	Net Commitments	Total Disbursed	Remaining Balance	Disbursed
IBRD				%
IDA	365.00	20.11	345.08	5.5 %
Grants				%

MPA Financing Data (US$, Millions)

MPA Program Financing Envelope	716.00

MPA FINANCING DETAILS (US$, Millions)

Board Approved MPA Financing Envelope:	716.00
MPA Program Financing Envelope:	716.00
of which Bank Financing (IBRD):	0.00
of which Bank Financing (IDA):	645.00
of which other financing sources:	71.00

PROJECT FINANCING DATA – ADDITIONAL FINANCING (Additional Financing to the Food System Resilience Program, Phase 2 Sierra Leone - P181088)

FINANCING DATA (US$, Millions)

SUMMARY (Total Financing)

	Current Financing	Proposed Additional Financing	Total Proposed Financing
Total Project Cost	315.00	106.25	421.25
Total Financing	315.00	100.00	415.00
Financing Gap	0.00	6.25	6.25

DETAILS - Additional Financing

Non-World Bank Group Financing

Trust Funds	25.00
Global Agriculture and Food Security Program	25.00

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any other Policy waiver(s)?

[ ] Yes [✓] No

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

INSTITUTIONAL DATA

Practice Area (Lead)

Agriculture and Food

Contributing Practice Areas

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
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	Responsible)		
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Shafick Hoossein	Environmental Specialist	Safeguards	SAWE4

Extended Team

Name	Title	Organization	Location

I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

A. Introduction

1. **This paper seeks the approval of the Regional Vice President of an Additional Financing (AF) in the amount of US$25.0M to the Multi-phase Programmatic Approach (MPA) of the West Africa Food System Resilience Program (FSRP, Phase 2, P178132) for the Republic of Sierra Leone from the Global Agriculture and Food Security Program (GAFSP).** The proposed AF, which will be the second AF to FSRP for Sierra Leone, will complement short-term emergency responses, while also contributing to building medium - to long-term resilience for the recovery of the agriculture and food systems in Sierra Leone. FSRP is an MPA that was approved in November 2021 to address food insecurity and strengthen food system resilience in West Africa. Its first phase (US$401M, of which US$330M IDA) became effective in June 2022, including support to Economic Community of West African States (ECOWAS), Permanent Interstate Committee for Drought Control in the Sahel[1] (CILSS) and West and Central African Council for Agricultural Research[2] (CORAF) as well as Burkina Faso, Mali, Niger, and Togo. The second phase of the program supporting Chad, Ghana, and Sierra Leone (US$315M), was approved in July 2022.

2. **Sierra Leone's Financing Agreement was signed on August 22, 2022, and the project became effective on November 4, 2022.** Based on a request from the Government of Sierra Leone (GoSL), the Contingency Emergency Response Component (CERC) was activated with a financing of US$25M to respond to the food insecurity crisis in Sierra Leone on November 10, 2022. To replenish the financing gap left by the CERC activation and finance additional emergency activities, the GoSL requested the first AF of US$50M from the IDA20 Crisis Response Window - Early Response Financing (CRW-ERF) that provides support to address the emerging food security crisis. The CRW-ERF AF was approved by the World Bank Board of Directors on December 15, 2022 and became effective on March 17, 2023.

B. Current Status of the Parent Project Implementation

3. **The FSRP overall implementation progress and progress towards achievement of the Project Development Objective (PDO) are both rated satisfactory.** The project's performance regarding financial management is rated satisfactory while performance related to procurement and safeguards is rated as moderately satisfactory. This is true for Phase 1 and Phase 2 of the MPA.

4. **In Sierra Leone the FSRP is financing investment in medium- to long-term food insecurity as well as emergency short-term interventions.** Activities in Sierra Leone have been launched across all components and are moving rapidly, especially under the emergency food security support interventions. The National Commission for Social Action (NaCSA) is leading the implementation of the cash transfer intervention to provide food and nutrition assistance to 12,000 vulnerable households facing high food insecurity. Working through the School Feeding Secretariat and the World Food Program (WFP), the Project is currently providing school feeding for 114,823 children in 588 pre-primary and primary schools in three crisis-affected districts to enhance nutritional levels of the children from at-risk households, also targeting vulnerable children (e.g., learners with disabilities). The Food and Agriculture Organization (FAO)

[1] Comité permanent inter-État de lutte contre la sécheresse au Sahel
[2] Conseil de l'Afrique de l'Ouest et du Centre pour la recherche et le développement agricole

is engaged to provide Technical Assistance for the implementation of activities related to strengthening of the National Early Warning System on food and Nutrition Security, the rehabilitation of 1,000 ha of inland valley swamps (IVS) under the cash for work modalities to provide incomes for crisis-affected youth, and the provision of 7,500 livestock/small ruminants and poultry to restore productive assets and build community buffers to enhance resilience during crisis. To restore the productive capacities of crisis-affected farming households, the project has supported the preparation of 15,000 ha land for 35,403 crisis-affected small farmers to cultivate cassava during the current 2023 cropping season and is providing seed and fertilizer support using e-voucher system that enhances beneficiary targeting as well as advisory services to improve productivity. Site selection and other activities related to community engagements and consultations on the integrated landscape management (ILM) interventions have been launched. As of July 25, 2023, the FSRP in Sierra Leone has disbursed US$17.22 million, and projections through the calendar year 2023 are US$28.16M (equivalent to 25 percent). Phase 2 overall implementation progress and progress towards achievement of Project Development Objective (PDO) are both rated Satisfactory.

C. Rationale for Additional Financing

5. **Sierra Leone is one of the poorest countries in the world**, with a Human Development Index of 0.477 and ranked 181 out of 191 countries in 2022, and with Gross Domestic Product per capita of only US$478 in 2022. Following the COVID-19 outbreak, and subsequent disruptions to global supply chains, the economy contracted by 2 percent in 2020. The national poverty rate declined by 5.6 percentage points over the past decade but remains high at 56.8 percent.[3] Poverty is concentrated in rural areas, with a poverty incidence of 78.7 percent and the poorest households are those headed by people engaged in agriculture. More than 70 percent of the rural poor are women, most of whom are engaged in agriculture. Economic growth resumed in 2021 to an estimated rate of 4.0 percent in 2022 mainly driven by recovery in the agricultural sector.[4] The economy is highly vulnerable to domestic and external shocks due to its dependence on mining – which is sensitive to shifts in global demand and prices – and on agriculture – which is rain-fed and subject to erratic weather changes.

6. **Sierra Leone is chronically food insecure, experiencing recurrent episodes of acute need.** Chronic challenges include low agricultural productivity, climate change impacts, inadequate infrastructure, past conflict and high levels of poverty that impede access to nutritious food. The country has consistently rated low on the Global Hunger Index recording levels of hunger considered “serious” or “alarming”, especially over the past decade. Food insecurity and malnutrition are currently worsening in Sierra Leone. The Cadre Harmonisé results from September 2022 indicated that countrywide, 1.61 million individuals (20 percent of Sierra Leone’s population) were facing Integrated Food Security Phase Classification (IPC) 3+ crisis or emergency level food insecurity with 26,400 people in IPC4+ (a 57 percent increase from March 2022).[5] The September 2022 HungerMap analysis by the WFP[6] found that in 12 of Sierra Leone’s 16 districts, 3.51 million people (42.8 percent of the population) had insufficient food consumption (707,000 more than in May 2022), 3.44 million people (41.9 percent of the population) had crisis or above crisis level food-based coping strategies, and 3.67 million people (46.1 percent of the

[3] World Bank. 2019. Poverty and Shared Prosperity in Sierra Leone, 2011-2018C
[4] Statistics Sierra Leone
[5] Food and Nutrition Situation Sierra Leone. RPCA. *https://www.food-security.net/en/datas/sierra-leone-2/*
[6] Note that the difference between food insecurity data stemming from the Cadre harmonisé (Ch) and WFP data is due to differences in the employed definition of food security and the corresponding data collection methodology. The WFP monitors food and nutrition insecurity trends in real time whereas the Cadre harmonisé relies on field surveys conducted twice a year.

population) faced challenges accessing markets.[7] In January 2023, 788,000 individuals (9.3 percent of Sierra Leone's population) were facing crisis or emergency (IPC3+) level food insecurity. While this number is below the all-time high of 1.5 million in March 2021, it is growing and is expected to increase to 1.1 million (13 percent of the population) by August 2023.[8] The number of people projected to be in crisis or worse (IPC3+) stands at 1.2 million (16 percent of the population) with 34,384 people facing emergency (IPC4+) level food insecurity from June to August 2023.[9]

7. **The food crisis Sierra Leone is facing is vast and needs coordinated and urgent action.** The GoSL's response plan, the Sierra Leone Quick Action Food Security Response Plan (QA-FSRP), for addressing the current food crisis includes short-term measures to provide immediate relief to the most vulnerable population as well as medium to long-term measures to enhance the resilience of the food systems for improved food security. The proposed GAFSP AF seeks to support the GoSL's action plan to meet the immediate food security needs of the most vulnerable households and contribute to building resilience of the food systems for improved food security in Sierra Leone by addressing institutional weaknesses, strengthening research and extension systems, and promoting technology access and exchange. The response plans, and thus the AF, are in line with lessons learned linked to past World Bank interventions that confirm that interventions aiming to reduce food insecurity must combine immediate crisis relief with investments in strengthening agricultural production and restoring households' productive assets.

8. **The AF will both contribute to the emergency response to Sierra Leone's current food crisis and invest in medium to longer term resilience along with other activities implemented under the Parent Project.** GAFSP has approved US$25M for the country to address the most critical needs. To improve the food system, especially given the current level of the crisis, more resources are required to support a large share of smallholder farmers through the provision of improved agricultural inputs and advisory services, among others. The AF from GAFSP will complement the work of FSRP to contribute to improving food security in the short-term and help to build resilience in the medium and longer terms by scaling activities planned under the associated project. Given that the parent project is at early stage of implementation, there can be a seamless integration of the GAFSP AF into the project.

9. **The GAFSP AF will make a critical contribution towards filling the observed financing gaps of the QA-FSRP.** The GoSL has engaged development partners to support the US$140 million QA-FSRP. The US$25 million GAFSP financing complements US$50 million in existing AF to FSRP (P178132) from the CRW-ERF as well as US$2.8 million in existing funding provided by Productive Social Safety Nets and Youth Employment Project (PSNYE, P176789) funded with US$15 million by the World Bank, US$5.7 million by WFP and US$2.1 million by the African Development Bank (AfDB). Discussion with the donor community is on-going to fill the remaining gap (US$42.2 million).

