The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD5588

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A PROPOSED ADDITIONAL CREDIT

IN THE AMOUNT OF SDR 37.8 MILLION
(US$50 MILLION EQUIVALENT)

FROM THE CRISIS RESPONSE WINDOW EARLY RESPONSE FINANCING

AND

A PROPOSED GRANT

IN THE AMOUNT OF US$20 MILLION

FROM THE GLOBAL AGRICULTURE AND FOOD SECURITY PROGRAM TRUST FUND

TO THE

REPUBLIC OF MADAGASCAR

FOR THE

FOOD SYSTEMS RESILIENCE PROGRAM FOR EASTERN AND SOUTHERN AFRICA PHASE 1
UNDER THE MULTIPHASE PROGRAMMATIC APPROACH APPROVED BY THE BOARD ON JUNE 21, 2022
WITH AN OVERALL FINANCING ENVELOPE OF US$2.75 BILLION EQUIVALENT

May 13, 2024

Agriculture and Food Global Practice
Eastern and Southern Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective {March 31, 2024})

Currency Unit =	Malagasy Ariary (MGA)
US$1 =	MGA 4,367.96
US$1 =	SDR 0.76

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Victoria Kwakwa
Country Director:	Boutheina Guermazi
Regional Director:	Iain Shuker
Acting Practice Manager:	Francisco Obreque
Task Team Leaders:	Elliot Wamboka Mghenyi, Stephen D'Alessandro

ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AM	Accountability Mechanism
CASEF	Madagascar Agriculture Rural Growth and Land Management Project (*Projet de Croissance Agricole et Sécurisation Foncière*)
CCARDESA	Centre for Coordination of Agricultural Research and Development for Southern Africa
CE	Citizen Engagement
CERC	Contingent Emergency Response Component
CFFAMMA	Center of Agriculture Mechanization (*Centre de Fabrication et de Formation et d'Application du Machinisme et de la Mécanisation Agricole)*
CGIAR	Consultative Group on International Agricultural Research
CPF	Country Partnership Framework
CRI	Core Result Indicator
CRW-ERF	Crisis Response Window Early Response Financing
CSA	Climate Smart Agriculture
DFIL	Disbursement and Financial Information Letter
DRAE	Regional Directorate of Agriculture and Livestock (*Direction Régionale de l'Agriculture et de l'Elevage)*
EAP	Emergency Action Plan
EFA	Economic and Financial Analysis
EN	Eligibility Note
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESRC	Environmental and Social Risk Rating
ESS	Environmental and Social Standards
FDA	Agriculture Development Fund
FFS	Farmer Field School
FIFAMANOR	Norwegian Center for Malagasy Rural Development, Agriculture, and Livestock *(Fiompiana Fambolena Malagasy Norvéziana)*
FM	Financial Management
FOFIFA	Center for Applied Research on Rural Development *(Foibe FIkarohana ampiharina Fampandrosoana ny eny Ambanivohitra)*
FSRP	Food Systems Resilience Program
FSRP-MG	FSRP Madagascar
GAFSP	Global Agriculture and Food Security Program
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HACCP	Hazard Analysis and Critical Control
HDDS	Households Dietary Diversity Score
HGSF	Home Grown School Feeding
GHG	Green House Gas
IA	Implementing Agency
IDA	International Development Association
IFC	International Finance Corporation
IFVM	Madagascar Locust Eradication Center (*Ivotoerana Famongorana ny Valala eto Madagasikara*)
IGAD	Intergovernmental Authority on Development
IPC	Integrated Food Security Phase Classification
IPF	Investment Project Financing

IPMP	Integrated Pest Management Plan
IR	Intermediate Results
ISM	Implementation Support Mission
LMP	Labor Management Procedures
LPMP	Locust Pest Management Plan
M&E	Monitoring and Evaluation
MEN	*Le Ministre de l'Éducation Nationale* (Ministry of National Education)
MinAE	Ministry of Agriculture and Livestock
MPA	Multiphase Programmatic Approach
MS	Moderately Satisfactory
NAFSIP	National Agriculture and Food Security Investment Plan
NAIP	National Agriculture Investment Program
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organization
NPV	Net Present Value
O&M	Operation & Maintenance
PADAP	Sustainable Land Management Project
PDO	Project Development Objectives
PEM	Madagascar National Emergencye Plan *(Plan d'Emergence Madagascar)*
PforR	Performance for Results
PIU	Project Implementation Unit
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy for Development
PSC	Project Steering Committee
R&D	Research and Development
RF	Results Framework
RPF	Resettlement Policy Framework
SEA/SH	Sexual Exploitation and Abuse / Sexual Harassment
SEP	Stakeholder Engagement Plan
SOE	Statement of Expenditures
SSA	Sub-Saharan Africa
SSI	Small-Scale Irrigation
STEP	Systematic Tracking of Exchanges in Procurement
TEGFS	Technical Expert Group on Food Security
TF	Trust Fund
UN	United Nations
WBG	World Bank Group
WFP	World Food Programme

TABLE OF CONTENTS

BASIC INFORMATION – PARENT (Food Systems Resilience Program for Eastern and Southern Africa - P178566)

Country	Product Line	Team Leader(s)		
Eastern and Southern Africa	IBRD/IDA	Elliot Wamboka Mghenyi		
Project ID	**Financing Instrument**	**Resp CC**	**Req CC**	**Practice Area (Lead)**
P178566	Investment Project Financing	SAEA3 (9247)	AFERI (81808)	Agriculture and Food

Implementing Agency: Ministry of Agriculture and Livestock, Madagascar, Ministry of Agriculture, Ethiopia, IGAD Agriculture and Environmental Division, Center for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA)

Is this a regionally tagged project?	Country (ies)
Yes	Ethiopia, Madagascar

Bank/IFC Collaboration
No

Approval Date	Closing Date	Expected Guarantee Expiration Date	Environmental and Social Risk Classification
21-Jun-2022	29-Jun-2029		High

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 the resilience of food systems and preparedness for food insecurity in the participating countries.

Project Development Objectives (Phase 003)

To increase the resilience of food systems and preparedness for food insecurity in Project areas

Ratings (from Parent ISR)

	Implementation			Latest ISR
	23-Sep-2022	31-Mar-2023	18-Oct-2023	29-Apr-2024
Progress towards achievement of PDO	S	MS	MS	MS
Overall Implementation Progress (IP)	S	MS	MS	MS
Overall ESS Performance	S	S	MS	S
Overall Risk	S	S	S	S
Financial Management	MS	MS	MS	MS
Project Management	S	MS	MS	MS
Procurement	MS	MS	MS	MS
Monitoring and Evaluation	S	MS	MS	MS

BASIC INFORMATION – ADDITIONAL FINANCING (Additional Financing to the Food Systems Resilience Program for Eastern and Southern Africa – Phase 1 under the Multi-Phase Program - P181398)

Project ID	Project Name	Additional Financing Type	Urgent Need or Capacity Constraints
P181398	Additional Financing to the Food Systems Resilience Program for Eastern and Southern Africa – Phase 1 under the Multi-Phase	Restructuring	Yes

	Program		
Financing instrument Investment Project Financing	Product line IBRD/IDA	Approval Date 03-Jun-2024	
Projected Date of Full Disbursement 27-Mar-2028	Bank/IFC Collaboration Yes	Joint Level Historical Project/Activity implemented in sequence with an IFC activity(Loan/Credit/Guarantee/AAA)	
Is this a regionally tagged project? Yes		Country (ies) Ethiopia, Madagascar	

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	788.10	177.73	599.42	23 %
Grants				%

MPA Financing Data (US$, Millions)

MPA Program Financing Envelope	2,750.00

MPA FINANCING DETAILS (US$, Millions)

Board Approved MPA Financing Envelope:	2,750.00
MPA Program Financing Envelope:	2,750.00
of which Bank Financing (IBRD):	0.00
of which Bank Financing (IDA):	2,750.00
of which other financing sources:	0.00

PROJECT FINANCING DATA – ADDITIONAL FINANCING (Additional Financing to the Food Systems Resilience Program for Eastern and Southern Africa – Phase 1 under the Multi-Phase Program - P181398)

FINANCING DATA (US$, Millions)

SUMMARY (Total Financing)

	Current Financing	Proposed Additional Financing	Total Proposed Financing
Total Project Cost	873.60	70.00	943.60
Total Financing	873.60	70.00	943.60
of which IBRD/IDA	788.10	50.00	838.10
Financing Gap	0.00	0.00	0.00

DETAILS - Additional Financing

World Bank Group Financing

International Development Association (IDA)	50.00
IDA Credit	50.00

Non-World Bank Group Financing

Trust Funds	20.00
Global Agriculture and Food Security Program	20.00

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	SML Amount	Guarantee Amount	Total Amount
Madagascar	50.00	0.00	0.00	0.00	50.00
Crisis Response Window (CRW)	50.00	0.00	0.00	0.00	50.00
Total	**50.00**	**0.00**	**0.00**	**0.00**	**50.00**

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

Environment, Natural Resources & the Blue Economy

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Elliot Wamboka Mghenyi	Team Leader (ADM Responsible)		SAEA3
Stephen Paul D'Alessandro	Team Leader		SAEA2
Beby Vololoniaina Razafindrakoto	Procurement Specialist (ADM Responsible)		EAERU
Anjani Kumar	Procurement Specialist		EECRU
Demelash Demssie	Procurement Specialist		EAERU
Francis Akolu Muthuiya	Procurement Specialist		EAERU
Miarana Heriniana Aime Razaf	Procurement Specialist		EAERU
Tojonirina Domoina Andrianasolomalala	Financial Management Specialist (ADM Responsible)		EAEG2
Maharavo Harimandimby Ramarotahiantsoa	Financial Management Specialist		EAEG2
Andrianjaka Rado Razafimandimby	Social Specialist (ADM Responsible)		SAES3
Paul-Jean Feno	Environmental Specialist (ADM Responsible)		SAEE3
Ahmadou Moustapha Diallo	Procurement Team		EAERU
Alfred Jean-Marie Borgonovo	Team Member		WFACS
Benjamin Billard	Team Member		SAEA2
Bodomalala Sehenoarisoa Rabarijohn	Team Member		SAEA2
Esperanza Lopez Rodriguez	Team Member	Legal	LEGAM
Felamboahangy Henintsoa Rasoarahona Ep Randevoson	Team Member		SAEA2
Harison Edmond Randriarimanana	Team Member		SAEA2
Hawanty Page	Team Member		SAEA3
Ines Melissa Emma Attoua Etty	Team Member		WFACS
Jean O Owino	Team Member		WFACS

Jeren Kabayeva	Team Member		SAEA3
Jorge Luis Alva-Luperdi	Team Member	Legal	LEGLE
Lalaina Albertine Randriarimanana	Team Member		SAES3
Lalao Vololomboahangy Cooper Razafinjatovo	Social Specialist		SAES3
Mamilala Sandratra Razafinjoelina	Team Member		SAEA2
Mampionona Amboarasoa	Team Member		SAEA2
Mario I. Mendez	Team Member		SAEA3
Melissa Williams	Team Member		SAGGL
Mohammad Ilyas Butt	Procurement Team		EAERU
Nomenjanahary Rindra Aina Rakotoson	Team Member		AEMMG
Noro Hajalalaina Rasoloarimanana Andriamihajas	Procurement Team		AEMMG
Patricia Oonagh Van de Velde	Team Member		SAGGL
Pierre Olivier Colleye	Team Member		SAEA3
Shijie Yang	Team Member		SAGGL
Vaniah Emode Andrianjaka	Team Member		SAEE3

Extended Team

Name	Title	Organization	Location

I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

A. Introduction

1. This Project Paper seeks the approval of the Executive Directors to provide an additional credit in the amount of SDR 37.8 million (US$50 million equivalent) to the Republic of Madagascar for the Food System Resilience Program for Eastern and Southern Africa (FSRP Phase I, P178566). The additional financing (AF) includes a grant from the Global Agriculture and Food Security Program (GAFSP) in the amount of US$20 million. The FSRP Madagascar (FSRP-MG) is financed by an International Development Association (IDA) credit and grant in the amount of US$158.1 million equivalent.

2. The AF will: (a) partially replenish the financing gap created by the activation of the contingency emergency recovery component (CERC) for a total amount of US$50 million; (b) process the GAFSP grant to strengthen food and nutrition security; (c) respond to the Government of Madagascar's (GoM) request for emergency locust response and livelihood support[1]; and (d) complement parent project activities by scaling up support to productive alliances to create jobs, improve preparedness and the efficiency of response systems, and enhance resilience to shocks. In addition, the project will be restructured to integrate the CERC activity and revise the Results Framework (RF) at the intermediate results (IR) level.

3. The FSRP MPA was approved by the World Bank Board of Directors on June 21, 2022, with an original financing envelope in the amount of US$2.3 billion equivalent. In addition, Phase 1 of the FSRP MPA was approved for a total amount of US$788.1 million IDA equivalent. Phase I provides financing to Ethiopia, Madagascar, the Intergovernmental Authority on Development (IGAD), and the Centre for Coordination of Agricultural Research and Development for Southern Africa. The program development objective (PrDO) is *to increase the resilience of food systems and preparedness for food insecurity in the participating countries.* The project development objective (PDO) for FSRP-MG is *to increase the resilience of food systems and preparedness for food insecurity in Madagascar*.