10. **The proposed AF is well aligned with the World Bank's Country Partnership Framework (CPF) fiscal year (FY) 2021 – FY2026 for Sierra Leone (report # 148025).** It specifically contributes to Focus Area

[7] WFP HungerMap: Sierra Leone Insight and Key trends. 15 September 2022. *https://hungermap.wfp.org*. The HungerMap primarily tracks trends in household food consumption, consumption-based coping and livelihood changes to understand multiple aspects of food insecurity. These are outcome level 1 indicators in the IPC Framework and therefore provide early indications of potential shifts in acute food insecurity. Specifically, three measures are assessed: the prevalence of insufficient food consumption; the prevalence of crisis or above crisis level food-based coping strategies; and the prevalence of challenges in accessing markets.
[8] Résultats de l'analyse de l'insécurité alimentaire et nutritionnelle aiguë courante en octobre-décembre 2022 et projetée en juin-août 2023. *https://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/ch/Resultats_Analyses_Nov2022_fichedecommunication.pdf*
[9] RPCA, 2023. https://www.food-security.net/en/visualise/

3, Economic Diversification and Competitiveness with Resilience and the emphasis on increasing productivity.[10] By addressing risk and vulnerability in Sierra Leone, the CPF provides a strong foundation for the World Bank's response to the unfolding food crisis in the country. The AF is also aligned with the World Bank's Strategy for Fragility, Conflict and Violence (FCV). Specifically, it supports the fourth pillar on "mitigating the spillovers of FCV to support countries and the most vulnerable and marginalized communities that are impacted by cross-border crises, such as forced displacement or shocks resulting from famines, pandemics, and climate and environmental challenges." The AF focuses on two of the six priority issues of the World Bank's FCV Strategy, including: (i) creating jobs and economic opportunities; and (ii) building the resilience and preparedness of communities, including the ability to manage climate change and environmental degradation. This is aligned with the World Bank's Crisis Response Framework, under pillar 1, "responding to food insecurity," and specifically related to a) support production and producers, b) scale-up social protection to protect the vulnerable, and c) sustainable food and nutrition security.

11. **The AF supports the GoSL's Medium-Term National Development Plan (2019-2023) and National Agriculture Transformation Plan 2023.** It also supports the GoSL's aim to implement the actions and roll out plan for sustainable food systems contained in the synthesis report of the Country Food Systems Dialogue prepared as part of the 2021 World Food Systems Summit.

12. **The proposed AF is consistent with Sierra Leone's national priorities for climate action.** It is consistent with the 2021 Updated Nationally Determined Contribution (NDC)[11] and the National Adaption Plan (NAP)[12]. According to the NAP, extreme weather events which threaten agricultural production and food security include strong winds, thunderstorms, landslides, heatwaves, and seasonal droughts. The NDC also identifies yield reduction and crop failures due to flooding and waterlogging, as well as increased disease incidence in staple crops as result of rising temperatures as key climate resilience risks in the agricultural sector. Priority actions in the NAP include mainstreaming climate change into agricultural development strategies, promoting climate resilient food security practices, and innovative and adaptive approaches such as irrigation and water harvesting to protect farmers from variable rainfall. The key agriculture related adaptation measures identified in the NDC include (i) sustainable management of watersheds and freshwater resources for human ecological benefits; (ii) adoption and application of climate-smart and conservation agriculture through best agricultural practices that enhance soil fertility and improve crop yield; (iii) removing barriers to adoption of low-carbon technologies. Key NDC mitigation strategies for agriculture include measures to (a) establish early warning systems to improve local understanding of risks; (b) improve institutional and functional capacities for integrated water management; (c) improve research and knowledge management capacities to support Climate-Smart Agriculture (CSA) and resilient land management; (d) promote climate-resilient food security practices; and (e) create an enabling environment for the resilience of private-sector investment, among others. These NAP and NDC adaptation and mitigation measures are substantially supported by activities to be financed under the proposed AF. The project activities across all the three technical components are consistent with the NDC adaptation and mitigation measures and will contribute to Sierra Leone's transition to lower-carbon agriculture. See Paris Alignment discussion in Section C. The parent project has

[10] The Focus Area 3 includes all investment that (i) Build resilient infrastructure (power, mobility, technology) for enhanced competitiveness, (ii) Boost productivity for a diversified economy and (iii) enhance disaster risk management and climate change adaptation.
[11] Updated Nationally Determined Contribution (NDC), The Republic of Sierra Leone. July 2021
[12] Sierra Leone National Adaptation Plan 2021

been screened for climate change and disaster risks.

13. **A Paris alignment assessment has been undertaken, and the residual risks are categorized as Low risk.** This is because the project interventions are exposed to climate hazards (particularly, floods and erratic rainfall), which could affect the achievement of the project outcomes. The project interventions, including the promotion of ILM and water management and promoting best climate resilient agricultural practices will yield a low residual risk that is an acceptable level

MPA Program Framework

Phase #	Project ID	Sequential or Simultaneous	Phase's Proposed DO*	IPF or PforR	Estimated IBRD Amount ($ million)	Estimated IDA Amount ($ million)	Estimated Other Amount ($ million)	Estimated Approval Date	Estimated Environmental & Social Risk Rating
1	P172769			IPF	0.00	330	71		
2	P178132			IPF	0.00	315	0.00		
AF	P180211			IPF	0.00	50	0.00		
AF	P181088			IPF	0.00	0.00	25		
AF	P181139			IPF	0.00	0.00	20		
Total					0.00	695	116		
Revised Financing Envelope							**$** 811		
Board Approved Financing Envelope							**$** 716		

II. DESCRIPTION OF ADDITIONAL FINANCING

A. Summary of Proposed Changes

14. **There will be no changes to the PDO or the components of the parent project.** The PDO will remain "*to increase the preparedness against food insecurity and improve resilience of food systems in participating countries"*. The parent project has five components:

- Component 1: Digital Advisory Services for Agriculture and Food Crisis Prevention & Management (IDA US$13.7 million equivalent). This component enhances decision support systems to increase the effectiveness of agriculture and food crises prevention and management and strengthen capacity to adapt to climate variability and change.
- Component 2: Sustainability and Adaptive Capacity of the Food System's Productive Base (IDA US$50.1 million equivalent). This major component provides support to enhance the resilience of the food system's productive base.
- Component 3: Regional Market Integration & Trade (IDA US$13.7 million equivalent). The component supports facilitation of trade across key corridors and support value chain development.
- Component 4: CERC (IDA US$25.0 million equivalent). The CERC supports the implementation of the GOSL's QA-FSRP.
- Component 5: Project Management (IDA US$7.5 million equivalent).

15. However, the disbursement tables for both the Parent Project and the first Additional Financing (AF1) will be amended to redefine the percentage of financing per the annual workplan and budget for all financing sources to enable the project to disburse on a flexible basis.

16. **The proposed AF will finance activities under Components 2 and 5.** The AF will scale-up activities of Component 2 to enhance the resilience of the food system for improved food security. Learnings from the Phase I of the MPA on the fastest implementation mechanisms of Component 2 activities (implementation of on-farm and community-level investments in parallel with the participatory identification of additional community-level investments) will be considered. Some of the emergency operations under Component 4 of the parent project and AF1 will also be scaled up under Component 2 to meet the immediate food and nutrition needs of acutely food insecure agricultural households and communities identified for support through the government-led targeting process. Additional resources will be added to Component 5 to enhance the capacity of the Project Implementation Unit (PIU) with additional resources to effectively coordinate the implementation of the expanded activities.

B. Changes in Beneficiaries and Target Areas

17. The additional resources from the GAFSP grant will contribute to expanding the reach of FSRP to an additional 61,300 people (from the current 881,900 to 943,200 people) focusing on vulnerable households and communities in six administrative districts (Pujahun, Moyamba, Port-Lokko, Tonkolili, Kambia, Koinandugu). The six districts were chosen based on the following criteria: (i) prevalence of food insecurity; (ii) geographical conditions for production (specifically rice and vegetables) and trading (distance to national and regional markets); (iii) location of emergency projects of other development

partners to avoid concentration; and (iv) balanced support for districts in the North and South of Sierra Leone. The targeted beneficiaries are selected using the targeting framework used for the cash transfer under the parent project, that was developed by the NaCSA and is being used for the unconditional cash transfer interventions under the Productive Safety Net and Youth Employment Project (P143588). In the short term, the AF contributes to increasing the area put under cultivation for crop production by 24,500 ha. An additional 9,000 ha for rice will be supported, in addition to the inclusion of high-nutrient crops, such as biofortified cassava and orange flesh sweet potato to enhance household nutrition. This translates to satisfying the annual consumption of at least 110,000 people at an average 131 kg per capita consumption, according to initial estimates. This support is also expected to contribute to the FSRP target for reducing food insecure households by at least 25 percent. Also, the expected boost in production will increase food supply to local markets hence contributing to reducing the high price rise for main staple food and other close substitutes. In the medium term, the AF will contribute to capacity enhancement for the delivery of extension services to farmers thereby enhancing the production environment for an effective farming practice, which promote intensive production and improve productivity on a whole.

C. Changes in Results Framework

18. Results will continue to be measured using the indicators of the MPA framework. The targets of the original indicators are revised to reflect the scale-up activities. One additional indicator is introduced to report on the number of people receiving improved nutrition services and products. The indicators are summarized below and detailed in the Results Framework (VIII).

Table 1: Summary of Indicators

Indicator	End Target		
	Original Project	Current – after restructuring (CERC activation and first AF)	With GAFSP (second AF)
MPA Indicators (Sierra Leone)			
Program beneficiaries (number and percentage of female beneficiaries)	365,200 (40% women)	881,900 (40% women)	943,200 (40% women)
Area under sustainable landscape management	3,000	6,000	14,000
Producers adopting CSA technologies and services	160,000 (40% women)	260,000 (40% women)	311,000 (40% women)
Additional Indicators			
Farmers reached with agricultural assets or services (number)	7,500 Added in first AF only	258,000 (40% women)	292,000 (40% women)
Number of producers supported in crop and livestock production (number)		258,000 (40% women)	292,000 (40% women)
Qty of inputs distributed (in metric tons)		7,500	10,540
- Rice Seeds		2,500	3,240
- Fertilizers		5,000	7,300

Indicator	End Target		
	Original Project	Current – after restructuring (CERC activation and first AF)	With GAFSP (second AF)
People receiving improved nutrition services and products[13]	Added in second AF only		26,000

D. Summary of Component and Cost changes

19. **Component 2: Sustainability and Adaptive Capacity of the Food System's Productive Base - US$73.3 million equivalent (of which IDA US$50.1 million equivalent and GAFSP US$23.2 million).** Additional resources from the GAFSP grant will complement the parent project in improving access to advisory services to accelerate the adoption of productivity enhancing technologies, to scale-up interventions supporting ILM, as well as the adoption of CSA practices to enhance resilience and improve productivity.

20. ***Subcomponent 2.1: Consolidate Regional Agricultural Innovation System – US$15.0 million (of which IDA US$11.6 million and GAFSP US$3.4 million).*** This sub-component supports the consolidation of the national research and extension systems to deliver technological innovations for the country's food system. Under this sub-component, the GAFSP grant will fund the scale-up of interventions to enhance the delivery of agricultural extension services to farmers and other economic operators in the agricultural value chains. This activity will contribute to the strengthening of the agricultural extension system with additional equipment and staff training to enhance the capacity of the Ministry of Agriculture and Food Security (MAFS) to deliver extension services. It will (i) support the review and strengthening of the current extension system to enhance extension service delivery through the use of digital platforms, with private sector participation, to significantly increase the reach, impact and cost effectiveness of the county's extension system; (ii) expand the space for innovative technologies and digital techniques in the delivery of agricultural advisory and other services; (iii) support the operational needs of the field extension staff through skills development, provision of relevant technology and digital tools; (iv) promote private sector participation in the delivery and operation of the recently launched MAFS e-extension system to ensure sustainability; and (v) provide logistical and mobility support (like motorbikes) to frontline extension staff to enhance field operation and monitoring. The core beneficiaries of this sub-component will be the extension staff of MAFS at national and district level, private service providers and farmer-led facilitators.

21. To deliver this sub-component, the following scale-up activities will be financed: (i) further develop and regularly update agricultural extension portal to which the farmer knowledge library (Interactive Voice Response (IVR) system) and the Call Center (operated at MAFS) will be linked. The e-extension portal will digitize and store all extension messages and information for easy access, including producing and disseminating documentary videos of improved agricultural practices and technologies; (ii) provide Technical Assistance in reforming agricultural advisory practices towards greater use of digital

[13] This indicator measures the increase in the number of people with access to a basic package of nutrition services through the GAFSP-financed activities (e.g., provision of Ready to Use Therapeutic Foods (RUTFs), micronutrient supplements, biofortified plant materials, community nutrition education programs).

systems; (iii) provide training to district extension staff and specialists on extension services to farmers and monitoring of field-based production activities using appropriate digital systems and tools; (iv) provide support for the training of farmer-based facilitators on new extension tools; (v) procure electronic devices to support data collection, reporting, and knowledge management and dissemination; (vi) support the operationalization of the MAFS e-extension system, as a key extension delivery tool, through the provision of training on effective farmer engagement, provision of smart android devices for call response, and the provision of incentives for IVR and Call Center operators (especially the volunteers until MAFS finalize the regularization of their employment by GoSL); (vii) facilitate engagements with the private sector and Telecos in leading the delivery, operation and management of the digital tools for sustainability; (viii) support to operationalize the IVR system to provide ready-to-go information to farmers 24/7. This support will include IVR licenses and hosting renewal and maintenance, awareness raising and sensitization through radio adverts and TV talk shows, community meetings, newspapers publications, etc.; and (ix) engage National Federation of Farmers of Sierra Leone (NaFFSL) to work with farmers through the commodity platform approaches for adoption of best farming practices and commitment to improving production.

22. ***Sub-component 2.2: Strengthening Regional Food Security through*** **Integrated Landscape Management (*ILM*) - *US$58.3 (of which IDA US$38.5 million and GAFSP US$19.8 million).*** This sub-component contributes to improved food security for rural households and building their resilience to climate variability by supporting ILM. The AF will scale up interventions of the parent project that promote climate-smart and nutrition-sensitive agriculture practices, technologies and interventions. It will scale-up FSRP interventions towards the development of ILM technologies, focusing on communal lands to strengthen the natural resource base in a sustainable way while promoting appropriate climate-smart agricultural practices and technologies in the context of the support for the cultivation of rice, cassava, and vegetables through the supported e-voucher program. This support will increase the target of FSRP's ILM intervention in the IVS by 8,000 ha. To deliver this, the GAFSP AF will provide additional support for financing stakeholder mobilization and awareness raising for participatory integrated communal landscape planning and management, including the establishment or strengthening of the functioning of local committees to lead the implementation. This will be led by civil society groups/NGOs who will facilitate participatory work for planning on communal land. Foreseen investments include (i) civil works for improved soil and water management (rehabilitation/development of 7,000 ha IVS, lowland and bolilands (seasonal hydromorphic swamps) through the rehabilitation and improvement of weirs, dykes, bunds, water harvesting and erosion control structures, and 1000 ha of small-scale and efficient irrigation systems, etc.) on communal lands (cultivated by smallholders) identified through participatory landscape planning; (ii) training community youth contractors, farmers, and engineering staff in IVS rehabilitation and improved water management practices; (iii) establishing and training Water User Associations (WUAs) and Land User Associations (LUAs) for sustainable management of water catchment and irrigation systems, and lowland ecologies respectively who will ensure that all community members have equal access to the developed lands; (iv) training to major farmers and WUA and LUAs' members on CSA and agronomic practices, and (v) investments in the deployment and adoption of CSA packages that respond to current and projected impacts of climate change and intend to maximize productivity and climate resilience, as well as environmental co-benefits (including greenhouse gas emissions reduction) with focus on improved soil and water management, integrated nutrient management (including preparation and application of organic fertilizers), increased input-use efficiency.

23. The GAFSP AF will also augment the productivity enhancing support to farmers through private sector delivery using the e-voucher system. This includes, inter alia, support for (i) CSA packages such as high-yielding, early-maturing, and drought-resistant, acidity and salinity tolerant genetic material; and (ii) environmentally friendly practices for agricultural intensification including organic fertilizers, liming to minimize soil acidity and enhance fertilizer use efficiency, training on fertilizer use efficiency, biological plant pest and disease control, etc. The AF will also pilot the improvement of community vegetable gardens (5-10 ha each) into modern community vegetable gardens for vulnerable women (including persons with disability) in 20 vegetable growing areas in the project intervention zone to diversify their production and enhance household incomes and nutrition. Under the community garden scheme, the AF will finance, among others (i) pressurized water management technologies to modernize production systems, with associated investments such as on-farm water storage tanks, on-farm drip or sprinkler irrigation equipment, greenhouse and vertical farming with appropriate digital enhancements, fencing, solar energy system and pumps (to promote green energy use); (ii) training of women vegetable gardeners on modern vegetable farming as well as on the operation and maintenance of the financed irrigation equipment to ensure its sustainability; (iii) training the women groups on business facilitation and market development; and (iv) facilitation of productive partnerships with agribusinesses downstream the vegetables/horticulture value chains to guarantee access to high value vegetable markets. Scaled up private sector investments are expected in areas of the vegetables/horticultural value chains that will enhance the efficient use of the precision irrigation infrastructure, product quality improvement (towards meeting global standards) and in market development. This activity will be implemented with Technical Assistance from FAO, as key implementing partner, in association with business development services providers.

24. Moreover, the AF will promote nutrition-sensitive practices for vulnerable groups through a variety of activities, including the support for training and establishment of homestead/kitchen and community vegetable gardens for a subset of beneficiaries, support to women groups to establish horticulture value chains to expand the supply of nutritious food in the country (as described above), capacity-building in MAFS and other institutions, and information campaigns for rural families to grow, purchase and consume more nutritious food and increase dietary diversity. Prioritized value chains for support under the AF include rice, biofortified cassava, beans (cowpeas), soybeans, groundnuts (peanuts), orange flesh sweet potatoes and vegetables. The sub-component will also support behavioural and communication campaigns for consumer acceptance of nutritious diets, especially the biofortified crops.

25. Under this sub-component, the AF will also finance the increase in the productive capacities of 18,000 eligible vulnerable farmers to enable them to engage in continued production of key staple foods in the short-medium term (6-24 months), to complement the emergency response interventions of FSRP to alleviate the impact of the food crisis in Sierra Leone. The project will finance: (i) procurement and distribution of improved seeds and planting materials, with a focus on key food crops and vegetables through private sector delivery using e-vouchers cultivate an additional 9,000 ha of land for rice (5,000 ha), bio-fortified cassava (2,000 ha) and sweet potatoes (1,000 ha orange flesh variety) and vegetables (1,000 ha for female producer groups mainly); and (ii) provision of requisite organic inputs (organic fertilizers and bio-pesticides) and advisory services in support of improved productivity and production system resilience to climate change.

26. **Component 5: Project Management– US$9.3 million (of which IDA US$7.5 million and GAFSP US$1.8 million)**. The existing PIU for the parent project will be mainly responsible for the coordination of the implementation of the activities to be financed under the AF to ensure seamless coordination and minimize overhead cost. However, a technical team lead will be recruited as a project advisor to focus on the delivery of the GAFSP financed activities and ensures proper reporting and accountability. To ensure proper implementation of project activities including new activities, the AF will contribute to the costs of managing the project and compliance with financial management, procurement, environmental and social (E&S) requirements including corporate commitments (such as citizens' engagement activities) as well as monitoring & evaluation (M&E) arrangements, and knowledge management activities. It will finance the cost of additional financial management staff (Senior Financial Management Specialist) and procurement staff (Senior International Procurement Management Specialist) to strengthen the fiduciary capacity of the PIU. It will also strengthen the M&E unit with an assistant M&E officer to ensure full complementarity between the FSRP M&E arrangement and GAFSP M&E Plan. It will finance E&S impact assessments, project management reporting, administration, and logistical support for project implementation, including knowledge and learning.

27. This Component will also finance updates to the E&S documents prepared for the parent project and contribute to the costs for E&S risk management and monitoring. Given the scaled-up and new activities, this sub-component will require enhanced capacity to manage sexual exploitation and abuse/sexual harassment (SEA/SH) risks, including the support for the ongoing work with the Ministry of Gender and Children's Affairs (MoGCA) to systematically strengthen government capacity, streamline, and standardize key risk mitigation measures in the World Bank portfolio, which the parent project is supporting. Civil society groups (especially the National Federation of Farmers of Sierra Leone) have played central role in the formulation of this project. The component will facilitate the continuous engagement of civil society engagement through the implementation of the project.

28. The details of the allocations for components by source of funding are shown as follows:

Table 2: Allocation per Component by financing source for Sierra Leone

Component and Subcomponent	Revised Allocation					
	Parent Project (US$ m)	Restructuring (US$ m)	AF (US$ m)	Total with CRW AF (US$ m)	GAFSP AF (US$ m)	Total (US$ m)
Component 1: Digital Advisory Services for regional agriculture and food crisis prevention and management	**13.7**	**13.7**	**0.0**	**13.7**	**0.0**	**13.7**
Subcomponent 1.1: Upgrading Food Crisis Prevention and Monitoring Systems	5.3	5.3	0.0	5.3	0.0	5.3
Subcomponent 1.2: Strengthening Digital Hydromet and Agro-Advisory Services for Farmers	8.4	8.4	0.0	8.4	0.0	8.4
Component 2: Sustainability and adaptability of the productive base of the food system	**30.1**	**5.1**	**45**	**50.1**	**23.2**	**73.3**

Component and Subcomponent	Revised Allocation					
	Parent Project (US$ m)	Restructuring (US$ m)	AF (US$ m)	Total with CRW AF (US$ m)	GAFSP AF (US$ m)	Total (US$ m)
Subcomponent 2.1: Consolidate Regional Agricultural Innovation System	9.6	4.6	7.0	11.6	3.4	15.0
Subcomponent 2.2: Strengthen Regional Food Security through ILM	20.5	0.5	38	38.5	19.8	58.3
Component 3: Regional market integration and trade	**11.2**	**11.2**	**2.5**	**13.7**	**0.0**	**13.7**
Subcomponent 3.1: Facilitate Trade Across Key Corridors and Consolidate Food Reserve System	2.7	2.7	2.5	5.2	0.0	5.2
Subcomponent 3.2: Support the Development of Strategic and Regional Value Chains	8.5	8.5	0.0	8.5	0.0	8.5
Component 4: Contingency emergency response component	**0.0**	**25.0**	**0.0**	**25.0**	**0.0**	**25.0**
Support to Implement Government's Emergency Food Security Response Plan	0.0	25.0	0.0	25.0	0.0	25.0
Component 5: Program Management	**5.0**	**5.0**	**2.5**	**7.5**	**1.8**	**9.3**
TOTAL	**60.0**	**60.0**	**50.0**	**110.0**	**25.0**	**135.0**

E. Institutional Arrangement

29. There will be no changes to the institutional arrangement for the parent project. The PIU established under National Development Partner Programs Coordinating Office (NDPPCO) of the MAFS will continue to coordinate the day-to-day implementation of the project activities, as defined in the parent project and refined in the first AF paper.

III. KEY RISKS

30. **The overall risk rating of the proposed AF is commensurate with the risk rating of the parent project and that of the first AF and is assessed as Substantial,** due to the substantial risk ratings assessment for five of the nine constituent risk elements: political and governance risk, institutional capacity for implementation and sustainability, fiduciary, environmental and social. The other risk (referring to climate risks) is also rated High The risk descriptions and mitigation measures are described as follows:

31. **Political and governance is rated Substantial.** This project's activities are not highly sensitive to moderate political agitations, although degeneration in political stability could still undermine their implementation. Risks arising from the potential political and elite capture as well as change in governance will be mitigated by strict adherence to a clear criterion for beneficiary selection (including involvement of UN agencies and international NGOs with presence in project areas in the selection of beneficiary) and

fiduciary oversight.