4. On May 31, 2023, an increase to the MPA financing envelope in the amount of US$450 million equivalent was approved by the World Bank Board of Directors along with a total of US$903 million IDA equivalent for phases two and three of the Eastern and Southern Africa FSRP. Phase two provides US$300 million to a Program for Results operation in Tanzania. Phase three was approved for a total amount of US$603 million equivalent which comprises of US$150 million to Kenya, US$40 million to the Union of Comoros, US$150 million to Somalia, US$250 million to Malawi, and US$13 million to the African Union Commission. The total MPA financing envelope is US$2.75 billion. See Table 1 and Table 2 for more information.

B. Project Components

5. The original financing to Madagascar supports five components: (a) (Re-)Building Resilient Agricultural Production Capacity to strengthen the productivity and resilience of food production to shocks and stressors (aligned to MPA Pillar 2); (b) Supporting the Sustainable Development of Natural Resources for Resilient Agricultural Landscapes, to promote participatory planning and more sustainable, community-led natural resources and irrigation infrastructure management and to reduce or reverse the adverse impact of climate change (aligned to MPA Pillar 3); and (c) Improving Market Connectivity and Access for Smallholders to elevate intra-regional food trade and increase value addition in

[1] This is consistent with MPA Pillar 2 aim to increase the ability of national and regional food production to withstand and recover from food shocks at the farm, national, and regional levels, including Pillar 2.1 on monitoring of pest and animal diseases and Pillar 2.2 on capacity to prevent and respond to crop and livestock disease outbreak. Livelihood-restoration activities fall under Pillar 1, aiming to provide short-term support to farmers and households to restore basic productive capacity.

target food crops. The parent project also supports Project Coordination, Knowledge Management and Dissemination (Component 4) and the CERC through Component 5.

C. Country Context

6. According to the World Bank Group (WBG) Country Partnership Framework (CPF) for Madagascar (FY23-27, Report No. 179576-MG), uneven investment in physical and human capital, decreasing productivity, and vulnerability to shocks are the most salient constraints on Madagascar's development and sustainable poverty gains. Between 2013 and 2019, the economy grew an average of 3.5 percent/year, enough to achieve modest per capita income. The COVID-19 crisis caused a 7.1 percent contraction in 2020, one of the worst in Sub-Saharan Africa; per capita income dropped to historic lows; and extreme poverty rose from an already-high 77.4 percent to 81 percent, reversing more than a decade of poverty reduction gains.[2] Though Gross Domestic Product (GDP) grew 5.7 percent in 2021, 4 percent in 2022, and 3.8 percent in 2023, according to the International Monetary Fund, Madagascar is today among only a handful of countries for which real income per capita is lower than it was in 1960.[3]

D. Sectoral and Institutional Context[4]

7. Madagascar is one of the most vulnerable countries to climate change and one of the least prepared to absorb the shocks. The country is prone to natural hazards, including drought, floods, cyclones, and locust invasion. Below average seasonal rainfall, prolonged droughts, and cyclone-induced flooding have hampered crop and livestock production, particularly in the South, while moving millions of people into high levels of acute food insecurity and malnutrition. In the Grand Sud region, severe droughts debilitated food production between 2019 and 2021 when more than 2 million people faced acute food insecurity. Climate change-induced weather extremes are expected to exacerbate pest and disease threats to Madagascar's food systems. In 2021, extreme weather fueled widespread locust and armyworm infestations that contributed to up to 60 percent crop losses in parts of the South. To address these vulnerabilities and mitigate climate impacts, Madagascar must facilitate recovery, safeguard and restore the productive assets of affected households and strengthen resilience against future shocks. It will also be important to strengthen adaptation and resilience of livelihood systems while safeguarding food security of affected by enhancing the purchasing power to meet food and other basic needs, such as through cash transfers.

8. Exacerbated by climate change, the latest upsurge of the Madagascar Migratory Locust (locust) continues to jeopardize food security. Budget shortfalls and mismanagement have severely eroded the country's locust prevention and management capacity. Long regional droughts ending with soaking rains favor the development of destructive swarms—and global warming is intensifying both of those extremes. Scientists believe that suitable locust habitat could increase about five percent in a low-emission future with limited warming, compared to locust distribution between 1985 to 2000. In a high emission scenario with greater warming, locust habitat could increase by as much as 13 to 25 percent between 2065 and 2100.[5] The locust crisis emerged following severe droughts (2019-2021) that depleted livestock populations and upended livelihoods, especially in the country's Grand Sud. Left unchecked, the crisis will continue to disrupt food production and cause substantial losses and damage to crops, livestock, and other assets. To mitigate such risks and strengthen resilience against future climate shocks, Madagascar must restore and safeguard

[2] World Bank. 2023. Madagascar Country Partnership Framework 2023 - 2027. World Bank, Washington, DC. © World Bank. *https://openknowledge.worldbank.org/handle/10986/30424*.
[3] World Bank. 2022. Madagascar - Systematic Country Diagnostic Update: The Urgency of Reforms - Structural Transformation and Better Governance at the Heart of the Strategy to Reduce Poverty. Washington, D.C : World Bank Group.
[4] Further details can be found in the original Project Appraisal Document of the FSRP MPA Phase I (P178566).
[5] Xinyue Liu et al. (2024). Unveiling the role of climate in spatially synchronized locust outbreak risks. Science Advances, Volume 10, Issue 7. February 14.

the country's locust prevention, preparedness and management capacity through a comprehensive restructuring and revitalization of Madagascar's Locust Eradication Center (*Ivotoerana Famongorana ny Valala eto Madagasikara, IFVM*).

9. Malagasy women are especially vulnerable to climate shocks amid high levels of gender inequality. Climate change and natural disasters, including pandemics, have a disproportionate impact on women, especially in rural areas, where they rely heavily on agriculture for their income. As of 2021, 39.4 percent of employed women worked in agriculture, and 32 percent concentrated in subsistence farming in contrast to 23 percent of working men.[6] Women farmers are less able than men to transition to off-farm work and access markets.[7] Cultural norms and beliefs, prevailing gender roles and unequal gender power relations in Madagascar influence access to health, food and nutrition, education, property, infrastructure, basic services, and employment, often placing women at an economic and social disadvantage. Women also suffer from limited participation in decision-making related to issues affecting their well-being and that of their families, communities, and surrounding environment.

E. Relevance to Higher Level Objectives

10. Like the parent project, the AF aligns with the World Bank's country engagement strategy. The AF aligns with the World Bank's mission of ending extreme poverty and boosting shared prosperity on a livable planet. It aligns with the Madagascar CPF High Level Objective 2: *Improved human capital outcomes*, with emphasis on Objective 2.3: *Improving food security systems and reduce stunting*; High Level Objective 3: *Enhanced resilience against shocks.* It also supports the World Bank Africa Regional priorities of strengthening climate resilience and food security. The Madagascar 2021 Systematic Country Diagnostics (Report No.170225-MG) shows the importance of improving access to major corridors and markets to increase farmer incomes and encourage investments to raise productivity.

11. The AF is fully aligned with requirements for accessing CRW-ERF funding. A Technical Expert Group on Food Security (TEGFS) reviewed the Eligibility Note (EN) submitted by the GoM to demonstrate eligibility for CRW-ERF. The TEGFS endorsed the following points: (i) the evidence provided in the EN sufficiently supported the view that the country is facing an eligible food security event under the CRW ERF; (ii) related risks are considered minimal for the ERF support in the areas affected by food insecurity; (iii) the EN sufficiently provided information about the readiness of WB's operations - including FRSP Madagascar - to respond to the crisis and fits very well with the WBG's Country Partnership Framework (CPF 2023 – 2027) for Madagascar; and (iv) the information included in the EN corroborates views provided by external experts, including the Integrated Food Security Phase Classification (IPC) system, among others. With support from the World Bank and the Food and Agriculture Organization of the United Nations (FAO), the GoM is preparing a Food Security Crisis Preparedness Plan (FSCPP). The Plan aims to promote collective, early and cost-effective responses to food and nutrition security (FNS) crises.

12. The AF will help Madagascar achieve its Nationally Determined Contribution (NDC) goals and contribute to global efforts to mitigate and adapt to climate change. In its latest NDC, submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2022, Madagascar committed to reducing greenhouse gas (GHG) emissions by 24 percent, while increasing carbon sequestration capacity by 20 percent, compared to the business-as-usual (BAU) scenario. By 2030, the agriculture sector is expected to reduce 4,601 Gg eq CO_2 in total, including cultivated soils, enteric fermentation, manure management, and rice cultivation. The implementation of the AF would lead to a net reduction of GHG emissions (-740,566 tCO_2eq over 20 years, -37,028 tCO_2eq per year).

[6] National Institute of Statistics of Madagascar (INSTAT). 2021. Permanent Household Survey (Enquête Permanente auprès des Ménages) 2021. Antananarivo, Madagascar.
[7] The World Bank (2023). Drivers of food and nutrition security during the lean period in southeastern Madagascar. Journal of Agriculture and Food Research, Volume 14.

13. The AF will also help strengthen resilience to climate risks and contribute to the country's priority adaptation goals, as per the NDC and the National Adaptation Plan of 2021 (NAP). The NDC prioritizes actions to enhance the resilience and sustainability of food systems through improved access to knowledge, innovations, climate-resilient inputs, climate-proof infrastructure, credit, and early warning systems. The NAP includes priorities for strategic sector programs, such as agriculture, water resources, forest, biodiversity, risk management, landscape, and infrastructure management, which are linked to the AF. Overall, the AF is aligned with the country's strategies on climate change and its goals for reducing GHG emissions.

14. The AF is fully aligned with requirements for accessing CRW-ERF funding. A Technical Expert Group on Food Security (TEGFS) reviewed the Eligibility Note (EN) submitted by the GoM to demonstrate eligibility for CRW-ERF. The TEGFS endorsed the following points: (i) the evidence provided in the EN sufficiently supported the view that the country is facing an eligible food security event under the CRW ERF; (ii) related risks are considered minimal for the ERF support in the areas affected by food insecurity; (iii) the EN sufficiently provided information about the readiness of World Bank operations - including FRSP Madagascar - to respond to the crisis and fits very well with the WBG's Country Partnership Framework (CPF 2023 – 2027) for Madagascar; and (iv) the information included in the EN corroborates views provided by external experts, including the Integrated Food Security Phase Classification (IPC) system, among others. With support from the World Bank and the Food and Agriculture Organization of the United Nations, the GoM is preparing a Food Security Crisis Preparedness Plan. The Plan aims to promote collective, early and cost-effective responses to food and nutrition security crises.

F. Summary of the project implementation status and achievements to date

15. The original credit became effective on August 16, 2022. The GoM submitted to the World Bank an emergency request on November 4, 2022, and the project's CERC for US$50 million was approved on April 12, 2023. The activated CERC funds were subsequently suspended on September 26, 2023, amid renewed in-depth discussions at the technical level. On February 26, 2024, the World Bank authorized the GoM to proceed with implementation of the CERC activity, which is expected to be completed by August 2024.

16. Challenges implementing the CERC, abrupt shifts to the project's coordination arrangements,[8] and the November 2023 Presidential elections slowed early implementation of FSRP-MG, but progress has since been notable. As of May 10, 2024, FSRP-MG commitments were US$86.8 million, with a disbursement rate of 38.5 percent (US$60.9 million). This includes US$16 million disbursed during FY24. Implementation across the project's core components is satisfactory and is expected to accelerate, with dedicated support from institutional partners such as the Africa Rice Center, the International Institute of Tropical Agriculture, the International Livestock Research Institute, and the Food and Agriculture Organization of the United Nations (FAO). Among notable achievements, the project signed in December 2023 a US$40 million contract with the World Food Program (WFP) supporting the scale up of Home-Grown School Feeding (HGSF) Program across nine of Madagascar's most vulnerable and food insecure regions. The World Bank and WFP Office of Evaluation are jointly developing a robust impact monitoring and evaluation framework and identification of the 800 schools is underway. For the CERC, a total of 657,000 households are expected to receive the first of two cash transfers in June 2024.

17. The project has fully complied with five legal covenants, and it is partially in compliance with the sixth one. The Ministry of Agriculture and Livestock (MinAE) and the Project Implementing Unit (PIU) have finalized the Project Implementation Manual and hired key staff, including the national project coordinator, the deputy project coordinator, and regional coordinators, procurement manager, financial management, and Environment and Social (E&S) specialists

[8] The 9-month extension of the Sustainable Landscape Management Project (P154698), which is implemented by the same PIU, severely compromised project coordination during the early stages of project implementation and necessitated a comprehensive overhaul of the project's coordination mechanisms and staffing.

at the central and regional levels. Pending staff, including experts on matching grants, on environment and natural resources management, and social development specialist, are all expected to be onboard by June 2024.

18. Steps to improve project performance. The GoM confirmed its commitment to achieving the PDO and results and has agreed to a detailed action plan it will implement by the GoM to improve project implementation performance in the latest implementation support mission. Key actions include: (a) recruiting the remaining technical consultants; (b) validating the matching grants manual; (c) launching technical studies for the irrigation and road rehabilitation works; and (d) finalizing the six-month implementation plan for the HGSF program.