32. **Institutional capacity for implementation and sustainability risk is rated Substantial.** The already weak and fragile public agencies may be further stretched with additional implementation challenges under the AF. In order to mitigate this, the PIU will be strengthened in ways that will boost capacities MAFS. This may increase the risk of timely preparation of all the necessary documents and establishment of implementation arrangement. Capacity weaknesses of MAFS will be partly addressed through the FAO's technical support to the implementation of the project.

33. **Fiduciary risk is rated Substantial.** The fiduciary team for the parent project remains weak, and largely new to World Bank fiduciary systems. This issue will be addressed by augmenting the team with well qualified (possibly international) experts to enhance fiduciary oversight and the provision of training in WB fiduciary and procurement procedures.

34. **Environmental and social risks are rated Substantial.** These include risks associated with civil works (water control structures and land development) such as dust pollution, use of chemicals and fertilizers, occupational safety, labor influx, exclusion risks, as well as risks Gender Based Violence (GBV) and violence/exploitation of children and persons with disabilities, specifically related to food distribution under the AF. The project's Environmental and Social Management Framework (ESMF) provides clear measures to avoid or limit these impacts.

35. **In addition to the above risks, there are climate-related risks which are rated High** due to the frequency of floods, and erratic rainfall. The parent project has been screened for climate change and disaster risks which have been rated as Moderate after risk mitigation measures. The mitigation measures will primarily promote CSA. The parent project is providing support to improve weather forecasting capability and early warning systems that will improve coping mechanisms leading to a reduction in the damage from climate change induced adverse events.

IV. APPRAISAL SUMMARY

A. Economic and Financial Analysis

36. **The AF shows a satisfactory economic internal rate of return (EIRR) of 20.1 percent and an economic net present value (ENPV) of US$60.2 million at the opportunity cost of capital of 6 percent**. The financial and economic analysis is based on a comparison of "with project" and "without project" scenarios (Annex 1). The financial analysis finds that all project activities are profitable. This is deemed satisfactory given the nature of the activities retained by the project. Sensitivity analysis shows that the Internal Rate of Return (IRR) is sufficiently robust. The IRR levels confirm the robustness of the positive economic effects and impacts of the AF on the area of intervention in the face of the risk of increased costs, reduced income from the activities carried out or/and delay in the generation of benefits.

B. Greenhouse Gas Accounting

37. **A Green House Gas (GHG) Analysis demonstrated significant mitigation of GHG emissions.** To calculate the carbon balance of the project, an EX-ACT appraisal was performed. The carbon balance results indicate that the project activities will lead to a total of 1,148,782 tons of CO_2e to be mitigated over a period of 15 years starting from project implementation. Per year, the mitigation potential is roughly 76,585 tons of CO_2e, or 4.5 tons of CO_2e per hectare. Overall, the additional emissions generated by the increase in input use and livestock are off-set and surpassed by the reductions in emissions due to improved agricultural practice on crop production and land use change, ensuring the project's carbon neutrality. See details in Annex 2.

C. Paris Alignment

38. **The operation is aligned with the goals of the Paris Agreement on both mitigation and adaptation**. On mitigation, under Component 2 and 4, the AF will support data and digital technologies, reforming and modernizing agricultural extension and advisory services, technical assistance, support to ILM, rehabilitation of small-scale irrigation systems, promotion of climate-smart and nutrition-sensitive agriculture practices, technologies and interventions, climate-smart water management practices, farmer capacity-building, and CSA input packages which all meet the conditions for being considered Universally Aligned. These activities are under the ICT and Digital Technologies, ILM, Water, CSA, Research, Development and Innovation, and the Economic Services categories of the Universally Aligned list. Under Component 4, the additional rice cultivation was assessed for risks to the country's low GHG emissions development pathways. The project already prioritizes climate-smart, low-carbon technologies, including the system of rice intensification (SRI) and innovative practices for the irrigation systems. The dissemination of technologies will be based on innovative research and extension services. To ensure low carbon lock-in and transition risks, and reducing emissions, the operation will invest in production efficiency (improved seeds and breeds, and CSA practices) and resource use efficiency (water and renewable energy). To further reduce mitigation risks, the operation will also invest in Technical Assistance, training workshops, studies, and analytical work to ensure investments and equipment for priority value chains are more climate resilient and competitive at the regional level.

39. On adaptation, risks from climate hazards have been reduced to an acceptable, low level. The project is at material risk from climate hazards (high risk from flooding, extreme heat, and drought). Risk reduction measures incorporated in the project's design include:

(i) *Flood and drought reduction investments*: The technical design of structural measures (water harvesting infrastructure, anti-erosive infrastructure, modern water, and labor-saving irrigation technologies etc.) is informed by projected flooding and temperature rise scenarios. The risks from drought will be reduced through drought resilience measures such as water harvesting and providing irrigation through the rehabilitation of irrigation schemes during the dry season. Drought risks have also been reduced by investing in improved, high-yielding, early maturing, and drought- and pest-resistant plant varieties as well as improved livestock breeds and animal husbandry practices.

(ii) *Infrastructure and basic services*: Climate resilience measures have been incorporated in the infrastructure being financed to reduce risks from flooding and extreme heat.

40. In summary, the operation adequately reduces the physical climate risks to the project outcomes, and the project's climate resilience and adaptation design considerations limit the exposure to an acceptable, low level of residual risk. On mitigation, the operation has a low risk of preventing Sierra Leone's transition to low-carbon development pathways, given its contribution to scaling up CSA practices and technologies, and transitioning away from a dependency on non-renewable energy sources. The detailed Paris Alignment assessment is included in project files.

D. Technical

41. A technical assessment confirmed that the extreme food and nutrition insecurity situation facing Sierra Leone requires urgent and scaled responses, and that the AF is an appropriate vehicle for such a response. The parent project has just commenced implementation of activities. It thus allows a seamless integration of GAFSP and provides a firm foundation for the scale-up and new activities envisioned under the AF. All proposed activities are wholly aligned with the parent project's PDO, which has not changed but accommodates the urgency of the food security crisis affecting Sierra Leone. Given the prominent role of climate shocks in the food security crisis, climate-related vulnerabilities are appropriately prioritized in sub-components with a range of resilience and adaptation enhancing interventions embedded within planned activities.

42. The AF's target areas are already covered by the parent project. The AF will address both immediate needs to mitigate the impact of the ongoing food security crisis, as well as complement the parent project to invest in productive capacities and critical infrastructure to strengthen the longer-term resilience of vulnerable populations to more frequent and severe economic and climatic shocks. The existing activities in the parent project for income-generation in crisis-affected areas will promote rapid and well-targeted scaling-up of sub-components. The targeted scale-up will be based on strengthened existing partnerships within the parent project, new partnerships under the AF, and enhanced engagement with related projects in the targeted areas. To ensure effective implementation, the significant expansion in coordination, fiduciary, safeguards, and M&E requirements will be met with appropriate investments within the PIU and among project partners.

43. **Support to Urgency of Situation:** Due to the urgent situation of food insecurity, and the urgent need to scale-up support for the current agricultural production season and as well as fit the tight processing schedule of the GAFSP financing window, approval was sought and received from the Director of Regional Integration to prepare the project applying Paragraph 12 of Section III of the Bank Policy, "Investment Project Financing" (IPF Policy), Situations of Urgent Need of Assistance or Capacity Constraints.

E. Gender

44. FSRP Phases 1 and 2 are gender-tagged and as such, the AF will deepen the implementation of the gender strategy of the program. The emergency interventions will focus support to the population's most vulnerable, particularly women, persons with disability and children. The parent project acknowledged that there is profound inequality between women and men in Sierra Leone, which ranks 156th out of 162 countries on the inequality index between the sexes (United Nations Development

Program, UNDP, 2019). Women rely heavily on agriculture for employment and income but suffer from low access to productive assets, and they have been greatly affected by the current food insecurity crisis. The AF from GAFSP will complement the parent project to address key issues related to gender imbalances, through capacity-building in communities and in the public sector and to promote activities that close gender gaps in women's participation in the agriculture sector and will dedicate specific access to productive resources for women. The GAFSP AF will target women specific activities (particularly horticulture) for support and ensure that women have better access to economic recovery support to increase their incomes and improve their food and nutrition security and income-earning opportunities. Consistent with the parent project and the first AF, the M&E will collect sex-disaggregated data, and the indicators to measure increased participation of women over community resources and improved access to income generation remain. In addition to the Results Framework, and consistent with the proposal under the original project, the AF will also measure economic empowerment using the Women's Empowerment in Agriculture Index (WEAI[14]). Like the original project, the AF prioritizes reducing the gender gap and the AF will scale-up activities focused on women, including targeted capacity building, cash for work activities and women targeted vegetable garden for income generation.

F. Citizen Engagement

45. The AF will systematically apply the Citizen Engagement (CE) mechanisms that were developed under FSRP-SL, and which are now under implementation. These mechanisms ensure an inclusive and participatory decision-making approach throughout processes, from selecting specific sites and ensuring the adequate targeting of vulnerable people and communities, to establishing solid management mechanisms that contribute to sustainability of investments and prevent future possible conflicts. The specific CE interventions that will be implemented include: (i) support for the inclusive engagement of local rural communities in landscape through participatory planning and monitoring; (ii) support for community engagement in determining local investments through consultations, including targeting and enhancing the voice of the vulnerable; and (iii) project-level feedback and Grievance Mechanism (GM), designed to process complaints, concerns and questions from beneficiaries and other stakeholders at various levels (regional to local), with the aim to resolving issues within the GRM specified timeframe.

G. Maximizing Finance for Development (MFD)

46. The AF will leverage the activities designed under the original program and will scale up selected MFD-enabling compliant activities under the parent project. Key MFD compliant activities of the parent project include: (i) modernizing national extension services to facilitate private sector participation; (ii) investments in national seed and fertilizer infrastructures to increase national availability of both; (iii) supporting the integration of value chains into regional markets through matching grant mechanisms; and (iv) supporting the construction of standard grains and community storages and processing facilities that are aimed to improve the competitiveness of target value chains at local and regional markets. The GoSL has credible plans and institutional setup for stimulating private sector investments while the project support to enabling environment will facilitate further reforms as needed. The private sector investments will be generated from a series of value chain actors, including producers' organizations and SMEs, and are expected to be realized during the project implementation and will continue beyond the project's

[14] https://www.ifpri.org/project/weai

timeframe.

H. Environmental and Social

47. **The overall Environmental and Social Risk Classification (ESRC) for the second AF remains Substantial,** as the first AF and parent project. The key interventions associated with the scaled- up activities with E&S implication include the use of chemicals and fertilizers; rehabilitation of a large area of inland valley swamps; rehabilitation of small-scale irrigation systems to support the cultivation of rice and vegetables, cash for works, school feeding program and digital tool, innovations, logistics and skill to strengthen the extension system for delivery of extension services.

48. Potential environmental risks include soil degradation, siltation and soil erosion, surface and ground water contamination, waste generation (including domestic and hazardous), destruction of vegetation and habitats, pesticide poisoning, noise and vibration, dust and air emissions, animal attacks and other occupational and community health and safety issues etc. Key social risks include economic and/or physical displacement associated with civil works, elite capture of project benefits, social exclusion, and lack of access to agri-inputs, trainings, extension and agricultural advisory services by vulnerable groups (i.e., women, persons with disabilities, communities in remote and hard to reach areas, etc.). Additional risks include the potential for child labor and forced labor, risks to community health and safety (including the spread of infectious diseases like COVID-19 and STDs/STIs), and SEA/SH risks brought on by the surge of project workers and civil construction workers in project areas. Cash transfers, cash for work, and school feeding interventions, and may also pose SEA/SH risks (including the exploitation of children). Lastly, improved value chain may be accompanied with unhealthy competition leading to the crowding out of small farmers most of whom are women as big players may involve in price fixing to gain a larger share of the market.

49. The ESSs relevant to the parent project remain relevant for the AF, they are: Environmental and Social Risk and Impact Assessment and Management (Environmental and Social Standard 1 (ESS 1)), Employment and Working Conditions (ESS 2), Resource Efficiency and Pollution Prevention and Management (ESS 3), Community Health and Safety (ESS 4), Land Acquisition, Land Use Restrictions and Involuntary Resettlement (ESS 5), Biodiversity Conservation and Sustainable Management of Living Natural Resources (ESS 6), Cultural Heritage (ESS 8), and Stakeholder Engagement and Information (ESS 10). To this end, the preparation and implementation of the activities under this AF2 will comply with all ESF requirements of the parent project and AF1. An Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Environmental and Social Commitment Plan (ESCP), Stakeholder Engagement Plan (SEP), Labor Management Procedure (LMP) and Integrated Pest Management Plan (IPMP) were prepared and disclosed for the Parent project and are at the final stages of being updated for First AF including preparation of a SEA/SH Action Plan which are yet to be redisclosed. The SEP, ESMF, RPF, LMP, GBV Action plan and IPMP will be updated to consider the risks and impacts associated with the new/expanded activities of the AF2 along with monitoring requirements and implementing arrangements. The Environmental and Social Commitment Plan (ESCP) prepared for the parent project and AF1 and was updated to cover AF2 and subsequently disclosed. The updated documents shall be applied to the parent project, AF1 and AF2. All other ESF instruments shall be revised and disclosed in accordance with the ESCP.

50. During implementation, as more information and preliminary designs become available, specific Environmental Social Impact Assessments (ESIAs) for each subproject with site-specific Environmental and Social Management Plans (ESMPs), including specific SEA/SH Risk Mitigation and Response Action Plans based on the general plan in the ESMF, will be prepared prior to the start of activities. Following these assessments, any additional instruments required—for instance, a Construction Site Security Plan, Guidance on Environmental, Health and Safety (EHS) as part of the contractors ESMP, and Cultural and Livelihoods Impact Assessments—are included in the prepared draft of the Environmental and Social Commitment Plans (ESCP). The ESMPs will clearly define mitigation and management measures, including roles and responsibilities, schedule, costs, implementation procedures and incident reporting that are specific to each subproject.

51. The overall SEA/SH risk rating for the proposed AF is maintained as Substantial. All AF activities are consistent with the parent project interventions. The SEA/SH risks will be managed by ensuring implementation of the SEA/SH Prevention and Response Action Plan, with specific attention to reduce vulnerabilities to children and youth girls, boys and those with disabilities. The GBV expert of the project will monitor and implement SEA/SH activities such as: the development of codes of conduct, including prohibited behaviors and sanctions for violations of standards that explicitly address sexual and gender-based violence and child abuse; consultations with women's groups in accessible and safe places separately from men; sensitization of contractors, workers and neighboring communities on the code of conduct, implementation of a sensitive GM to SEA/SH which includes multiple entry points; mapping of a referral pathway of GBV services providers (at least legal, medical and psychosocial services); and quality evaluation in the project implementation areas. This work will be done in close collaboration with MoGCA. Additionally, the project will support systematic strengthening of government capacity and standardize key project risk mitigation measures.

I. Fiduciary

(i) Financial Management

52. The parent project's PIU will remain responsible for the financial management aspects of the proposed AF. The financial management arrangements of the AF will follow the same approach as the implementation arrangements in place for the ongoing parent project, in line with the financial management framework described in the PIM. A second Designated Account shall be opened to be used for the GAFSP Additional Financing. The project will support the hiring of a Senior Financial Management Specialist (Financial Controller) to strengthen the project financial management and oversight and to provide financial management support to MAFS through NDPPCO.

53. In respect to the activities to be undertaken by FAO under Component 4, Indirect Financing approach will apply whereby the PIU will contract with WFP and FAO using the appropriate Standard Form of Agreement (SFAs). Disbursement to FAO in relation to the cash for work related activities will be directly to FAO on behalf of the Recipient under a UN Commitment. Given the higher risks involved in cash for work payments by FAO to beneficiaries, the SFA will outline the targeting and verification approach, method of payment, use of payment agent, fraud prevention measures and due diligence, and audit or evaluation requirements as well as other fiduciary oversight arrangements. The PIU will provide the draft SFA to the World Bank to provide input to such financial management provisions prior to signing.

(ii) Procurement

54. Procurement under the proposed AF and the parent project will be carried out in accordance with the World Bank 'Procurement Regulations for Investment Project Financing Borrowers' (dated November 2020), the 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by International Bank for Reconstruction and Development (IBRD) Loans and IDA Credits and Grants' (dated July 1, 2016) and beneficiary disclosure requirements, as well as other provisions stipulated in the project Legal Agreements. Furthermore, the Sierra Leone 'National Public Procurement Act of 2016' will apply for tenders approaching national market taking into considerations the requirements of Clauses 5.3, 5.4, 5.5 and 5.6 of the Procurement Regulations for Investment Project Financing (IPF) Borrowers. The Project Procurement Strategy for Development (PPSD) for the parent project has been updated to include the activities of this AF. The Additional Financial will support the strengthening the procurement management function of the project with the recruitment of a Senior International Procurement Specialist to provide oversight and coaching mentoring to the procurement staff at MAFS.

J. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	No

55. The original project and this AF trigger OP 7.50 as activities may involve the use of international waterways. The AF will scale-up existing activities to wider areas. All activities remain limited to the rehabilitation and improvement of small-scale community schemes and will not adversely change the quality or quantity of flow to other riparian countries. Accordingly, and to cover the expanded project scope, an exception to the notification requirement under paragraph 7 (a) of the Policy was approved by the Regional Vice President on July 6, 2023.

V. WORLD BANK GRIEVANCE REDRESS

56. ***Grievance Redress.*** Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the 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 Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service (GRS), please visit

http://www.worldbank.org/GRS. For information on how to submit complaints to the Bank's Accountability Mechanism, please visit https://accountability.worldbank.org.

VI SUMMARY TABLE OF CHANGES

	Changed	Not Changed
Results Framework	✓	
Components and Cost	✓	
Disbursements Arrangements	✓	
Implementing Agency		✓
Project's Development Objectives		✓
Loan Closing Date(s)		✓
Cancellations Proposed		✓
Reallocation between Disbursement Categories		✓
Legal Covenants		✓
Institutional Arrangements		✓
Financial Management		✓
Procurement		✓
Implementation Schedule		✓
Other Change(s)		✓

VII DETAILED CHANGE(S)

MPA PROGRAM DEVELOPMENT OBJECTIVE

Current MPA Program Development Objective

Proposed New MPA Program Development Objective

EXPECTED MPA PROGRAM RESULTS

Current Expected MPA Results and their Indicators for the MPA Program

Proposed Expected MPA Results and their Indicators for the MPA Program

COMPONENTS

Current Component Name	Current Cost (US$, millions)	Action	Proposed Component Name	Proposed Cost (US$, millions)
Digital Advisory Services for Agriculture and Food Crisis Preventionand Management	45.20	No Change	Digital Advisory Services for Agriculture and Food Crisis Preventionand Management	45.20
Sustainability and Adaptive Capacity of the Food System's Productive Base	200.41	Revised	Sustainability and Adaptive Capacity of the Food System's Productive Base	223.61
Regional Food Market Integration and Trade	66.69	No Change	Regional Food Market Integration and Trade	66.69
Contingent Emergency Response (CERC)	25.00	No Change	Contingent Emergency Response (CERC)	25.00
Project Management	27.70	Revised	Project Management	29.50
TOTAL	**365.00**			**390.00**

DISBURSEMENT ARRANGEMENTS

Change in Disbursement Arrangements

Yes

Expected Disbursements (in US$)

Fiscal Year	Annual	Cumulative
2023	65,000,000.00	65,000,000.00
2024	65,000,000.00	130,000,000.00
2025	65,000,000.00	195,000,000.00

2026	65,000,000.00	260,000,000.00
2027	65,000,000.00	325,000,000.00
2028	65,000,000.00	390,000,000.00
2029	0.00	390,000,000.00

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Latest ISR Rating	Current Rating
Political and Governance	Substantial	Substantial
Macroeconomic	Substantial	Moderate
Sector Strategies and Policies	Moderate	Moderate
Technical Design of Project or Program	Moderate	Moderate
Institutional Capacity for Implementation and Sustainability	Substantial	Substantial
Fiduciary	Substantial	Substantial
Environment and Social	Substantial	Substantial
Stakeholders	Substantial	Substantial
Other	High	High
Overall	Substantial	Substantial

LEGAL COVENANTS – Additional Financing to the Food System Resilience Program, Phase 2 Sierra Leone (P181088)

Sections and Description
The ESMF has been updated and for the AF1 and shall be adjusted to reflect the AF2 scale up before disclosure within two weeks of AF2 effectiveness
Update the current LMP to reflect the risks and impacts associated with the new and scaled up project activities, within two weeks of Project Effective Date of the AF2
Update the IPMP to reflect the risks and impacts associated with the new and scaled up project activities, within two months of Project Effective Date of AF2
SEA/SH Action Plan to reflect the risks and impacts associated with the original and additional financing is being finalized and shall be disclosed within two months of the AF2 effectiveness date.
Update the RPF to reflect the risks and impacts associated with the new and scaled up project activities, within two months of the AF2 Project Effective Date.

Adopt and implement the respective RAP, including ensuring that before taking possession of the land and related assets, full compensation has been provided and as applicable, displaced people have been resettled and moving allowances have been provided within two months of the AF2 Project Effective Date.
Update the SEP, within two weeks of Project Effective Date of AF2 to reflect the risks and impacts associated with the scaled-up project activities

Conditions

Type	Financing source	Description
Effectiveness	Trust Funds	This Agreement shall not become effective until evidence satisfactory to the Bank has been furnished to the Bank that the following condition has been satisfied: that the Recipient has recruited an internal auditor with qualifications and experience satisfactory to the Bank.

VIII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Western and Central Africa

Additional Financing to the Food System Resilience Program, Phase 2 Sierra Leone

Project Development Objective(s)

To increase preparedness against food insecurity and improve the resilience of food systems in participating countries.