Table 1. MPA Program Framework

Phase	Project ID	Sequential or Simultaneous	IPF or PforR	Estimated IDA Amount (US$ million)	Estimated Other Amount (US$ million)	Estimated Approval Date	Estimated Environmental & Social Risk Rating
Phase 1 (ongoing)	Ethiopia, Madagascar, IGAD and CCADERSA (P178566)	Sequential	IPF	788.1	65.5	June 21, 2022	High
Phase 2 (ongoing)	Tanzania (P179818)	Simultaneous	PforR	300.0	-	May 31, 2023	Substantial
Phase 3 (ongoing)	Comoros, Kenya, Malawi, Somalia and AU (P177816)	Simultaneous	IPF	603.0	18.0	May 31, 2023	Substantial
AF	Madagascar (P181398)	Simultaneous	IPF	50.0	20.0	May 29 2024	Substantial
Phase 4	Mozambique (P181112)	Sequential	IPF	75.0	-	January 2025	Substantial
Board Approved Financing Envelope		**US$2,750 million**					

Table 2. Updated List of Countries and Organizations Expected to Participate in the MPA

Expected Participating Country/Organization	Estimated Financing (up to US$, million)	Expected Participating Country/Organization	Estimated Financing (up to US$, million)
Comoros	80	South Sudan	100
Democratic Republic of Congo	400	Tanzania	300
Ethiopia	600	Zambia	100
Kenya	150	Zimbabwe	100
Lesotho	82	CCARDESA	5
Madagascar	208	IGAD	25
Malawi	250	AU	13
Mozambique	150	Other Regional Organizations (future phases)	37
Somalia	150		
		Total IDA (US$ million)	**2,750**

II. DESCRIPTION OF ADDITIONAL FINANCING

19. The rationale for the AF is to replenish in part the US$50 million used for CERC activation and to add new activities to support emergency locust response and strengthen livelihoods recovery and resilience to future climate shocks. The AF will: (a) allocate US$50 million of CRW-ERF resources to finance new investments supporting the GoM's locust crisis response, restoring locust prevention capacity, facilitating livelihoods recovery while strengthening resilience to future shocks; rehabilitating irrigation and road infrastructure (damaged by Cyclone Gamane in late March 2024); and supporting the Agriculture Census; and (b) process the GAFSP TF (US$20 million), which will help scale up school feeding based on local production. The AF will build on FSRP Phase 1 MPA by crowding in private sector investment through productive alliances. This is the first restructuring of FSRP Phase I. It includes changes to the IR indicators and targets to account for the CERC and the additional CRW-ERF and GAFSP resources.

20. The PDO is amended to reflect CERC activation and there is no change to the results chain or closing date of the parent project. The PDO of the AF is amended to reflect the triggering of the CERC: *to increase the resilience of food systems and preparedness for food insecurity in Madagascar, and in case of an Eligible Crisis or Emergency, respond promptly and effectively to it.*

21. The AF will expand the geographical coverage of FSRP-MG to three new regions: Androy, Atsimo Atsinanana, and Melaky, for a total of 16 regions[9] under the restructured project. A full map can be found in Annex 2. Additional geographic coverage is needed to expand the project's regions of interventions to align with the scale up of the HGSF Program and to optimize public investment through synergies with IFC-supported projects with the private sector.

22. Institutional arrangement will be the same as the parent project. The project will be implemented by the Ministry of Agriculture and Livestock (MINAE) through a Project Implementation Unit (PIU) at the national level and Interregional Implementation Unit at the regional level.

23. Components and costs. The AF covers components 1.1, 1.3, 2.3, 3.2, and 4 of the parent project. Under Component 1, the AF will support the mobilization of the first General Agricultural Census in nearly 20 years. Under component 2, the AF will support the Government's response to Cyclone Gamane, namely the rehabilitation of impacted irrigated perimeters. Under Component 3, the AF will support: (a) productive alliances to integrate smallholder production into commercial agro-food value chains with support from matching grants; (b) scaling up school feeding programs through local purchasing arrangements, with support from the WFP; and (c) rural road rehabilitation or construction. Component 4 will finance the cost of involuntary resettlement[10] to facilitate smooth implementation of the project. Under the new Component 6, the AF will support emergency and resilience-building measures—such as, locust surveillance and control at the national level, capacity building for preparedness and prevention, livestock, and training on climate-smart agriculture to facilitate livelihoods adaptation in dry lands and strengthen resilience against future climate and other shocks. Table 3 shows the proposed allocation of the AF and reallocations across components, following activation of the CERC and processing of the restructuring.

[9] Diana, SAVA, Analanjirofo, Boeny, Melaky, Betsiboka, Analamanga, Itasy, Atsinanana, Vakinankaratra, Vatovavy, Fitovinany, Atsimo Andrefana, Atsimo Atsinanana, Anosy, Androy.

[10] An authorization from the regional vice-president authorizing the use of IDA financing for the purchase of food was approved on April 25, 2024.

Table 3: Project Cost by Component

Component	Current Project (US$ millions)	AF (US$ millions)	Total (US$ millions)
C1: (Re-)Building Resilient Agricultural Production Capacity	27.1	12.0 (CRW)	31.1
C2: Supporting the Sustainable Development of Natural Resources for Resilient Agricultural Landscapes	44.8	8.0 (CRW)	36.8
C3: Improving Market Connectivity and Access for Smallholders	64.2	20.0 (GAFSP) 4.0 (CRW)	62.2
C4: Project Coordination, Knowledge Management, and Dissemination	22.0	4.0 (CRW)	26.0
C5: Contingency Emergency Response Component (CERC)	0.0	0.0	50.0
C6: Support to Locust Response and Climate-Smart Livestock Systems	0.0	22.0 (CRW)	22.0
TOTAL	158.1	70.0	228.1

24. GAFSP funding will enhance nutritional outcomes and smallholders' access to markets. In partnership with WFP and under Component 3, the project will scale up the HGSF program, with dedicated support to sourcing arrangements between school canteens and local and regional suppliers, facilitating links between components 1 and 3 of the project. It will also cover improved storage facilities and improved producer access to agro-meteorological data and information. Key objectives include improving food security and nutrition outcomes, mitigating absenteeism, and leveraging school canteens as institutional markets to stimulate local production of sorghum, legumes, fruits and vegetables, cassava, orange-fleshed sweet potatoes, and other nutritious foods. Over a three-year period, 800 schools, 240,000 children and 20,000 farmers will benefit from the program, which is more fully described in Annex 3.

25. Component 5: Contingency Emergency Response Component (CERC)—US$50 million equivalent (original project US$0 million, current US$50 million). The CERC was triggered on 12 April 2023 and financed with US$50 million reallocated from other components (see Table 3). Under the CERC, 657,000 urban and rural households spread across 114 districts in all 23 regions are benefitting from unconditional cash transfers. These will cover some 2.8 million direct beneficiaries, among which, 65 percent are women. These targets have been introduced as new IR indicators under the RF. The aim to provide timely support to poor and vulnerable households to enable them to meet their daily basic needs, avoid a significant erosion of their food security, and facilitate livelihoods recovery.

26. Component 6: Support to Locust Response and Climate-Smart Livestock Systems (US$22 million equivalent). To facilitate the recovery of communities affected by recent climate shocks, including the locust infestation, and to attenuate Madagascar's vulnerability to climate change shocks, this new component funds emergency response and resilience strengthening activities. It will finance: (a) emergency locust surveillance and control measures; (b) technical and physical infrastructure upgrades to restore IFVM's preparedness and prevention capacity; and (c) an animal restocking campaign to facilitate recovery of communities and livelihoods affected by crop and livestock losses and damages and to promote adaptation of animal-based livelihood systems for improved climate resilience.

27. Sub-Component 6.1: Strengthening Locust Management. Pest outbreaks are increasing in number and severity due to climate change. To minimize damages and losses to crops, livestock, and other assets, this subcomponent will finance locust surveillance, monitoring, ground and aerial control measures, and training and capacity building. All activities will be implemented in accordance with environment and social standards, including the project's updated Integrated Pest Management Plan. This activity will prevent the spread of locusts, safeguard livelihoods threatened by the outbreak, and strengthen Madagascar's system for prevention and preparedness by rehabilitating infrastructure and strengthening the technical, human resource, and logistical capacity of IFVM.

28. Sub-Component 6.2: Support for Climate Resilient Livestock Systems. This subcomponent will finance the delivery and uptake of climate-smart technologies and practices through a matching grant mechanism to mitigate

climate risks, reduce animal mortality, and facilitate the adaptation of livestock systems and associated livelihoods for improved productivity and climate resilience of dryland communities. Support will introduce new and improved breeding stock and genetic resources for cattle, small ruminants, and poultry that are more productive and resistant to dry conditions, drought, and heat waves. It will encourage community uptake of a more diversified range of animals while strengthening veterinary services to enhance animal health and reduce mortality under severe conditions. It will promote community-led rangeland restoration and improvement, climate-resilient grazing management, and sustainable feed supply and storage systems. It will also equip the regional directorships of MinAE (*Direction Régionale de l'Agriculture et de l'Elevage*, or DRAE) to better monitor and control animal disease and pest outbreaks. Where feasible, it will help reduce GHG emissions by promoting use of animal manure to improve soil health and fertility.

29. Implementation arrangements. Implementation arrangements for the AF will follow the parent project, except for the CERC activities. The parent project's PIU anchored in MinAE will coordinate and manage the AF resources, except for the CERC activity under component 5. All new activities build directly on relevant methods and structures in place under the parent project and other interventions and partnerships. Administration and implementation arrangements for the CERC are outlined in the approved CERC manual. CERC implementation is managed by FID (*Fonds d'Intervention pour le Développement*).

30. Relying entirely on Government procurement and financial management systems to procure the proposed food purchases needed to administer the HGSF activity could significantly delay implementation and jeopardize the achievement of objectives. Therefore, the Project will leverage through a direct services agreement the unique capacity of the WFP to procure rapidly and at best price on the global market the cereals, beans, edible oils and other products. Contracting with United Nations (UN) agencies is consistent with World Bank procurement rules and procedures, as set out in the Procurement Regulations, and an adequate standard template corresponding to the proposed activity have been shared by World Bank procurement staff to the Client. There will be no need for retroactive financing by contracting WFP.

31. Changes in the RF. Some IR indicators will be revised to reflect scaled-up activities and to ensure concordance with GAFSP Monitoring and Evaluation (M&E) requirements. Some targets (baseline and/or end results) will be updated. The AF includes additional IR indicators to adequately record project's progress, outputs, and outcomes and respond to corporate scorecard requirements.

Table 4: Changes to IR indicators

Indicator	Original Target	Revised Target	Comments
Component / IR Indicator			
C1: (Re-)Building Resilient Agricultural Production Capacity			
(NEW) - Number of farmers receiving inputs or services on climate resilient or sustainable agriculture practices (farmer)	0	120,000	GAFSP indicator
(NEW) - *of which female farmers receiving inputs or services on climate resilient or sustainable agriculture practices*	0	60,000	GAFSP indicator
Number of women integrating sustainable production technologies because of a women-targeted program	20,000	30,000	Indicator reformulated
(NEW) Number of smallholder producers/processors receiving productivity enhancement support (person)	0	20,000	GAFSP indicator

Indicator	Original Target	Revised Target	Comments
Component / IR Indicator			
Consumption of animal products in targeted communities (per capita, per year)			End target values revised in collaboration with DGE, FIFAMANOR and other concerned entities.
Eggs (number)	15	26	
Milk (liters)	5	7	
Meat (kg)	5	11.5	
C2: Supporting the sustainable development of natural resources for resilient agricultural landscapes			
MPA level - Land area restored or reforested/afforested (hectares)	150,000	15,000	Considering cost per ha to implement activity, the initial end target value was unrealistic and consequently, revised downward.
MPA level - Area provided with new or improved irrigation or drainage services (CRI indicator) (CRI, hectares)[11]	25,000 (new) 5,000 (rehabilitated)	11,000	End target value reduced downward. Allocated budget was insufficient in Parent Project design. Also, other priorities have arisen with CERC triggering and locust response needs. These events required strategic choices and budgetary decisions.
C3: Improving market connectivity and access for smallholders			
Roads constructed or rehabilitated (km)	273	230	End target value reduced downward. Allocated budget was insufficient in Parent Project design. Also, other priorities have arisen with CERC triggering and locust response needs. These events required strategic choices and budgetary decisions.
(NEW) Number of processing, storage, and market facilities constructed and/or rehabilitated	0	50	GAFSP indicator
(NEW) - People receiving improved nutrition services and products (person)	0	300,000	GAFSP indicator/Sub-Indicator added to serve as scorecard indicator
(NEW) - of which female (number)	0	120,000	GAFSP indicator
C4: Project coordination, knowledge management and dissemination			
MPA level – Direct project beneficiaries[12] (number)	600,000	3,400,000	CERC beneficiaries included
Of which female (number)	120,000	1,920,000	-
C5: Contingency Emergency Response Component			
(NEW) Number of beneficiaries of social safety net programs (monetary transfers)	0	2,800,000	These two proposed indicators are added to record Project efforts and in line with scorecard indicator.
(NEW) of which female recipients of monetary transfers (%)	0	65	
C6: Support to Locust Response and Climate-Smart Livestock Systems			

[11] This indicator will be reported under GAFSP tier 2.2 output indicator #2 - Land area receiving improved production support (hectare), Disaggregation: Area provided with new/improved irrigation or drainage services (hectare).
[12] This indicator will be reported under GAFSP tier 2.2 output indicator #1 - Number of people receiving direct benefits (person) Disaggregation: Of which, number of females.

Indicator	Original Target	Revised Target	Comments
Component / IR Indicator			
Number of hectares protected from locusts	0	300,000	
Number of beneficiaries receiving livestock goods and services including high performing animal breeds	0	55,000	
Of which Female beneficiaries (%)	0	40	

III. KEY RISKS

32. The overall risk associated with the implementation of the AF is Substantial, in line with the parent project. The overall project implementation risk is rated as Substantial given Madagascar's volatile political and economic situation, the disruptive nature of reforms at the national and local levels, the risk of political interference, the current uncertainty on economic recovery, high environmental and social risks associated, in particular, with locust control measures, and potential for elite capture and exclusion of vulnerable individuals or groups. To mitigate risks during implementation of the project, the design builds on the implementation to-date experience of the parent project and emphasizes robust institutional arrangements that will leverage high-capacity partnerships with as international research institutes and UN agencies.

33. Political and governance risk is High. Between 2009 and 2014, Madagascar experienced several political crises that weakened its institutions for governance. The democratic transition of power in 2019 marked a turn to a more stable political environment conducive to continued development efforts, though governance remains a challenge, and it is expected that potential changes in government counterparts at both political and technical levels may induce some delays in project preparation and implementation in the very short-term. The project's use of participatory planning and performance-based contracts and robust oversight engagement by the World Bank will help to mitigate these risks.

34. Macroeconomic risk rating is Substantial. Madagascar has been historically characterized by low levels of public revenues affecting the government's ability to deliver basic services, foster development efforts and maintain sufficient levels of investment. Limited resources may affect the government's capacity to sustain the results of the proposed efforts and provide the necessary funding to maintain investments going forward. The country remains vulnerable to political and other endogenous and exogenous shocks. The country is prone to natural disasters that, despite fiscal provisions, have at times affected its budgetary and macroeconomic balance, heavily affecting the agricultural sector on which the country heavily relies. Nonetheless, the government has made reforms to improve revenue mobilization and enhance public financial management, and these reforms are expected to continue. These risks will be mitigated, in part, through closely monitoring updates to the decentralization policy and providing technical support to the Government through the Public Finance Monitoring and Accountability for Local Service Delivery Project (P178038).

35. Sector strategies and policies risk is Substantial. The project is closely aligned with the Madagascar National Emergency Plan *(Plan d'Emergence Madagascar)* strategy and relevant sector policies. The government has engaged in updating key policies on rice sector development, aggregation, extension and other priorities to reflect national orientations and take into account new challenges. New sector strategies relating to the Operations & Maintenance of watershed and irrigation networks also need to prove their social and financial sustainability, as the issue of financing these schemes could prove problematic for cash-constrained beneficiaries, specifically smallholders. To mitigate risks that these reforms will be compromised by weak implementation capacity, the project will support studies and the

development of policy notes to help inform decision making and to advance needed reforms.

36. Environment and Social risks is High. The parent project and this AF have a high overall E&S risk rating. The relevant standards of the parent program remain applicable. The rehabilitation and expansion of existing irrigation infrastructure, rehabilitation of feeder roads and small bridges, and rehabilitation and upgrading of market and post-harvest infrastructures, which all include small- to medium-scale civil works, will likely generate: (a) adverse site-specific risks and impacts to the occupational health and safety of workers during construction and operational phases; (b) increased levels of dust and noise and community health and safety risks from, particularly the risk of pollution to surface and groundwater sources during dredging of channels; and (c) solid and liquid waste. In addition, the promotion of farmers' increased use of fertilizers could cause adverse health effects linked to improper use, storage, and disposal and contribute to the degradation of surface and groundwater quality. However, the potential adverse risks and impacts on human populations and/or the environment are not likely to be significant and will be site specific. Labor influx and associated risk and impacts can be a point of concern, especially on community health (including the risk of transmission of diseases such as sexually transmitted diseases as well as the transmission and propagation of COVID-19, Gender-based Violence (GBV), and Sexual Exploitation and Abuse / Sexual Harassment (SEA/SH). Risk mitigation measures to be taken include but are not limited to: (a) the development and implementation of a GBV action plan; (b) the systematic inclusion of (code of conduct) clauses on workers' conditions and management, child protection, and GBV prevention in all contracts; and (c) the reinforcement of the GRM to ensure that any incident related to GBV will be addressed effectively with sufficient social sensitivity. In addition, AF-supported locust control measures pose risks—for example, people consuming locust or food and water contaminated by pesticides, risk of fires/explosions due to improper storage of pesticides and fertilizers, traffic and road safety, and pesticide spillages. To mitigate these risks, the project has prepared a comprehensive standalone Locust Pest Management Plan (LPMP) to mitigate short- and long-term impacts on the flora, fauna, and people associated with control activities and to avoid all sensitize zones—for example, protected areas such as rivers and lakes.

37. Stakeholders risk is rated as Substantial. These risks include: (a) insufficient community and other stakeholder engagement (including the potential exclusion of vulnerable individuals or groups such as women and youth); (b) elite capture of project benefits; (c) the exclusion of vulnerable groups or individuals from project benefits due to poorly designed, disseminated, or nontransparent beneficiary selection processes or eligibility criteria. These risks will be mitigated through robust implementation of the Stakeholder Engagement Plan (SEP) and close supervision of the Grievance Redress Mechanism (GRM) and associated processes.

IV. APPRAISAL SUMMARY

A. Economic and Financial Analysis

38. An Economic and Financial Analysis (EFA) shows an economic internal rate of return of 22 percent and an economic net present value of US$149.29 million at the opportunity cost of capital of 6 percent, over a 20-year period. The EFA compares "with project" and "without project" scenarios and is based on investment models and additional economic analysis that represent the main project activities and the theory of change (ToC). The financial analysis demonstrates the financial viability of investment models supported by the project versus the without project scenario. The economic analysis integrates relevant co-benefits from the project intervention, with particular attention to climate co-benefits. All project components contribute to a positive impact for the society. Sensitivity analysis shows that the project is sufficiently robust to changes in expected costs and benefits (a full EFA can be found in the project

files). No transition risk was identified for this AF in line with the Paris Alignment requirement (full details on the Paris Alignment assessment are in project files).

B. Green House Gas (GHG) Analysis, Climate Co-Benefits and Paris Alignment

39. FRSP-MG AF generates important climate co-benefits. The GHG accounting separates estimates for the parent project (based on the proposed restructuring) and the AF. FSRP-MG AF generates net GHG emissions reduction in the amount of 740,566 tCO_2e in 20 years, or 37,028 annually (see GHG Annex 1). The economic value of net GHG emissions generated by the project as a whole amount to a net reduction of 6.05 million tCO_2eq in 20 years and are included in the economic analysis following the World Bank guidelines.

40. The operation is aligned with the goals of the Paris Agreement on both mitigation and adaptation and does not impede the advancement of Madagascar's climate commitments.

41. Assessment and reduction of mitigation risks: The AF has a low risk of preventing the country's transition to low-carbon development pathways, as it supports activities that are largely universally aligned. These include research and development, agricultural and climate information, school feeding programs and time-bounded temporary emergency response. This type of school feeding program has shown positive effects in terms of reduced food losses and waste, as well as increasing the efficiency of processes along the value chain. Considering the restrictions indicated for Climate Smart Agriculture (CSA) applicable categories, project activities under component 3 were subject to further assessment of risks and definition of risk management measures. The risk identified is low.

42. Assessment and reduction of adaptation risks: The level of residual risk and additional risk management measures for project assets, systems and services have been determined in the face of major climate hazards (extreme events - droughts, floods, cyclones; sea level rise; changes in climatic patterns). This assessment ensures that the level of risk is acceptable for project implementation and the fulfillment of the intended PDO and impact over the long run.

43. Overall, the FSRP intends to increase the resilience of food systems. Program activities integrate measures that contribute to the improved management of major risks, including climate risks. Measures that support climate proofing of assets and services generated by the project are also important to safeguard the continuous operation of the project in the event of disasters. These measures include climate-smart agriculture technologies, support for sustainable land management, the provision of information systems to help manage climate risks, and climate-proof infrastructure.

C. Gender

44. Sixty-nine percent of Malagasy women work in agriculture, but women's productivity lags that of men's for several reasons, predominantly: (a) lack of access to resources and information due to exclusion from extension activities; (b) family and community (care) obligations that reduces their time for agriculture; and (c) limited access to markets. Climate change and extreme weather conditions further increase women vulnerabilities.[13] Components 1 and 3 will help women increase their productivity by: (a) encompassing good practices to ensure women's access to training—such as inviting households (instead of head of household) to trainings, ensuring trainings are delivered at a time and location that accommodates women's care commitments, and encouraging men to help with care duties in the household; and identifying female lead farmers through the mobilization process and working with them to spread information through women's social networks; and (b) supporting crops that are preferred by women producers, developing/disseminating climate-smart technologies (e.g., adapted seed drills, adapted tools to facilitate carrying water for household and market garden crops, etc.), and prioritizing women under the grant program, ensuring they benefit from financing discounts, and targeting 65 percent of cash transfers to women to enable them to purchase the

[13] World Bank. 2023. "Unlocking the Potential of Women and Adolescent Girls – Challenges and Opportunities for Greater Empowerment of Women and Adolescent Girls in Madagascar." World Bank, Washington, DC.

appropriate tools. The outcome of the first set of actions will be captured by the indicator: *Number of technologies developed and transferred to extension services with project support* (with gender disaggregation). The second set of actions will be tracked through the indicator: *Number of women who have adopted new technologies to enhance production and environmental sustainability.*

D. Citizen Engagement

45. The AF will apply the citizen engagement (CE) mechanisms developed for the parent project, which uses three CE approaches. The first approach involves consultation with all beneficiaries during the program life cycle. Consultation activities will be based on the country's specific objectives and will regularly feedback to beneficiaries how their input has influenced the implementation of project activities. The second approach is the GRM, which has been updated to reflect AF activities and is ready for operationalization. The third approach involves collecting, recording, and reporting inputs received from beneficiaries through beneficiary satisfaction surveys. The project will also explore a "thick CE approach" that provides citizens and communities with resources and decision-making powers with respect to the Operation & Maintenance (O&M) of water and other community infrastructure, equipment, or landscape restoration by involving water users' associations and farmer-based organizations. The beneficiary feedback indicators are: "beneficiaries satisfied with the program's interventions" and "percentage of GRM claims addressed among those received." The SEP will elaborate in detail on the proposed CE approaches.

E. Financial Management

46. Financial Management (FM) assessments were conducted and FM arrangements were agreed upon on: (a) FSRP PIU that will be responsible of implementing the parent (P178566) project (components 1, 2, 3, 4), additional financing (components 1, 2, 3, 4, 6); and (b) the FID (*Fonds d'Intervention pour le Developpement*) will be responsible for implementing CERC activities, component 5.

47. The FM assessments were carried out in April 2024 in accordance with the World Bank Directive and Policy for IPFs issued on September 30, 2018, the World Bank Guidance on FM in World Bank IPF Operations issued on February 10, 2017, Guidance Note on FM in Rapid Response to Crises and Emergencies issued by OPCS on November 1, 2013 and updated on June 1, 2015. The assessments' objective was to confirm whether the FM arrangements in place are acceptable. The assessment considered the degree to which: (a) reasonable records are maintained and financial reports produced and disseminated for decision-making, management and reporting; (b) funds are available to finance the Project; (c) there are reasonable controls over Project funds; and (d) adequate audit arrangements are in place.

48. The existing FSRP-FM arrangements were assessed as adequate. There is no overdue financial audit and interim financial reports are submitted timely and are acceptable. The financial management performance of the project is satisfactory as of April 2024. The PIU should finalize the ongoing recruitment of the regional finance officer, the internal auditor and the external auditor. To further strengthen the FM arrangements in the FSRP PIU, the following additional measures will be put in place: (i) the project implementation manual will be updated to incorporate procedures for new activities; (ii) the additional financing activities will be covered by internal auditor. In addition, a specific manual for compensations should be developed by three months after effectiveness of the additional financing. A segregated designated account will be opened at a commercial bank acceptable to the World Bank for the AF.

49. The FID is implementing the P149323 Social safety nets project (PFSS) and P179466 Madagascar Safety Nets and Resilience Project (PFSR). PFSS has no overdue financial audits and the external auditor opinion is unqualified. IFRs have been acceptable and submitted on time. FM performance is rated satisfactory as of December 2023. PFSR is only at its first year of implementation. FM arrangements are deemed adequate for the CERC implementation. The current FM arrangements of PFSS and PFSR is broadly in compliance with the FM reporting requirements. To address the risks

related to the emergency activities: (i) the FID updated the procedures manual to consider the emergency activities expenditure; (ii) the CERC activities should be recorded using an appropriate accounting software; (iii) a segregated designated account was opened at the Central Bank to receive CERC funds; and (iv) internal auditor in place will cover the CERC activities. The World Bank will increase implementation support for the CERC.

50. The risk of the entire FSRP project was re-evaluated considering the CERC activation and the AF. The FM inherent risk level is deemed Substantial, and the residual risk is Moderate after consideration of the mitigation measures.

F. Procurement

51. The AF's procurement risk is Moderate, in line with that of the parent project and in consideration of the mitigation measures. Procurement under the AF will be carried out in accordance with the World Bank's *Procurement Regulations for Investment Project Financing Borrowers* (Fith edition, September 2023), 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) beneficiary disclosure requirements, and other provisions stipulated in the project Legal Agreements. The project procurement strategy for development (PPSD) for the parent project has been updated to include the activities of this AF.

G. Legal Operational Policies

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

52. The project triggers OP/BP 7.50 because some of the proposed investments under the original Phase 1 of the MPA (not related to this Additional Financing for Madagascar) will affect international waterways in accordance with the Policy. All riparian countries were notified on August 21, 2021 and no objections were received. The requirements of the World Bank Policy OP/BP 7.50 (Projects on International Waterways) of notifying the riparian states have therefore been met.