Project Development Objective Indicators by Objectives/ Outcomes

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Increase Preparedness Against Food Insecurity							
Intra-regionally traded production in selected value chains (Percentage)		20.00	22.00	24.00	26.00	28.00	30.00
Reduction of food insecure people in program targeted areas (Percentage)		0.00	5.00	10.00	15.00	20.00	25.00
Ghana (Percentage)		0.00	5.00	10.00	15.00	20.00	25.00
Chad (Percentage)		0.00	5.00	10.00	15.00	20.00	25.00
Sierra Leone (Percentage)		0.00	5.00	10.00	15.00	20.00	25.00

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Program beneficiaries (Number)		0.00	465,000.00	930,000.00	1,395,000.00	1,980,000.00	2,026,000.00
Action: This indicator has been Revised							
Of which women (Percentage)		0.00	10.00	20.00	30.00	35.00	40.00
Ghana (Number)		0.00	270,000.00	540,000.00	810,000.00	1,000,000.00	1,080,000.00
Chad (Number)		0.00	120,000.00	240,000.00	360,000.00	480,000.00	600,000.00
Sierra Leone (Number)		0.00	589,740.00	600,000.00	689,740.00	850,740.00	943,200.00
Action: This indicator has been Revised							
People receiving emergency support from the project (Number)		0.00	130,000.00	260,000.00	390,000.00	450,000.00	516,700.00
Improve Resilience of Food Systems in Participating countries							
Food system actors accessing hydro and agrometeorological advisory services (Number)		0.00	81,240.00	162,480.00	243,720.00	324,960.00	406,200.00
Ghana (Number)		0.00	42,240.00	84,000.00	126,720.00	168,960.00	211,200.00
Chad (Number)		0.00	15,000.00	30,000.00	45,000.00	60,000.00	75,000.00
Sierra Leone (Number)		0.00	24,000.00	50,000.00	100,000.00	150,000.00	200,000.00
Of which women (Percentage)		0.00	10.00	25.00			40.00

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Land area under sustainable landscape management practices (CRI, Hectare(Ha))		0.00	2,370.00	4,740.00	7,110.00	14,480.00	19,850.00
Action: This indicator has been Revised							
Ghana (Hectare(Ha))		0.00	900.00	1,800.00	2,700.00	3,600.00	4,850.00
Chad (Hectare(Ha))		0.00	800.00	1,600.00	2,400.00	3,200.00	4,000.00
Sierra Leone (Hectare(Ha))		0.00	600.00	2,000.00	4,000.00	10,000.00	14,000.00
Action: This indicator has been Revised							
Producers adopting climate-smart agricultural technologies and services (Number)		0.00	96,000.00	192,000.00	288,000.00	450,000.00	531,000.00
Action: This indicator has been Revised							
Ghana (Number)		0.00	48,000.00	96,000.00	144,000.00	192,000.00	240,000.00
Chad (Number)		0.00	16,000.00	32,000.00	48,000.00	64,000.00	80,000.00
Sierra Leone (Number)		0.00	32,000.00	144,000.00	180,000.00	260,000.00	311,000.00
Action: This indicator has been Revised							
Of which are women (Percentage)		0.00	10.00	25.00	30.00	35.00	40.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Digital Advisory Services for agriculture and food crisis prevention and management							
Satisfaction of farmers have access to usable weather, climate and ag-advisory services (Percentage)		0.00	20.00	30.00	50.00	70.00	80.00
Ghana (Percentage)		0.00	20.00	30.00	50.00	70.00	80.00
Chad (Percentage)		0.00	20.00	30.00	50.00	70.00	80.00
Sierra Leone (Percentage)		0.00	20.00	30.00	50.00	70.00	80.00
Improved access to local climate information services with digital information platforms (Yes/No)		No	No	No	No	Yes	Yes
Ghana (Yes/No)		No	No	No	No	Yes	Yes
Chad (Yes/No)		No	No	No	No	Yes	Yes
Sierra Leone (Yes/No)		No	No	Yes	No	Yes	Yes
Agreements involving co-production of agro-hydro-meteorological services between the public and private sectors (Number)		0.00	2.00	3.00	4.00	5.00	6.00
Ghana (Number)		0.00	1.00	1.00	1.00	2.00	2.00
Chad (Number)		0.00	1.00	1.00	1.00	2.00	2.00

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Sierra Leone (Number)		0.00	0.00	1.00	1.00	2.00	2.00
Sustainability and Adaptive Capacity of the Food System's Productive Base							
Technologies made available to farmers by the consortium of NCoS, CGIAR and other international research institutes (Number)		0.00	27.00	28.00	45.00	57.00	74.00
Ghana (Number)		0.00	5.00	5.00	10.00	10.00	15.00
Chad (Number)		0.00	20.00	20.00	30.00	40.00	50.00
Sierra Leone (Number)		0.00	2.00	3.00	5.00	7.00	9.00
Percentage of nutrition sensitive technologies (Percentage)		0.00	10.00	10.00	20.00	20.00	30.00
Sub-projects selected from the integrated landscape management plans with climate-resilient measures implemented (Percentage)		0.00	30.00	30.00	60.00	60.00	70.00
Ghana (Percentage)		0.00	30.00	30.00	60.00	60.00	70.00
Chad (Percentage)		0.00	30.00	30.00	60.00	60.00	70.00
Sierra Leone (Percentage)		0.00	30.00	30.00	60.00	60.00	70.00
Spatial information system established and operational for designing and planning		No	No	No	Yes	Yes	Yes

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
climate-resilient land management practices (Yes/No)							
Ghana (Yes/No)		No	No	No	Yes	Yes	Yes
Chad (Yes/No)		No	No	No	Yes	Yes	Yes
Sierra Leone (Yes/No)		No	No	Yes	Yes	No	Yes
Regional Food Market Integration and Trade							
Private-sector actors involved in regional agriculture trade that are supported by the Project (Number)		0.00	60.00	120.00	180.00	240.00	300.00
Ghana (Number)		0.00	20.00	40.00	60.00	80.00	100.00
Chad (Number)		0.00	4.00	8.00	12.00	16.00	20.00
Sierra Leone (Number)		0.00	36.00	72.00	108.00	144.00	180.00
Women farmers reached with assets or services to improve commercialization in selected value chains (Number)		0.00	20,460.00	40,920.00	61,380.00	81,840.00	102,300.00
Ghana (Number)		0.00	2,400.00	4,800.00	7,600.00	10,000.00	12,000.00
Chad (Number)		0.00	2,000.00	4,000.00	6,000.00	8,000.00	10,000.00
Sierra Leone (Number)		0.00	20,000.00	40,000.00	60,000.00	80,000.00	100,000.00

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Project Management							
Beneficiaries satisfied with the Project's interventions (Percentage)		0.00	60.00	60.00	80.00	80.00	80.00
Ghana (Percentage)		0.00	60.00	60.00	80.00	80.00	80.00
Chad (Percentage)		0.00	60.00	60.00	80.00	80.00	80.00
Sierra Leone (Percentage)		0.00	60.00	60.00	80.00	80.00	80.00
Grievances registered and addressed by the Program (Percentage)		0.00	90.00	90.00	90.00	90.00	90.00
Ghana (Percentage)		0.00	90.00	90.00	90.00	90.00	90.00
Chad (Percentage)		0.00	90.00	90.00	90.00	90.00	90.00
Sierra Leone (Percentage)		0.00	90.00	90.00	90.00	90.00	90.00
Contingency Emergency Response Component (CERC), Sierra Leone							
People benefiting from unconditional cash transfer (Number)		0.00	50,000.00	100,000.00	100,000.00	100,000.00	100,000.00
People benefiting from unconditional cash transfer - Female (Number)		0.00	25,000.00	50,000.00	50,000.00	50,000.00	50,000.00
People benefiting from unconditional cash transfer - individuals with disabilities (Number)		0.00	5,000.00	15,000.00	15,000.00	15,000.00	15,000.00

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
People benefiting from food/cash for public works program (Number)		0.00	4,000.00	8,700.00	8,700.00	12,700.00	17,700.00
Action: This indicator has been Revised							
People benefiting from food/cash for public works program - Female (Number)		0.00	2,000.00	4,000.00	4,000.00	5,000.00	7,000.00
Action: This indicator has been Revised							
School pupils receiving project-supported meals (Number)		0.00	60,000.00	120,000.00	120,000.00	120,000.00	120,000.00
School pupils receiving project-supported meals - Female (Number)		0.00	30,000.00	60,000.00	60,000.00	60,000.00	60,000.00
Farmers reached with agricultural assets or services (CRI, Number)		0.00	100,000.00	200,000.00	268,000.00	268,000.00	292,000.00
Action: This indicator has been Revised							
Farmers reached with agricultural assets or services - Female (CRI, Number)		0.00	50,000.00	84,000.00	134,000.00	134,000.00	116,800.00
Action: This indicator has been Revised							
Number of producers supported in crop and livestock production (Number)		0.00	50,000.00	100,500.00	134,000.00	134,000.00	292,000.00

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Action: This indicator has been Revised							
Quantity of inputs distributed to beneficiary farmers (Metric ton)		0.00	5,000.00	7,500.00	7,500.00	7,500.00	10,540.00
Action: This indicator has been Revised							
Rice seed (Metric ton)		0.00	1,000.00	2,000.00	2,000.00	3,000.00	3,240.00
Action: This indicator has been Revised							
Fertilizer (Metric ton)		0.00	2,500.00	5,000.00	5,000.00	6,000.00	7,300.00
Action: This indicator has been Revised							
Vegetable and legume seed (Metric ton)		0.00	250.00	500.00	500.00	500.00	500.00
Households using better cropping and farm management practices (Number)		0.00	15,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Beneficiary households with increased minimum dietary diversity scores (Percentage)		0.00	60.00	70.00	70.00	70.00	70.00
People receiving improved nutrition services and products (Number)		0.00	10,000.00	20,000.00	25,000.00		26,000.00
Action: This indicator is New							

Monitoring & Evaluation Plan: PDO Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Intra-regionally traded production in selected value chains		Annual	Customs and Ministry of trade statistics	Statistics from Customs and the Ministry of trade	PIUs
Reduction of food insecure people in program targeted areas		Twice per year	Cadre harmonise, Early warning systems report	Cadre Harmonisé methodology	Early Warning System Office, PIUs
Ghana					
Chad					
Sierra Leone					
Program beneficiaries		Twice a year	Project reports	Baseline study and subsequent studies twice a year	PIUs
Of which women					
Ghana					
Chad					
Sierra Leone					
People receiving emergency support from the project					
Food system actors accessing hydro and agrometeorological advisory services		Annual	Activity reports,	Total number of food system actors who have	M&E Specialists, National Hydromet

			surveys	access to hydro and agrometeorological advisory services thanks to the Project support	Department
Ghana					
Chad					
Sierra Leone					
Of which women					
Land area under sustainable landscape management practices	The indicator measures, in hectares, the land area for which new and/or improved sustainable landscape management practices have been introduced. Land is the terrestrial biologically productive system comprising soil, vegetation, and the associated ecological and hydrological processes; Adoption refers to change of practice or change in the use of a technology promoted or introduced by the project; Sustainable landscape management (SLM) practices refers to a combination of at least two				

	technologies and approaches to increase land quality and restore degraded lands for example, agronomic, vegetative, structural, and management measures that, applied as a combination, increase the connectivity between protected areas, forest land, rangeland, and agriculture land.				
Ghana					
Chad					
Sierra Leone					
Producers adopting climate-smart agricultural technologies and services		Annual	Country progress reports	Sum of the total beneficiaries benefitting from CSA technologies/practices, advisory services and trainings from the Project's support	M&E Specialists
Ghana					
Chad					
Sierra Leone					
Of which are women					

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Satisfaction of farmers have access to usable weather, climate and ag-advisory services		Mid term, and end of project	Progress reports/FSRP M&E system	Survey	PIUs, M&E specialists
Ghana					
Chad					
Sierra Leone					
Improved access to local climate information services with digital information platforms		Yearly	Progress report/FSRP M&E system, Hydromet services reports	Yearly information collection	PIUs
Ghana					
Chad					
Sierra Leone					
Agreements involving co-production of agro-hydro-meteorological services between the public and private sectors		Annual	Progress Report	Progress report review	Meteorology Department, PIUs
Ghana					
Chad					

Sierra Leone					
Technologies made available to farmers by the consortium of NCoS, CGIAR and other international research institutes		Every six months	Progress report, FSRP M&E system, NCoS and CGIAR institutions reports	Data collection, surveys	PIUs
Ghana					
Chad					
Sierra Leone					
Percentage of nutrition sensitive technologies					
Sub-projects selected from the integrated landscape management plans with climate-resilient measures implemented	Share of sub-projects selected from the integrated landscape management plans with climate-resilient measures implemented out of the total sub-projects	Every six months	SRP Progress reports, M&E system	Sub-projects database	PIUs
Ghana					
Chad					
Sierra Leone					
Spatial information system established and operational for designing and planning climate-resilient land management practices		Yearly	Progress report		PIUs

Ghana					
Chad					
Sierra Leone					
Private-sector actors involved in regional agriculture trade that are supported by the Project		Twice a year	Progress report	Review of progress reports	National PIUs
Ghana					
Chad					
Sierra Leone					
Women farmers reached with assets or services to improve commercialization in selected value chains		Twice a year	Progress reports, M&E system	Review of activity reports and field visits	PIUs
Ghana					
Chad					
Sierra Leone					
Beneficiaries satisfied with the Project's interventions		Mid term, and end of project	Progress reports	Surveys	PIUs
Ghana					
Chad					
Sierra Leone					
Grievances registered and addressed by the Program		Every six months	GM activity reports	Review of GM activity reports	PIUs, LGA

Ghana					
Chad					
Sierra Leone					
People benefiting from unconditional cash transfer					
People benefiting from unconditional cash transfer - Female					
People benefiting from unconditional cash transfer - individuals with disabilities					
People benefiting from food/cash for public works program					
People benefiting from food/cash for public works program - Female					
School pupils receiving project-supported meals	Number of school pupils receiving at least one school meals daily that is paid for by the Project.				
School pupils receiving project-supported meals - Female					
Farmers reached with agricultural assets or services	This indicator measures the number of farmers who were provided with agricultural assets or services as a result of World Bank project support. "Agriculture" or "Agricultural" includes: crops, livestock, capture				

	fisheries, aquaculture, agroforestry, timber, and non-timber forest products. Assets include property, biological assets, and farm and processing equipment. Biological assets may include animal agriculture breeds (e.g., livestock, fisheries) and genetic material of livestock, crops, trees, and shrubs (including fiber and fuel crops). Services include research, extension, training, education, ICTs, inputs (e.g., fertilizers, pesticides, labor), production-related services (e.g., soil testing, animal health/veterinary services), phyto-sanitary and food safety services, agricultural marketing support services (e.g., price monitoring, export promotion), access to farm and post-harvest machinery and storage facilities, employment, irrigation and drainage, and finance. Farmers are people engaged in agricultural activities or				

	members of an agriculture-related business (disaggregated by men and women) targeted by the project.				
Farmers reached with agricultural assets or services - Female					
Number of producers supported in crop and livestock production					
Quantity of inputs distributed to beneficiary farmers					
Rice seed					
Fertilizer					
Vegetable and legume seed					
Households using better cropping and farm management practices					
Beneficiary households with increased minimum dietary diversity scores					
People receiving improved nutrition services and products					

ANNEX 1: Economic and Financial Analysis

1. **This annex presents the economic and financial analysis (EFA) for the proposed second AF to FSRP-Phase 2 in Sierra Leone, while considering the parent and AF1 (P178132 and P180211) in Sierra Leone.** The evaluation is built on the cost-benefit analysis (CBA) approach applied to the main project interventions: the support to strengthen regional food security through integrated landscape management. Part I of this annex introduces the identification of benefit streams, followed by Part II, which describes the methodology and assumptions used for the CBA analysis. Part III describes the EFA for the implementation of the integrated landscape management approach. Finally, Part IV summarizes the economic results of the program for Sierra Leone, including a sensitivity analysis under different scenarios.

2. **The project's scale and complexity had to be simplified in the present analysis due to limited data availability.** As further explained below, the analysis made some strong assumptions about different parameters. Hence, it can only provide indicative results and it will be updated as the project appraisal advances.

3. **The project agricultural interventions to enhance food security and resilience of the food system in Sierra Leone are economically justified, generating a net present value (NPV) of the net additional benefits (NPV, using a social discount rate of 6 percent) of US$60.2 million and an economic internal rate of return (EIRR) of 20.1 percent (over a 15-year period).** These economic results are very satisfying, given that several other project benefits (such as strengthened national capacity to manage future pest events, improved food and nutrition security, etc.) could not be quantified at this stage, due to limited data availability. When incorporating the social value of carbon mitigation generated by the project (see Annex 2 GHG Accounting), the economic indicators improve, depending on the social carbon pricing scenario: assuming the low estimate range of social carbon price, the EIRR is 25.9 percent and the NPV is US$88.6 million; assuming the high estimate range, the EIRR becomes 31.4 percent and the NPV is US$117 million.

Identification of benefits

4. **The project's development objective of increasing preparedness against food insecurity, improving resilience of food systems and providing immediate response to an eligible crisis or emergency is expected to lead to three main quantifiable, mutually-reinforcing benefits.** First, FSRP-Phase 2 and two AF will lead to *increased agricultural income* thanks to increased productivity and to the sale of the surpluses. The higher productivity will be the direct result of several program outcomes, such as higher availability of improved climate-smart, nutrition-smart technologies and innovations (i.e., improved planting material, landscape management practices, irrigation and other infrastructure), widespread provision of improved research and extension services, greater access and use of quality, timely information on environmental hazards (i.e., extreme weather events, pests and diseases). Moreover, farmers will record higher sales thanks to their increased participation into domestic and regional markets. Indeed, the program will promote diversification at farm and/or post-farm levels into higher value-added, import-competing and export-oriented agricultural products. It will also promote farmers' competitive integration in regional markets through strengthened value chain organizations and financing, greater access to market price information and decision-support tools, increased availability of improved value-adding technologies and both hard and soft marketing infrastructure (i.e., last-mile infrastructure and food safety systems).

5. **The second benefit stream resulting from the FSRP-Phase 2 and two AF is *increased climate change resilience and adaptation.*** To mitigate the adverse effects of climate change variability on agriculture, the program interventions will enhance national and regional systems for agriculture and food crises prevention and management, thanks to improved coordination and early warning preparedness mechanisms related to

food security and environmental hazards, including the effective dissemination of relevant information and advisory services to end users. Hence, such systems will allow them to secure the food production and livelihoods of the affected population. In addition, farmers' resilience and adaptive capacity will be strengthen through the increased availability of climate-smart agriculture technologies and practices (i.e., integrated landscape management approach). Consequently, higher climate resilience and adaptation will not only secure the stability of agricultural incomes and rural livelihoods but also ensure their improvement.

6. **Third, the program will stimulate agricultural growth and transformation through *broader and more effective regional agricultural integration between ECOWAS member countries*.** This will directly follow from several program outcomes, such as the increase in intra-regional food trade between surplus and deficit areas and the subsequent stabilization of food prices through harmonized rules and regulations, the removal of barriers to trade and improved national and regional food reserve systems. Moreover, ECOWAS integration will be also realized through enhanced value creation in regional priority value chains resulting from different program interventions aimed at strengthening regional agricultural research and development, technology and knowledge exchange (e.g., increasing access to affordable climate- and nutrition-smart inputs). In turn, a stronger regional integration will minimize import dependency and enhance regional food and nutrition security.

7. **Fourth, the program will generate *regional positive environmental externalities*.** As many natural resources are regionally shared and/or their national use will be based on a regional, integrated approach, addressing their degradation through the FSRP ILM approach (e.g. measures to reduce carbon sequestration, soil erosion, water pollution) in each program country will have positive spill-over effects on other participating countries. These effects will be reinforced by the cross-border coordinated strategy implemented by the program and will lead to sustainable restored natural ecosystem ensuring climate resilience and sustainable production systems.[15]

8. **The AF2 will also have other positive impacts, non-quantifiable at this stage due to data availability.** These include employment growth, particularly women and youth employment, as all program components incorporate gender- and youth-focused interventions (e.g. prioritizing their access to land, innovative technologies and practices, finance, and markets). Besides, the program will lead to increased food security, improved nutrition and health (e.g., resulting from greater, stable access to diversified, nutrition-dense food, clean air and water), demonstration effects (the number of beneficiaries could result in a significant outreach considering the adopted highly participatory, community-based ILM approach), enhanced institutional capacity and policy and regulatory frameworks, greater community participation, etc.

Methodology and assumptions

9. **This CBA analysis follows the standard methodology recommended by the World Bank**, as described in Gittinger (1982), Belli et al. (2001) and is aligned to the recent guidelines for EFA. The financial analysis was conducted to assess the profitability of the proposed project activities (*with-project (WP) situation)*, modelled from the perspective of the target beneficiaries, and compared with the *without-project (WOP)* situation. The choice of indicative crops has been driven by the proposed budgets and by the experience of previous investment operations in Sierra Leone. The opportunity cost of capital used is in line with the World Bank guidelines and the practice of recent projects, i.e. 12 percent.

10. **The economic analysis followed a similar approach, aggregating the results at the level of the project and from the society viewpoint.** The economic analysis uses the incremental benefits, assumes at least 85 percent outreach for the modelled interventions based on discussion with the program country team,

[15] A preliminary evaluation of the environmental benefits brought about by the FSRP-Phase 2 and two AF is conducted through a greenhouse gas emission (GHG) accounting analysis and included in the EFA. The details of the GHG accounting analysis are provided in a separate annex.

experience of past projects, and articles from scientific journals. As some of the program costs, such as the inputs, are integrated in the individual models, the total project economic costs have been adjusted to avoid double-counting and are subsequently subtracted from the additional benefits to determine the overall economic viability of the project. The discount rate used for the EFA, that is 6 percent, is in line with the World Bank guidelines and the practice of recent projects. Given the nature of the investments included in the project, the duration of the analysis has been considered 15 years. Activities will be implemented over the five program years.

EFA for the support to enhance the food system's productive base

11. **The choice of models included in the analysis has been based on the preliminary proposal of the project activities to support the strengthening of regional food security through the integrated landscape management to be financed in Sub-component 2.2, as per the discussions between the World Bank and the implementation partners.** It will finance the implementation of the highly participatory ILM approach combining natural resource management with environmental and livelihoods activities. The ILM approach encompasses a range of interventions such as soil fertility management, water conservation and irrigation infrastructure, pastoralism and rangeland management reforestation, integrated crop and livestock management, climate-smart agriculture, organization and capacity building for the operation and maintenance of the financed investments. This includes the provision of improved agricultural inputs and training and technical assistance to improve food security, to strengthen farmers' resilience and adaptive capacity to climate change and variability, and to improve household nutrition through increased access to healthy and diversified food and through the promotion of good practices. Moreover, these activities will also benefit from the interventions foreseen under the other components. For instance, sub-component 2.1 is expected to deliver improved technological innovations including climate- and nutrition- smart technologies tailored to the needs of Sierra Leone farmers (i.e., techniques in mangrove rice). Besides, Component 3 is expected to expand sustainably food trade in the region and so, to ensure a greater and more stable commercialization of agricultural products, inputs, and technologies increasing farmers' income.

12. **The impact of the interventions under Sub-components 2.2 has been assumed to be reflected in the modeling of crop and livestock production.** These activities will support farmers' productive capacity as they will enhance climate smart agriculture technologies and tools, including input supply support, irrigation, reduction in post-harvest loss, and market connectivity. Thus, the following activities have been identified and modeled based on the current budget proposal for the abovementioned sub-component.