H. Environmental and Social

53. In line with the World Bank Environmental and Social Framework (ESF), the environmental and social risk classification (ESRC) is High. It is expected that AF-supported activities will broadly have positive environmental and social impacts by financing public goods critical to protecting biodiversity, restoring healthy natural ecosystems, and strengthening food security. Like the parent project, the AF will also finance the rehabilitation of small-scale irrigation schemes (component 2) and the construction and rehabilitation of market infrastructure (component 3) for value addition, food safety, and reduced food loss and waste (storage, cold chain, processing, and marketing). These activities could result in various environment, health, and safety risks and impacts including: (a) inappropriate use and disposal of agrochemicals and agricultural research laboratory chemicals; (b) health and safety risks and impacts during construction works; (c) inappropriate use of water resources and agrochemical contamination, affecting water quantity and quality in neighboring communities and downstream; (d) physical and chemical degradation of soils from unsuitable land management techniques; and (e) adverse impacts on biodiversity and ecosystems through an introduction of invasive species. Under component 6, locust control measures and restocking activities pose risks to human health and placing increased pressures on sensitive natural ecosystems. High environmental and social risks

primarily related to the rehabilitation of small- to medium scale civil works and locust control activities will be addressed through revisions to the project's environmental and social instruments, including: (a) Environmental and Social Commitment Plan, including the Stakeholder Management Plan; (b) Integrated Pest Management Plan; and (c) Gender-Based Violence Action Plan to cover the activities of the AF, including the locust response program.

54. The project-level GRM will be central to risk mitigation efforts and will help manage grievances from communities or by parties who feel that they are or will be adversely affected by the project. The project-level GRM will serve as an avenue for communities to channel their concerns. Clients will be supported to establish an accessible, effective, and efficient GRM with the capacity to receive and respond to grievances in the local languages and on time. Grievances related to SEA/SH as well as other forms of GBV will be given special attention and protocols to enable survivor-centered responses will be put in place. The team will ensure that project-related grievances are shared with the World Bank's Grievance Redress Service (GRS). The team will work with clients to ensure that communities are aware of the multiple forms used to submit grievances to the GRM and the GRS in case they think they are or could be adversely affected by the project.

55. Broadly, FSRP-MG AF will generate a net reduction of GHG emissions compared to business as usual. There are activities, such as the fight against the locust invasion, that might generate emissions in the short term but will not surpass the Paris Alignment cap and not create transition risks. Other activities, like animal restocking are also accompanied by mitigation measures (improved animal husbandry and management) which in the long run will lead to a balance and or even slight net reduction per activity (see GHG Balance Annex 1). The project will be implemented on existing agricultural land and hence will not lead to the conversion of natural habitat.

56. The project is expected to result in social benefits, but its social risk level is high. In particular, it is expected to increase rural employment opportunities (including for youth and women), improve income and livelihoods, enhance the resilience of farmers to shocks, improve access to finance, increase agricultural yields, and increase access to diverse and nutritious foods (especially to pupils), increase access to information system, and restore land. However, the social risk of the project is considered Substantial because of the project's extensive scope and country's cultural and political context. In addition, the project-supported activities could result in land acquisition—notably for the construction of agricultural infrastructure such as small-scale and household irrigation, market infrastructure, and rural feeder roads and laboratories and for trees plantations. The latter may trigger involuntary resettlement (physical and economic displacement), restrictions on access to land, and a loss of livelihoods within affected communities. In addition, although the exact location of the investments will be determined during the project implementation stage, project activities will be implemented in highland and lowland areas with complex socioeconomic and political contexts.

57. Other forms of social risk may exist. It may, for example, arise from: (a) insufficient community and stakeholder engagement and elite capture; (b) the exclusion of vulnerable groups and individuals from project benefits due to poorly designed and/or disseminated or nontransparent beneficiary selection process or eligibility associated with grants, loans, and cash transfer; (c) social tensions and conflict induced by competition over agricultural resources including irrigation water resources and contextual security risks in conflict-affected areas; (d) labor influx and associated community health and safety risks, and SEA/SH; (e) the failure to comply with labor standards, especially within activities financed by matching grant, and the potential use of forced and child labor; (f) operational concerns due to remoteness and insecurity, including challenges in monitoring social risks and handling grievance management; and (g) weak implementation capacity, especially at the grassroots level due to limited functional structures and trained manpower.

58. To identify and manage the potential Environmental Social Health and Safety (ESHS) risks, the national MinAE prepared the following required environmental and social instruments for parent project. They include: (a) an ESMF with a screening tool for project activities and guide the development of site-specific instruments, including GRM,

SEA/SH action plan and Security management plan; (b) an IPMP to mitigate potential risks and impacts associated with the application of pesticides; (c) a Resettlement Policy Framework (RPF); (d) a SEP including GRM; and (e) an LMP. An ESCP was also developed to outline measures to be implemented including implementation arrangements and monitor and report on the implementation of environmental and social risk management tools and plans in line with the ESF. As per ESF requirements for this AF, the Borrower has: (a) updated the Environmental and Social Commitment Plan (ESCP), disclosed on May 1, 2024; (b) updated the SEP including the GRM, disclosed on December 29, 2023; and (c) prepared the standalone PMP for the locust program that was also approved by the World Bank and disclosed on February 1, 2024.

59. The project will take measures to mitigate and manage these risks. The ESCP, the SEP, including a GRM, the LMP including a workers' GRM, the ESMF including IPMP and SEA/SH action plan and the RPF were disclosed both on the World Bank website on April 24, 2022, and in country on April 25, 2022.

60. The project's M&E system will be responsible for monitoring environmental and social impacts and measures. As the project's Implementing Agency (IA), the PIU—with the guidance of its environmental and social specialists and the World Bank, will be responsible for the preparation of the relevant environmental and social instruments. Monitoring checklists will be prepared based on mitigation plans.

61. The project will take measures to ensure social inclusion, gender equity, and CE. In accordance with corporate directives on CE in IPF projects, the project will emphasize approaches that maximize outreach and participation of communities and broader public awareness of project activities. The project will have two CE indicators: one related to beneficiaries' feedback and the other linked to the project GRM. In accordance with ESS10 and the guidelines for citizen involvement in projects throughout the preparation and implementation processes, the project will further promote CE and the establishment of a process for processing community feedback. These aspects will be included in the SEP, which will also cover the establishment and operationalization of a project GRM. Grants under component 2 supporting infrastructure development and income diversification opportunities will be identified through demand-driven processes. Participatory assessment and planning approaches will ensure that all groups, including those that are historically marginalized such as women and youth, are engaged in planning and decision-making processes. Local authorities will present final plans and advise on the selection of grant proposals that will be financed under the project. Project staff and service providers will receive training on gender issues. Finally, the project's GRM will ensure that any feedback will generate a timely and comprehensive response and, where needed, an acceptable resolution by the project.

V. WORLD BANK GRIEVANCE REDRESS

62. 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 World Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the World Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of World 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 World Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's Grievance Redress Service (GRS), please visit

http://www.worldbank.org/GRS. For information on how to submit complaints to the World 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		✓
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)
(Re-)building Resilient Agriculture Production Capacity	277.07		(Re-)building Resilient Agriculture Production Capacity	277.07
Supporting the Sustainable Development of Natural Resources for Resilient Agricultural Landscapes	267.66		Supporting the Sustainable Development of Natural Resources for Resilient Agricultural Landscapes	267.66
Getting to Market	203.59		Getting to Market	203.59
Promoting a Greater Focus on Food Systems Resilience in National and Regional Policymaking	43.65		Promoting a Greater Focus on Food Systems Resilience in National and Regional Policymaking	43.65
Contingency Emergency Response Component (CERC)	0.00		Contingency Emergency Response Component (CERC)	0.00
Project Management	81.63		Project Management	81.63
TOTAL	**873.60**			**873.60**

DISBURSEMENT ARRANGEMENTS

Change in Disbursement Arrangements

Yes

Expected Disbursements (in US$)

Fiscal Year	Annual	Cumulative
2022	0.00	0.00
2023	3,054,150.00	3,054,150.00
2024	7,042,150.00	10,096,300.00
2025	9,488,250.00	19,584,550.00
2026	10,268,850.00	29,853,400.00
2027	10,550,550.00	40,403,950.00
2028	8,475,150.00	48,879,100.00

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

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

LEGAL COVENANTS – Additional Financing to the Food Systems Resilience Program for Eastern and Southern Africa – Phase 1 under the Multi-Phase Program (P181398)

Sections and Description
Madagascar AF - By no later than three (3) months after the Effective Date, the Recipient shall update the Project Implementation Manual to incorporate this AF.
Madagascar AF - The Recipient shall ensure that no later than twelve (12) months after the Effective Date of the AF,

a Preparedness Plan is prepared and adopted in form and substance acceptable to the Association.
Madagascar AF - Dedicated resettlement account available no later than 6 months after the effective date of the AF.

Conditions

Type	Financing source	Description
Disbursement	Trust Funds, IBRD/IDA	No withdrawal shall be made under Category (2)(b), unless and until the Recipient has adopted the Financing Mechanisms Manual in a manner satisfactory to the Association.

VIII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Eastern and Southern Africa

Additional Financing to the Food Systems Resilience Program for Eastern and Southern Africa – Phase 1 under the Multi-Phase Program

Project Development Objective(s)

To increase the resilience of food systems and preparedness for food insecurity in Project areas

Project Development Objective Indicators by Objectives/ Outcomes

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Increased preparedness for food insecurity in participating countries									
Reduction of food insecure people in program targeted areas (Percentage)		0.00	0.00	0.00	0.00	5.00	5.00	10.00	10.00
Increase the resilience of food systems in participating countries									
Farmers adopting resilient enhancing technologies and practices (Number)		0.00	233,901.00	536,797.00	808,799.00	1,083,302.00	1,358,097.00	1,637,600.00	1,637,600.00
Of which female farmers (Number)		0.00	35,460.00	97,523.00	179,136.00	272,076.00	380,967.00	491,280.00	491,280.00
Percentage of climate resilient technologies		0.00	0.00	20.00	25.00	30.00	35.00	40.00	40.00

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
(Number)									
Land area under sustainable landscape management practices (CRI, Hectare(Ha))		0.00	25,000.00	50,000.00	100,000.00	150,000.00	200,000.00	250,000.00	250,000.00
Increase in volume of agricultural production sold on domestic and regional markets (Percentage)		0.00	0.00	5.00	10.00	15.00	20.00	25.00	25.00
Policy products adopted with program's support related to agriculture, natural resource management, and food system resilience (Number)		0.00	0.00	1.00	3.00	4.00	5.00	6.00	6.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
(Re-)Building Resilient Agricultural Production Capacity *(Action: This Component has been Revised)*									
Technologies developed and transferred to extension services with project support (Number)		0.00	85.00	195.00	305.00	361.00	417.00	441.00	441.00

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Of which gender sensitive technologies (Number)		0.00	17.00	39.00	61.00	72.00	85.00	90.00	90.00
Farmers accessing food system and hydromet information to manage shocks that affect food supply (Number)		0.00	0.00	5,000.00	10,000.00	20,000.00	30,000.00	40,000.00	40,000.00
Of which female farmers (Number)		0.00	0.00	2,000.00	4,000.00	10,000.00	15,000.00	20,000.00	20,000.00
Change in households dietary diversity score (HDDS) among targeted project beneficiary households (Percentage)		0.00	0.00	0.00	15.00	15.00	15.00	30.00	30.00
Number of women using modified access to inputs/service for agricultural production (Ethiopia) (Number)		0.00	2,625.00	6,000.00	9,000.00	12,000.00	15,200.00	18,000.00	18,000.00
Action: This indicator has been Revised									
Number of farmers receiving inputs or services on climate resilient or sustainable agriculture practices (farmer) (Number)		0.00	0.00	40,000.00	100,000.00	120,000.00	120,000.00	120,000.00	120,000.00
Action: This indicator is New									
Of which female (number) (Number)		0.00	0.00	20,000.00	50,000.00	60,000.00	60,000.00	60,000.00	60,000.00

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Action: This indicator is New									
Number of women integrating sustainable production technologies because of a women-targeted program (Number)		0.00	0.00	5,000.00	10,000.00	20,000.00	30,000.00	30,000.00	30,000.00
Action: This indicator is New									
Number of smallholder producers/processors receiving productivity enhancement support (person) (Number)		0.00	0.00	5,000.00	15,000.00	20,000.00	20,000.00	20,000.00	20,000.00
Action: This indicator is New									
Supporting the Sustainable Development of Natural Resources for Resilient Agricultural Landscapes *(Action: This Component has been Revised)*									
Share of communities with multi-year development plans for resilient productive base implemented (Percentage)		0.00	10.00	15.00	30.00	40.00	50.00	50.00	50.00
Land areas restored or reforested/afforested (Madagascar) (Hectare(Ha))		0.00	0.00	2,000.00	6,000.00	10,000.00	12,000.00	15,000.00	15,000.00
Action: This indicator has been Revised									

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
Water user associations/farmer-based organizations for the O&M of the infrastructure, equipment, and landscape restoration activities established or/and strengthened (Number)		0.00	53.00	109.00	168.00	230.00	292.00	360.00	410.00
Area provided with new/improved irrigation or drainage services (CRI, Hectare(Ha))		0.00	0.00	0.00	5,000.00	15,500.00	32,000.00	47,000.00	47,000.00
Action: This indicator has been Revised									
Area provided with new irrigation or drainage services (CRI, Hectare(Ha))		0.00	0.00	0.00	5,000.00	12,000.00	18,500.00	25,000.00	25,000.00
Action: This indicator has been Revised									
Area provided with improved irrigation or drainage services (CRI, Hectare(Ha))		0.00	0.00	0.00	5,000.00	10,500.00	16,000.00	22,000.00	22,000.00
Action: This indicator has been Revised									
Getting to Market *(Action: This Component has been Revised)*									
SMEs supported by the Program and running		0.00	76.00	411.00	845.00	1,310.00	1,741.00	2,120.00	2,195.00

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
their business sustainably (Number)									
Roads constructed or rehabilitated (Madagascar) (Kilometers)		0.00	0.00	100.00	150.00	200.00	230.00	230.00	230.00
Action: This indicator has been Revised									
Number of processing, storage, and market facilities constructed and/or rehabilitated (Madagascar) (Number)		0.00	0.00	5.00	10.00	25.00	40.00	50.00	50.00
Action: This indicator is New									
People receiving improved nutrition services and products (person) (Number)		0.00	50,000.00	200,000.00	300,000.00	300,000.00	300,000.00	300,000.00	300,000.00
Action: This indicator is New									
of which female (number) (Number)		0.00	20,000.00	80,000.00	120,000.00	120,000.00	120,000.00	120,000.00	120,000.00
Action: This indicator is New									
Promoting Food Systems Resilience in National and Regional Policymaking *(Action: This Component has been Revised)*									
Regionally harmonized policy frameworks and legislations facilitated by RECs through the		0.00	0.00	1.00	2.00	2.00	2.00	3.00	3.00

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
program (Number)									
Strengthening/establishing the Regional Centers of Leadership (RCoL) in participating countries (Number)		0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Technical areas for which a regional knowledge sharing mechanism is put in place (Number)		0.00	1.00	1.00	2.00	2.00	2.00	3.00	3.00
Countries with current NAIPs/NAFSIPs in place (Number)		0.00	0.00	0.00	0.00	0.00	2.00	2.00	2.00
Program Management									
Program direct beneficiaries reached (Number)		0.00	279,188.00	3,459,789.00	3,834,809.00	4,236,409.00	4,647,864.00	5,109,617.00	5,106,179.00
Action: This indicator has been Revised									
Of which women (Number)		0.00	63,313.00	1,858,941.00	1,985,399.00	2,152,700.00	2,339,143.00	2,483,473.00	2,483,847.00
Action: This indicator has been Revised									
Beneficiaries satisfied with the Program's interventions (Percentage)		0.00	85.00	85.00	85.00	85.00	85.00	85.00	85.00
Percentage of GRM addressed from the total		0.00	95.00	95.00	95.00	95.00	95.00	95.00	95.00

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
claims received (Percentage)									
Contingency Emergency Recovery Component *(Action: This Component is New)*									
Beneficiaries of social safety net programs (CRI, Number)		0.00	2,800,000.00	2,800,000.00	2,800,000.00	2,800,000.00	2,800,000.00	2,800,000.00	2,800,000.00
Action: This indicator is New									
Beneficiaries of Safety Nets programs - Unconditional cash transfers (number) (CRI, Number)		0.00	2,800,000.00	2,800,000.00	2,800,000.00	2,800,000.00	2,800,000.00	2,800,000.00	2,800,000.00
Action: This indicator is New									
of which women (Percentage) (Percentage)		0.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Action: This indicator is New									
Supporting Locust Response and Climate-Smart Livestock Systems *(Action: This Component is New)*									
Number of hectares protected from locusts (Madagascar) (Hectare(Ha))		0.00	0.00	100,000.00	200,000.00	300,000.00	300,000.00	300,000.00	300,000.00
Action: This indicator is New									
Number of beneficiaries receiving livestock goods		0.00	0.00	1,000.00	5,000.00	30,000.00	50,000.00	55,000.00	55,000.00

Indicator Name	PBC	Baseline	Intermediate Targets						End Target
			1	2	3	4	5	6	
and services including high performing animal breeds (Madagascar) (Number)									
Action: This indicator is New									
of which women (number) (Number)		0.00	0.00	400.00	2,000.00	12,000.00	20,000.00	22,000.00	22,000.00
Action: This indicator is New									

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Reduction of food insecure people in program targeted areas		Baseline, midterm, endline	HH Survey Report /Baseline, Midterm and End-line survey report	Rigorous sampling process to select the survey households and data collection follow the IPC methodology and survey design	Survey firms
Farmers adopting resilient enhancing technologies and practices		Bi-annual	Country Progress Reports	Sum of the total beneficiaries who have adopted CSA technologies/practices after receiving advisory	M&E Teams

				services or/and trainings from the Project	
Of which female farmers					
Percentage of climate resilient technologies					
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	Bi-annual	Country progress	Bi-annual assessment	National M&E teams

	example, agronomic, vegetative, structural, and management measures that, applied as a combination, increase the connectivity between protected areas, forest land, rangeland, and agriculture land.				
Increase in volume of agricultural production sold on domestic and regional markets		Annual	Country progress reports	National trade: Data obtained from the Project Implementation Units Intra-regional trade: Statistics from Customs and the Ministry of trade	M&E teams
Policy products adopted with program's support related to agriculture, natural resource management, and food system resilience		Annual	Country and regional organisations' progress reports	Data obtained from PIUs	M&E Teams

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Technologies developed and transferred to extension services with project support	This indicator counts technologies developed with project support that	Bi-annual	Country progress reports	Sum of the total technologies transferred to extension from each	M&E Teams, HH Survey /Firm level survey

	have reached the stage of being promoted to public extension services			country's report	
Of which gender sensitive technologies					
Farmers accessing food system and hydromet information to manage shocks that affect food supply		Bi-annual	Country progress reports	Number of farmers receiving food system and hydromet information out of total farmers	M&E Teams
Of which female farmers					
Change in households dietary diversity score (HDDS) among targeted project beneficiary households		Baseline, Mid-term, End-line	HH Survey Report /Baseline, Midterm and End-line survey report	The HDDS indicator provides a glimpse of a household's ability to access food as well as its socioeconomic status based on the previous 24 hours. Each food group is assigned a score of 1 (if consumed) or 0 (if not consumed). The household score will range from 0 to 12 and is equal to the total number of food groups consumed by the household	M&E Teams
Number of women using modified access		BI-annual	Country	Reports obtained from	M&E teams

to inputs/service for agricultural production (Ethiopia)			progress report	PIUs	
Number of farmers receiving inputs or services on climate resilient or sustainable agriculture practices (farmer)	This GAFSP indicator measures the number of farmers receiving inputs or service on climate resilient or sustainable agriculture practices.	Bi-annual	Country Progress Reports	Bi-annual assessments	PIU
Of which female (number)	This GAFSP indicator measures the number of female farmers receiving inputs or services on climate resilient or sustainable agriculture practices	Bi-annual	Country Progress Reports	Bi-annual assessments	PIU
Number of women integrating sustainable production technologies because of a women-targeted program	This indicator measures the number of women integrating sustainable production technologies because of a women-targeted program. This indicator will ensure that the Project get gender-tagged.	Bi-annual	Country Progress Reports	Bi-annual assessments	PIU
Number of smallholder producers/processors receiving productivity enhancement support (person)	This GAFSP indicator measures the number of smallholder producers/processors receiving productivity enhancement support	Bi-annual	Country Progress Reports	Bi-annual assessments	PIU

Share of communities with multi-year development plans for resilient productive base implemented		Bi-annual	Country progress reports	Reports obtained from the PIUs	M&E Teams
Land areas restored or reforested/afforested (Madagascar)	This indicator measures land areas restored or reforested/afforested	Bi-annual	Country progress reports	Bi-annual assessments	PIU
Water user associations/farmer-based organizations for the O&M of the infrastructure, equipment, and landscape restoration activities established or/and strengthened		Bi-annual	Country progress reports	Data obtained from the PIUs	M&E Teams
Area provided with new/improved irrigation or drainage services		Bi-annual	Country progress reports	Data obtained from PIUs	M&E teams
Area provided with new irrigation or drainage services					
Area provided with improved irrigation or drainage services	Measures in hectares the total area of land provided with new or improved irrigation or drainage services in operations supported by the World Bank.	Bi-annual	Country Progress Reports	Bi-annual assessments	PIU
SMEs supported by the Program and running their business sustainably		Bi-annual	Country progress reports	Data obtained from the PIUs	M&E Teams
Roads constructed or rehabilitated (Madagascar)	This indicator measures kilometers of roads	Bi-annual	Country progress	Bi-annual assessments	PIU

	constructed or rehabilitated		reports		
Number of processing, storage, and market facilities constructed and/or rehabilitated (Madagascar)	This GAFSP indicator measures the number of processing, storage, and market facilities constructed and/or rehabilitated	Bi-annual	Country Progress Reports	Bi-annual assessments	PIU
People receiving improved nutrition services and products (person)	This GAFSP indicator measures the number of people receiving improved nutrition services and products. It will also serve as a scorecard indicator	Bi-annual	Country Progress Reports	Bi-annual assessments	PIU
of which female (number)	This GAFSP sub-indicator measures the number of female receiving improved nutrition services and products	Bi-annual	Country Progress Reports	Bi-annual assessments	PIU
Regionally harmonized policy frameworks and legislations facilitated by RECs through the program		Annual	RECs	Data obtained from RECs	RECs
Strengthening/establishing the Regional Centers of Leadership (RCoL) in participating countries		Annual	RECs	Data obtained from RECs	RECs
Technical areas for which a regional knowledge sharing mechanism is put in place		Annual	RECs	Data obtained from RECs	RECs
Countries with current NAIPs/NAFSIPs in place		Annual	Country progress reports	Data from PIUs	M&E teams

Program direct beneficiaries reached	This indicator measures the number of program direct beneficiaries reached	Annual	Country progress reports	Annual assessments	PIUs
Of which women	This indicator measures the number of female of Program direct beneficiaries	annual	Country Progress Reports	Annual assessments	PIUs
Beneficiaries satisfied with the Program's interventions		Mid term, and end of project	Country progress reports	Surveys	M&E Teams
Percentage of GRM addressed from the total claims received		Bi-annual	PIUs	GRM systems in the PIUs	PIUs
Beneficiaries of social safety net programs		at conclusion of 3-month activity	Implementing Agency FID		FID and PIU
Beneficiaries of Safety Nets programs - Unconditional cash transfers (number)					
of which women (Percentage)	This indicator measures the number of female beneficiaries of Safety Nets programs - Unconditional cash transfers				
Number of hectares protected from locusts (Madagascar)	This indicator measures the number of hectares protected from locusts as part of the newly created Component 6	bi-annually	FAO quarterly reports and IFVM bulletins		PIU

Number of beneficiaries receiving livestock goods and services including high performing animal breeds (Madagascar)	This indicator measures the number of beneficiaries receiving livestock goods and services including high performing animal breeds as part of the newly created Component 6.	bi-annually	MinAE, Directorate of Livestock		MinAE/PIU
of which women (number)					

Annex 1: FSRP-MG AF Greenhouse Gas (GHG) Accounting

1. **Background and methodology**. Following its Environment Strategy, the World Bank adopted a corporate mandate to conduct greenhouse gas (GHG) emissions accounting for investment lending. The quantification of GHG emission is an important step in managing and ultimately reducing GHG emission. The World Bank adopted the Ex-Ante Carbon-balance Tool (EX-ACT), developed by the Food and Agriculture Organization of the United Nations, to assess the impact of agricultural and rural development investment lending on GHG emissions and carbon sequestration. EX-ACT allows the ex-ante assessment of a project's net carbon-balance, defined as the net balance of CO_2 equivalent GHG that would be emitted or sequestered as a result of project implementation, compared to a *without project scenario*. EX-ACT estimates the carbon stock changes (emissions or sinks), expressed in equivalent tons of CO_2 per hectare and year.

2. **Ex-ACT application for the GHG accounting of Madagascar Food Systems Resilience Project Additional Financing (FSRP-MG AF)**. The Project Development Objective (PDO) remains unchanged for FSRP-MG AF. The aim is to "increase the resilience of food systems and preparedness for food insecurity in project areas." The Project, including its AF, is implemented in a six-year timeframe, starting in FY 24, and has a capitalization period of fourteen years (in total, the assessment considers a 20-year period). Project interventions are organized into six Components: Component 1 (Re-)Building Resilient Agricultural Production Capacity (US$34.90 million, including US$14 million from AF); Component 2 'Supporting the Sustainable Development of Natural Resources for Resilient Agricultural Landscapes (US$29 million with no AF); Component 3 'Getting to Market (US$60.20 million, US$24M linked to AF – of which, US$20 million from GAFSP)'; Component 4 'Project Coordination, Knowledge Management and Dissemination (US$26 million, including 6M of AF)'; Component 5: Contingent Emergency Response Component (US$50 million with no AF); and, Component 6, Emergency Response (US$34 million from AF). The GHG accounting of FSRP-MG AF applies Ex-Act tool to assess the Greenhouse gas impacts of the Project implementation on activities corresponding to the AF only. The GHG Balance is in line with the Economic and Financial Analysis (EFA) of the Project.

3. **Investment models considered in the GHG accounting of FSRP-MG**. The assessment is based on the net GHG emissions likely generated by the investment models applied in the EFA. The EFA focuses on the quantitative assessment of investment models that represent the main Project activities and its anticipated results. This GHG balance assessment considers only those investment models to be implemented with Additional Financing. Based on the parameters and assumptions applied to the investment models (see EFA Annex Table 1.1 for further details), the influence of investment models in terms of GHG fluxes is assessed for a land area of 71,550 hectares out of the global Project target of 250,000 hectares under sustainable land management. Table 1.1 of this GHG Balance Annex summarizes the main assumptions applicable to the GHG balance assessment per investment model corresponding to FSRP-MG AF. As part of the Project's AF, besides the investment models listed in table 1.1, the GHG accounting also integrates the effects of the emergency response to the ongoing locust invasion. The parameters and assumptions referring to the emergency response are described below in the applicable modules of Ex-Act tool.