13. **Rice production.** Based on the discussions with the implementation partners, a total of 15,300 ha is expected to benefit from a mix of improved agricultural technologies for rice cultivation, including improved climate-smart agricultural technologies, capacity development on specific agronomical practices such as the System of Rice Intensification and the development of small-scale irrigated perimeters.

14. **Cassava production.** Based on the FSRP-Phase 2 and two AF budget for Sierra Leone, the program will support the cassava cultivation of 8,000 ha. The program will provide climate- and- nutrition smart technologies to cassava farmers, such as improved seedlings and fertilizers. To estimate the financial returns from such investments, the present analysis develops a cassava farming model by using the data on average cassava yields as indicated by the country team and past projects in Sierra Leone. Hence, the project will allow its beneficiaries to obtain a yield rate of about 12 t/ha at full realization of benefits against a yield rate of 18 t/ha in absence of the project, assuming conservative returns.

15. **Livestock - vegetable integrated activities.** Even though AF2 will not be supporting investments in livestock, the FSRP-Phase 2 and the first AF will promote livestock-vegetable integration techniques that restore soil organic matter in Sierra Leone and enhance food security and nutrition. As for livestock, the parent program and AF1 plan to distribute improved breeds of about 8,000 goat calves and 16,500 chicks.

Given the specificity of this activity, it has been assumed that the *without-project* situation is null, i.e., without the project intervention livestock breeding would not occur because of the difficulties of financing the inputs. Based on information provided by the country team, the yield projections show a considerable reduction in mortality rates (from 20 percent to 10 percent) and a higher probability to have more calves per parturition compared to local breeds.

16. **Learning curves and duration of benefits.** Most models have assumed a gradual realization of benefits, to reflect the effects of the improved varieties, more inputs, and improved practices. As such, the full realization of benefits is expected from the third of fourth year of the project depending on the activity. In addition, given the nature of the investments, it has been assumed that the additional benefits generated by the program will last fifteen years.[16] This methodological choice is justified by the availability of good quality inputs and the type and level of advisory services provided thanks to the program support. Based on the experience of past projects and discussions with the country team, it is also assumed that most beneficiary households will succeed in building the sustainability of improved production, as promoted by the program. In addition, family labor has been included and valued in the present analysis, in line with the EFA guidelines.

17. **Based on the methodology and parameters described above, all models included in the analysis demonstrate financial profitability.** As presented in Tables A1.1 and A1.2, alongside the main parameters, all agricultural activities supported by the project will generate positive additional benefits, in the range of US$296-1,124 per hectare for rice production, about US$ 346 per hectare for cassava production, and about US$336 per hectare (sweet potato)/2 goats per farmer/ livestock-vegetable integrated activities.

Table A1.1. Summary of rice growing models and financial returns

	Boliland Rice Production			IVS Rice Production				Mangrove Rice Production		
	Rain fed	Newly developed irrigation	Rehabilitated irrigation	Rain fed	Newly developed irrigation	Rehabilitated irrigation	Rehabilitated and SRI methodology	Rain fed	Newly developed irrigation	Rehabilitated irrigation
Net additional revenue* (US$/ha/year)	329	727	296	488	1,046	455	837	606	1,124	454

*At full realization of benefits

Table A1.2. Summary of crop and livestock models and financial returns

	Cassava	Sweet Potato	Goats**
Net additional revenue* (US$/ha/year)	364	266	70

*At full realization of benefits ** Average over three years at full realization

Overall economic results

18. **Overall, the economic results of the proposed project are positive, generating a net present value (NPV, at 6 percent social discount rate) of the net additional benefits of US$60.2 million and an economic internal rate of return (EIRR) of 20.1 percent (over a 15-year period).** These economic results are satisfying, given that several other project benefits (such as improved nutrition, employment growth, etc.) could not be quantified at this stage, due to limited data availability. In addition, the analysis period could be extended to increase the benefit streams, if the project design and implementation would include more measures to build resilience and ensure longer developmental impact.

[16] Given that livestock breeding represents a new activity, in this case, the analysis assumes that the related benefits generated by the program will last for 10 years.

19. **As described in Annex 2 (GHG Accounting), the project will also generate some positive environmental externalities (a total mitigation of 1148782 tCO_2eq).** Using the World Bank's *Guidance note on shadow price of carbon in economic analysis* (September 2017), the social value of these environmental benefits has been also included in the overall economic results, using the low and high estimate range for the social price of carbon. As a result, the economic indicators improve, depending on carbon pricing scenario: assuming the low estimate range of carbon social price, the EIRR is 25.9 percent and the NPV is US$88.6 million; assuming the high estimate range, the EIRR becomes 31.4 percent and the NPV is US$117 million.

20. **These economic results have been tested against several risk scenarios, including reduced delays in implementation, cost overruns, etc., as presented in table A1.3.** The sensitivity analysis indicates that results are robust for small to moderate delays, cost overruns, and reduction in benefits. Yet, larger changes in these parameters can significantly affect the project's economic justification.

Table A1.3 Sensitivity analysis for Sierra Leone

	NPV @ 6%, 15-y	EIRR
	(US$ m)	(%)
Baseline Scenario	60.2	20.1%
Increased project costs +5%	57.7	19.1%
Increased project costs +10%	55.1	18.2%
Increased project costs +20%	50.1	16.5%
Delayed benefits +1 year	45.8	16.2%
Delayed benefits +2 year	32.5	13.1%
Delayed benefits +3 year	20.1	10.4%
Decreased add. benefits -10%	49.1	18.0%
Decreased add. benefits -20%	38.0	15.7%
Decreased add. benefits -30%	26.9	13.2%

ANNEX 2: Greenhouse Gas (GHG) Accounting

1. This annex presents the preliminary GHG accounting for the AF while considering the parent and AF projects (P178132 and P180211). In line with the World Bank's corporate guidelines, the present analysis is using the Ex-Ante Carbon-balance Tool (EX-ACT) developed and updated by FAO since 2010,[17] to assess a project's net carbon-balance. The carbon-balance is defined as the net balance from all GHGs expressed in CO2 equivalents (CO2e) that are to be emitted or sequestered due to project implementation (WP) as compared to a business-as-usual scenario (WOP). EX-ACT is a land-based accounting system, estimating CO2e stock changes (i.e., emissions or sinks of CO2) expressed in equivalent tons of CO2 per hectare and year. The tool is built using mostly data from the Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories (NGGI-IPCC, 2006) that furnishes EX-ACT with recognized default values for emission factors and carbon values in soils and biomass (the so-called "Tier 1 level" of precision).

2. For the AF, the calculations have been based on agro-ecological characteristics of the project area (tropical wet climatic conditions with low-activity clay (LAC) soils) and on the parameters of land use and crop management practices. The changes brought about by the project have been included in the tool's different modules and include: (i) improved crop and livestock productivity and production with less GHG emissions under different crops (rice, cassava, sweet potato and vegetables) and with goats and chicks; and (ii) increased use of synthetic fertilizers (980 tons of N-fertilizer[18]) and organic fertilizers (5950 tons).

Table 3: Assumptions used in the EX-ACT Tool

Module	System/crop category	Changes
Land Use Change	6600 ha from annual fallow to sweet potato 2500 ha from other land to vegetables 100 ha re-afforestation from degraded land	Increased organic fertilizers and climate-smart practices
Crop and Livestock Production	Annual Systems: Rain fed rice: 7650 ha Irrigated rice: 7650 ha Cassava: 8000 ha Sweet potato: 6600 ha Vegetables: 2500 ha	Improved agronomical practices (i.e., SRI) and better nutrient management
Inputs	Increased use of synthetic fertilizers and organic fertilizers	980 tons of N synthetic fertilizers and 5950 tons of organic fertilizers

3. The carbon balance results indicate that the project activities will lead to a total of 1148782 tons of CO2e to be mitigated over a period of 15 years[19] starting from project implementation. Per year, the mitigation potential is roughly 76,585 tons of CO2e, or 4.5 tons of CO2e per hectare. As shown in Table A2.2 below, the additional emissions generated by the increase in input use and livestock are off-set and surpassed by the reductions in emissions due to improved agricultural practice on crop production and land use change, ensuring the project's carbon neutrality.

4. Given the strong climate change resilience and adaptation component of the FSRP-Phase 2, the proposed core interventions are not expected to generate any significant additional GHG emissions.

[17] http://www.fao.org/tc/exact/ex-act-home/en/
[18] It has been assumed a 20 percent of N for kg of synthetic fertilizer.
[19] Aligned with the EFA analysis period and assuming 5 years of implementation and 10 years of capitalization.

Table A2. 1 GHG Accounting Results from the EX-ACT Tool

Project name	AF-FSRP-Phase 2: Sierra Leone						
Continent	Western Africa	**Project duration (in years)**		**Total area (ha)**	17,200	**Global warming potential**	
Country	Sierra Leone	Implementation	5	Mineral soil	17,200	CO_2	1
Climate	Tropical	Capitalization	10	Organic soil	0	CH_4	34
Moisture	Wet	Period analysis	15	Waterbodies	0	N_2O	298

GROSS FLUXES

In tCO_2-e over the whole period analysis

SHARE PER GHG OF THE BALANCE

In tCO_2-e over the whole period analysis

AVERAGE ANNUAL EMISSIONS

In tCO_2-e/yr

PROJECT COMPONENTS		WITHOUT	WITH	BALANCE	CO_2 BIOMASS	CO_2 SOIL	N_2O	CH_4	ALL NON-AFOLU EMISSIONS*	WITHOUT	WITH	BALANCE
Land use changes	Deforestation	0	0	0	0	0	0	0		0	0	0
	Afforestation	0	-35,979	-35,979	-27,995	-7,984	0	0		0	-2,399	-2,399
	Other land-use	0	-37,634	-37,634	-26,790	-10,844	0	0		0	-2,509	-2,509
Cropland	Annual	393,098	-492,681	-885,779	0	-850,232	33,669	-69,216		26,207	-32,845	-59,052
	Perennial	0	-510,593	-510,593	-334,870	-175,723	0	0		0	-34,040	-34,040
	Flooded rice	-106,460	-143,531	-37,071	0	0	-14,303	-22,768		-7,097	-9,569	-2,471
Grasslands & Livestock	Grasslands	0	0	0	0	0	0	0		0	0	0
	Livestock	0	19,025	19,025			1,579	17,446		0	1,268	1,268
	Forest mngt.	0	0	0	0	0	0	0		0	0	0
	Inland wetlands	0	0	0	0	0	0	0		0	0	0
	Coastal wetlands	0	0	0	0	0	0	0	0	0	0	0
	Inputs & Invest.	0	339,248	339,248		0	254,417		84,832	0	22,617	22,617
Total emissions, tCO_2-e		**286,638**	**-862,145**	**-1,148,782**	**-389,654**	**-1,044,783**	**275,361**	**-74,538**	**84,832**	**19,109**	**-57,476**	**-76,585**
Total emissions, tCO_2-e/ha		**16.7**	**-50.1**	**-66.8**	**-22.7**	**-60.7**	**16.0**	**-4.3**	**4.9**			
Total emissions, tCO_2-e/ha/yr		**1.1**	**-3.3**	**-4.5**	**-1.5**	**-4.0**	**1.1**	**-0.3**	**0.3**			

+ = Source / - = Sink

Results presented here include GHG fluxes on mineral and organic soils

See further down for detailed results on organic soils

* Includes fisheries, acquaculture and inputs & investments that are not included in the AFOLU definition.

Uncertainty level	tCO2-e/yr	Percent
Without	19,109	43%
With	-57,476	43%
Balance	-76,585	40%