GHG Balance Annex - Table 1.1. List of investment models/technological packages supported by FSRP-MG AF[14]

Sub-component	Investment models	Land area (hectares)	Land use WOP	Land use WP
C1.1	Improved seed multiplication - maize	6,000	Annual cropland - conventional system	Annual cropland - improved system
C1.2	Farm equipment manufacturing	-	Annual cropland - conventional	Annual cropland - improved system
C2.2	Agroforestry nursery	-	Degraded land	Multi-strata AF system
C2.2	Agroforestry systems	-	Degraded land	Multi-strata AF system
C2.2	Beekeeping	-	Degraded land	Multi-strata AF system
C2.3	CSA rice production	-	Annual cropland - conventional system	Annual cropland - improved system
C2.3	CSA onion production	-	Annual cropland - conventional system	Annual cropland - improved system
C3	Rice storage and processing	5,600	Annual cropland - conventional system	Annual cropland - improved system
C6.2	Improved livestock and pasture management	9,900	Grassland - conventional system	Grassland - improved system
C6.2	Improved goat rearing and grazing	50,050	Grassland - conventional system	Grassland - improved system
TOTAL		**71,550**		

4. **Data sources.** The assessments take into consideration various sources of data and information. For the delimitation of technical aspects in the with-Project and with-out Project scenarios, the main sources of data and information include ongoing investment operations (from World Bank and other partners) and technical documents prepared or led by the Project Implementation Unit.

5. **General parameters and assumptions**. The Project geographical area within Madagascar is vast, including 18 regions. For the GHG accounting, the most dominant climate, moisture regime and soil type have been selected. The climate is tropical with a moist regime and the soil type is Low activity clay (LAC). The timeframe of Project implementation is 6 years, and the capitalization phase is 14 years. Thus, the analysis period is set for a total of 20 years. Dynamics of evolution are assumed to be linear for most of the variables. The analysis applies default "Tier 1" coefficients from Exact Tool. The construction of 'with-out project situation' and 'with project situation' trajectories is based on average technical references. The GHG accounting considers the following two main trends supported by the Project, with implications on GHG fluxes. First, the transition from conventional to climate resilient and sustainable models. The approximate area (in hectares) and dynamics (initial, without project and with project) of diverse land uses is detailed in the following sections. Second, changes in inputs utilization, based on the changes in production intensity and efficiency gains and avoided losses, which are relevant benefits derived from the application of CSA technologies and practices. The analysis also considers additional effects from emergency interventions in response to the ongoing locust invasion.

6. **Parameters and assumptions for land use and land use change**. In line with FSRP-MG, the Project would lead to the sustainable management of 250,000 hectares, corresponding to the area covered by the EFA investment models. With regards to the AF, the analysis covers 65,283 hectares out of the global target. Besides area covered by investment models, the GHG balance considers additional effects of implementing a triennial action Plan to control the locust invasion and avoid additional losses. In this case, to facilitate the assessment and keep it conservative, it is assumed that there are no significant changes in land use and management driven by the implementation of the Plan. Therefore, the potential area under influence from the implementation of the triennial action plan is not accounted for in the land use and land use change matrix shown in Table 1.2 of this GHG Balance Annex.

[14] This Tables lists all investment models integrated into the FSRP-MG EFA. Only those with indications of land area are assumed to be implemented with AF support.

Table 1.2. Land use and land-use change dynamics supported by FSRP-MG AF

WITHOUT PROJECT	Forest	Annual	Perennial	Flooded rice	Grassland	Degraded land	Other land	Total area (ha)
Forest	0	0	0	0	0	0	0	**0**
Annual cropland	0	5,333	0	0	0	0	0	**5,333**
Agroforestry	0	0	0	0	0	0	0	**0**
Flooded rice	0	0	0	0	0	0	0	**0**
Grassland	0	0	0	0	59,950	0	0	**59,950**
Degraded land	0	0	0	0	0	0	0	**0**
Other land	0	0	0	0	0	0	0	**0**
Total area without project (ha)	**0**	**5,333**	**0**	**0**	**59,950**	**0**	**0**	**65,283**

WITH PROJECT	Forest	Annual	Perennial	Flooded rice	Grassland	Degraded land	Other land	Total area (ha)
Forest	0	0	0	0	0	0	0	**0**
Annual cropland	0	5,333	0	0	0	0	0	**5,333**
Agroforestry	0	0	0	0	0	0	0	**0**
Flooded rice	0	0	0	0	0	0	0	**0**
Grassland	0	0	0	0	59,950	0	0	**59,950**
Degraded land	0	0	0	0	0	0	0	**0**
Other land	0	0	0	0	0	0	0	**0**
Total area with project (ha)	**0**	**5,333**	**0**	**0**	**59,950**	**0**	**0**	**65,283**

7. **Parameters and assumptions for annual crops.** FSRP-MG AF considers support to up-scale investment models linked to annual croplands. The technical guidelines proposed for annual crops incorporate improved agricultural technologies and practices that contribute to GHG mitigation, while supporting climate resilience enhancement. In the frame of Ex-ACT GHG accounting of annual crop systems remaining annual crop systems, the assessment considers that CSA practices, in comparison to the conventional systems, increase the organic material input (from low to medium[15]) and varies the management of residues (from exported to retained). The EFA and GHG accounting assumes that 6,000 hectares of annual crops will be subject to such improved agricultural technologies and practices.

8. **Parameters and assumptions for grassland and livestock management**. FSRP-MG integrates investments linked to livestock systems, being one of the key sub-sectors in the regions covered by the Project. In particular, the Project AF will support emergency response to the locust invasion with implications on grassland and livestock management. First by supporting animal restocking and improved livestock management. Then by avoiding further losses due to the timely action against the locust invasion.

9. **Parameters and assumptions for grassland and livestock management – emergency response to the locust invasion: animal restocking and improved management**. In the case of most critical areas affected by the locust invasion, the assessment assumes these are linked to more direct Project beneficiaries. In line with the EFA, these correspond to investment models listed in Table 1 as 'improved livestock and pasture management', as well as 'improved goat rearing and grazing' (C6.2). These investment models cover 59,950 hectares out of the global Project target of 250,000. The implementation of Project activities would lead to the application of improved animal and grassland management. Without the Project intervention, the carrying capacity of the land would be reduced and lead to a decrease of livestock heads. Given the high vulnerability of the population affected by the locust invasion, who are currently suffering acute food insecurity, it is assumed that this loss of livestock will prove difficult to recover without Project support. At the baseline and with Project intervention, livestock herd for other cattle is 69,300 heads and without the Project intervention it would

[15] According to Ex-ACT, medium C input cropland systems are defined by one of the following conditions: (1) annual cropping with cereals where all crop residues are returned to the field; or (2) the crop residues of annual crops are removed or burnt but organic amendments (e.g. manure) are applied or (3) low residue crops are cultivated or frequent rotation with bare fallow but using practices that increase C input above low residue varieties such as using organic amendments, cover crops/green manures, and mixed crop/grass systems or (4) annual crops with no mineral fertilization or N-fixing crops but using practices that increase C input by enhancing residue production such as irrigation, cover crops/green manures, vegetated fallows, high residue yielding.

be 34,650 heads. At the baseline and with Project intervention, livestock herd for goats is 811,752 heads and without the Project intervention it would be 522,933 heads.

10. **Parameters and assumptions for grassland and livestock management – emergency response to the locust invasion: avoided additional losses due to the locust invasion.** Regarding the other line of action, under sub-component 6.1, the implementation of the action Plan against the locust invasion would avoid additional losses. The triennial action Plan against locust invasion is still under preparation. Therefore, very conservative assumptions have been made based on the implementation of the triennial action plan of 2013/14 – 2015/16. Without the implementation of the Plan, the locust invasion would expand and lead to temporary reductions in available biomass over an area of at least 1.4 million hectares. It is assumed that these additional losses would occur in grass lands (pasture and rangelands). The GHG analysis keeps a very conservative approach, accounting only for avoided losses of pasture within land areas covered in each campaign of the triennial action plan. The analysis assumes that 50 percent of the total area covered by the Plan is pasture and the biomass losses are expressed in terms of energy savings.[16] It would be also ideal to add assumptions on likely changes in herd numbers. However, these changes would be temporary and hard to predict with the limited information available. Therefore, this factor is excluded from the GHG balance. Only the effects of the Plan in terms of emissions from the pesticides applied and the balance with temporary avoided losses of pastures (converted to energy savings) are considered in the analysis. Given that there will be no significant changes in land use and management practices over the long run, these 1.4 million hectares are not included in the land use and land use change dynamics shown in Table 1.2 of this GHG Balance Annex.

11. **Parameters and assumptions on the use of inputs**. The main inputs considered in this GHG analysis are agricultural inputs, such as fertilizers and others. Regarding energy consumption, there are changes due to variations in the efficiency of key inputs. In the case of avoided losses (considering intermediate inputs along the value chain) these are expressed as energy savings by applying conservative assumptions.

12. **Agricultural inputs**. The available technical guidelines in crop production include the use of improved seeds and fertilizers (organic and inorganic). The incremental amounts (tons per year) of fertilizers are linked to the investment models applied to the EFA. Data is available per hectare for annual crops. The assessment also includes the chemicals applied to fight the current locust invasion and avoid expansion. The Project will provide technical support to make a safe and efficient use of inputs.

13. **Energy consumption**. The implementation of the triennial Action Plan to fight the locust invasion, including barrier measures, would limit the expansion of the locust invasion and avoid further biomass losses. Based on the experience from the implementation of the last triennial Action Plan (2013/14-2015/16), the analysis applies assumptions on the area that would benefit from avoided biomass losses. Taking into consideration the major production systems in the area (mainly grassland and crop land), in line with the EFA, avoided losses are expressed in terms of energy savings. Other climate change mitigation benefits could arise from avoided biomass loss, but these are not included to keep a conservative estimate. There are no land use changes and no major changes in terms of the technologies and practices applied to the production systems. Therefore, this area is not accounted for in the land use / land-use change matrix.

14. **Infrastructure**. FSRP-MG AF supports the development or rehabilitation of agricultural buildings providing key services along the target value chains. The type of buildings supported by the Project AF are mainly used for post-harvest management and inputs/outputs certification laboratories.

[16] The Ex-Act tool does not facilitate the analysis of temporary effects within the timeframe of the overall assessment. Therefore, the total estimate of energy savings is divided by 20 to express it along the whole period of analysis (assuming an immediate change).

15. **Net carbon balance of FSRP-MG AF.** A GHG accounting of the Project AF was carried out using the ex-ante carbon-balance tool (EX-ACT). The analysis quantifies the net carbon balance with regard to tCO_2e, resulting from GHGs emitted or sequestered during the project implementation and capitalization period (20 yeas) compared to the without-project scenario. The project leads to a net reduction of 0.6 tCO_2e emissions annually and per hectare, when compared to a business-as-usual baseline scenario. After 20 years, and for the whole FSRP-Mg AF intervention, GHG mitigation benefits would amount to a net reduction of 740,566 tCO_2e. The main results of this GHG analysis are summarized in Table 1.3 of this GHG Balance Annex.

16. **Carbon sources and sinks**. The main source of GHG emissions comes from livestock, followed by agricultural inputs. The sequestration benefits come principally from improved grassland management, followed by cropland.

GHG Balance Annex - Table 1.3. Results of the ex-ante GHG analysis in tCO_2-eq

Project name	FSRP-MG Additional Financing					**Global warming potential**	
Continent	Eastern Africa	**Project duration (in years)**		**Total area (ha)**	65,283	CO_2	1
Country	Madagascar	Implementation Phase	6	Mineral soil	65,283	CH_4	28
Climate	Tropical	Capitalization Phase	14	Organic soil	0	N_2O	265
Moisture	Moist	Total Duration of Accounting	20	Waterbodies	0		

GROSS FLUXES

In tCO2-e over the whole period analysis

PROJECT COMPONENTS		WITHOUT	WITH	BALANCE
Land use changes	Deforestation	0	0	0
	Afforestation	0	0	0
	Other land-use	0	0	0
Cropland	Annual	28,309	-12,295	-40,604
	Perennial	0	0	0
	Flooded rice	0	0	0
Grasslands & Livestock	Grasslands	0	-2,693,367	-2,693,367
	Livestock	2,687,824	4,659,941	1,972,118
	Forest mngt.	0	0	0
	Inland wetlands	0	0	0
	Coastal wetlands	0	0	0
Fisheries and aquaculture		0	0	0
Inputs & Invest.		0	21,289	21,289
Total emissions, tCO2-e		**2,716,133**	**1,975,568**	**-740,566**
Total emissions, tCO2-e/ha		**41.6**	**30.3**	**-11.3**
Total emissions, tCO2-e/ha/yr		**2.1**	**1.5**	**-0.6**

+ = Source / - = Sink
Results presented here include GHG fluxes on mineral and organic soils
See further down for detailed results on organic soils
* Includes fisheries, aquaculture and inputs & investments that are not included in the AFOLU definition.

SHARE PER GHG OF THE BALANCE

In tCO2-e over the whole period analysis

Tier 2 Specific GHG fluxes

CO2 BIOMASS	CO2 SOIL	N_2O	CH_4	ALL NON-AFOLU EMISSIONS*
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	-43,619	3,015	0	
0	0	0	0	
0	0	0	0	
0	-2,830,801	63,708	73,725	
		177,625	1,794,493	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	0
	0	37,379		-16,090
0	**-2,874,420**	**281,726**	**1,868,219**	**-16,090**
0.0	**-44.0**	**4.3**	**28.6**	**-0.2**
0.0	**-2.2**	**0.2**	**1.4**	**0.0**

AVERAGE ANNUAL EMISSIONS

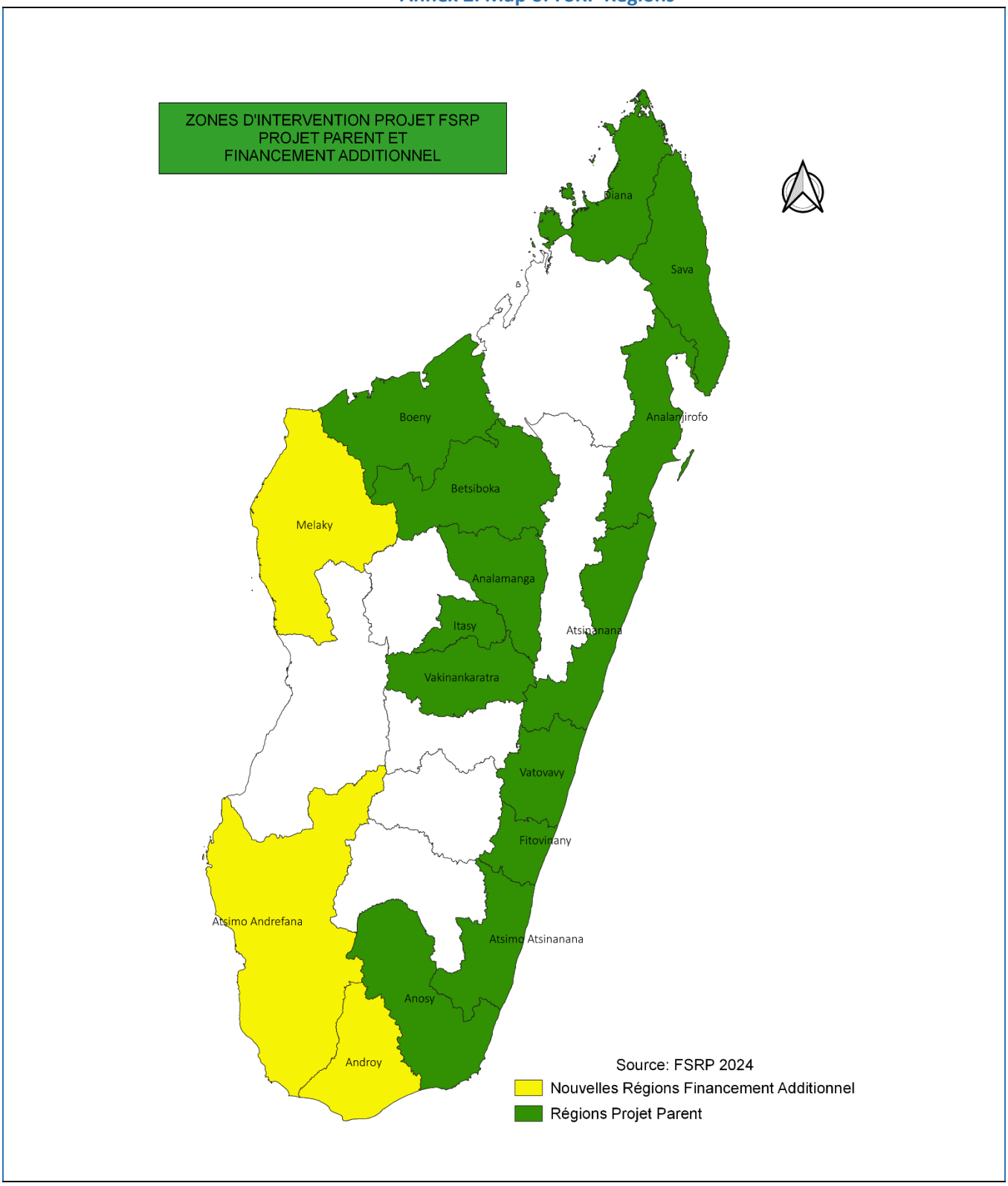
In tCO2-e/yr

WITHOUT	WITH	BALANCE
0	0	0
0	0	0
0	0	0
1,415	-615	-2,030
0	0	0
0	0	0
0	-134,668	-134,668
134,391	232,997	98,606
0	0	0
0	0	0
0	0	0
0	0	0
0	1,064	1,064
135,807	**98,778**	**-37,028**

Uncertainty level	tCO2-e/yr	Percent
WITHOUT	135,807	33%
WITH	98,778	41%
BALANCE	-37,028	44%

17. **Sensitivity analysis**. The uncertainty, as calculated by Exact-Tool, is 43 percent. This analysis was run using mostly tier 1 coefficients, which in some cases may provide over or underestimated values. It is a relevant source of uncertainty in the estimation of GHG emission/sequestration scenarios.

Annex 2: Map of FSRP Regions



Annex 3: Home Grown School Feeding: products and work plan

Overview

1. This activity aims to strengthen the food and nutrition security of target populations in Madagascar and build institutional and community capacity for more sustainable and crisis-resilient food systems. It includes three pathways of implementation:

i) Contributing to increased access to education and improved nutrition among school-age children by:

- extending coverage of the school feeding program based on purchases from local producers; and

  strengthening national capacity to deliver on the availability and consumption of fresh and varied nutritious foods in school canteens.

ii) Sustainably developing natural resources for resilient food systems by:

- increasing the supply of improved stoves to reduce firewood consumption; and
- raising awareness of environmental education and promoting the adoption of school and community gardens and sustainable agricultural practices such as crop rotation, agroforestry, and use of environmentally friendly practices.

iii) Supporting multi-sector collaboration and coordination among relevant stakeholders, such as government institutions, UN agencies, NGOs, or the private sector, by:

- establishing coordination and communication mechanisms among sectors involved in food security; and
- monitoring the implementation of the integrated food security policy and crisis response plan.

2. Home-grown school feeding will reduce the vulnerability and increase the resilience of beneficiaries and communities in project areas by prioritizing the purchase of locally produced food for schools, and by building the capacity of officials responsible for managing school feeding programs to deliver using the innovative modality. Training and technical assistance provided to beneficiary producers will help them increase their productivity and resilience to climate shocks while securing an important new institutional market for their goods (income impact). School children will improve their food and nutritional security, which should contribute to improved academic performance. At the same time, authorities at the school, local and national levels will develop new capacity to manage the school feeding system and contribute to the implementation of food security and crisis response policies.

3. The activities will be implemented by the World Food Programme (WFP), which will align itself with the government's development objectives and the orientations of the school nutrition and feeding strategy based on local purchases. WFP will support and ensure the implementation of the school feeding program in around 800 schools, for 240,000 pupils per school year in the targeted intervention zones for three years. Students will benefit from a hot meal prepared with local products, reinforcing their food security and access to education for the school years 2024-2025, 2025- 2026, and 2026-2027. The project will initially support 20,000 producers who will receive training and Technical Assistance (TA) and will supply agricultural products to participating schools in their vicinity. New producers will be added to the implementation of the project if the right conditions are present.

4. Through this school feeding model, the WFP will help ensure the development of the local economy by helping agricultural producer organizations meet the demand for local products in terms of quality and quantity. It will also facilitate the marketing of agricultural products to improve the flow between supply and demand. Finally, the WFP will work to strengthen institutional capacities by empowering actors at the local, regional, and national level in the coordination of school canteen activities to ensure the program's continuity and sustainability over the long term.

5. **The project aims to consolidate the full potential of school feeding as a driver of community development in the intervention area by strengthening the school, producer, and community network.** In addition, by disseminating innovative and intelligent agricultural technology solutions to climate-induced shocks and other risks, it will contribute to strengthening sustainable and resilient food systems. Targeted communities will increase the resilience of their livelihoods as well as their capacity to engage in production, processing, and marketing systems toward more diversified and sustainable market opportunities. Project implementation will consider opportunities for synergy and complementarity with ongoing activities (such as the Mionjo[17] project), lessons learned from previous experiences, multiple stakeholder involvement at all levels, and diversification of partners by leveraging their comparative advantage and expertise.

6. **To achieve these objectives, the WFP, in close collaboration and coordination with the government and partners,** will implement five activities, grouped around three main products corresponding to each of the above-mentioned objectives.

Outputs and Activities

Output I: Stronger school feeding system based on local production

7. **Through the activities detailed below, 240,000 pre-school and primary school pupils per year for the duration of the project in over 800 schools** in the project's target intervention areas will receive a hot meal based on local purchases over three years (2024-25, 2025-26 and 2026-27)— 177 meal days per school year. This will contribute to strengthening student access to nutritious food and food security, while promoting access to education and the development of local communities.

8. **The school meals will be made up primarily of local products,** which will be purchased in the following ways: (i) community-based organizations (parents, etc.) responsible for planning and carrying out purchases for schools receive the cash transfer via cell phone, validate a supply plan with local structures and local producers, and makes the purchases to meet a nutritious and diversified menu; and (ii) by WFP directly, prioritizing local purchases at local, regional and national level in accordance with its rules and procedures, in place of imported products, which was the classic approach.

9. **The strategy for the three years of implementation will contribute to increasing the production capacity of rural producers** and thus increase the proportion of local purchases around the school through several components:

- Strengthening the link between producers and schools by supporting structuring and financial inclusion.
- Strengthening processing and storage capacities
- Increasing, diversifying, and strengthening smallholder production by improving access to agricultural extension services, particularly for complementary sectors, and disseminating climate services and information.

[17] The Project for Resilient Livelihoods in Southern Madagascar (Mionjo - P171056) is up and running, with additional funding in 2021 to strengthen access to basic infrastructure and income opportunities.

10. **Given the precarious storage conditions in the schools and the short shelf life of fresh produce,** participating schools will make weekly purchases/deliveries of fresh produce. Local products will be purchased from local producers in the intervention areas, thus strengthening local economies. Dry goods purchased locally by WFP will be distributed on a quarterly basis, with the food basket consisting of rice, oil and pulses. Menus will follow the nutritional guidelines set out in regional catalogs drawn up by WFP nutritionists, considering the availability of products in the areas of intervention, the energy and nutritional value of foods, and local eating habits. Each school meal will represent at least 40 percent of pupils' daily energy requirements.

11. **Interventions will target the regions and districts indicated below.** The schools will be proposed by the WFP, in close collaboration with the Ministry of National Education (*Le Ministre de l'Éducation Nationale*- MEN), after which a list of intervention schools with the number of pupils and the number of producers will be drawn up. The intervention districts are:

REGIONS	DISTRICTS
Anosy	Amboasary et Fort-Dauphin
Androy	Ambovombe ; Tsihombe ; Beloha ; Bekily
Atsimo Andrefana	Ampanihy ; Betioky ; Benenitra ; Toliara II ; Toliara I et Morombe
Atsimo Atsinanana	Vaingandrano et Farafangana
Fitovignany	Manakara
Vatovavy	Mananjary
Analamanga	Antananarivo Avaradrano, Manjakandriana et Anjozorobe
Vakinankaratra	Antsirabe II
Itasy	Arivonimamo, Miarinarivo et Soavinandrina

12. ***Activity 1.1: Strengthening and expanding the links and networks between schools and producers.*** Focused on strengthening school feeding based on local purchases given its potential to stimulate local production, this multi-sectoral intervention also relies on a review of the current school supply system to expand this network and its potential for providing nutritious meals to pupils and its local economic spin-offs.

13. **Study and analysis of value chains for each school will be carried out by the project,** which will map nearby (or district/regional, where appropriate) production units that could replace imports as a source of supply, through the study and analysis of targeted value chains, including their capacity to meet the schools' supply needs. The involvement of MINAE's decentralized structures including the regional directorates will support the collection and analysis of data on value chains in proximity to schools.

14. **Implementation of the school feeding program based on local purchasing**. This activity will also cover: (i) cash transfers via cell phone to schools, which will validate a supply plan with local structures and local producers and make purchases to meet a nutritious and diverse menu ensuring supplies to pupils on school days; and (ii) canteen supplies through WFP purchases of local, regional and/or national products.

15. **The project will explore the possibility of sourcing from neighboring regions with surplus production,** particularly if production and market availability of nutrient-rich dry grains such as lentils, chickpeas, black beans and others is limited. A ten percent increase in income from sales to schools is expected for 35 percent of the 20,000 farmers targeted and supported, based on a baseline to be established on what producers sell during the first year (the

assumption is that in the South, less than 35 percent of producers have the sale of agricultural products as their main source of income.

16. ***Activity 1.2: Capacity-building for stakeholders involved in managing and implementing the school canteen program based on local* purchasing *by schools.*** The project will support training in canteen management, which will be needed for schools to manage the process of purchasing, receiving, monitoring, reporting and quality control, as well as menu planning and food preparation through local management committees at each trained school. They will also receive support in raising awareness of education and good nutritional, health, and hygiene practices, maintaining school gardens to raise awareness of dietary diversity, and promoting essential family practices in nutrition, health, and hygiene to maximize benefits for pupils.

17. **The school gardens will serve as educational tools and will be implemented and adapted to the conditions of each school.** The production of school gardens can complement the school diet and support diversification, but their main purpose remains educational. Climate-sensitive agricultural activities will be introduced to pupils and, depending on the conditions available for school gardens in the schools, may be tested, including vertical garden suspended vegetable growing techniques and small livestock or fish farming initiatives in the vegetable growing component. These activities could contribute to food diversification, while providing new sources of animal protein, organic fertilizer of animal origin, and/or composting. The project will aim to expand the adoption of innovative technologies for school feeding, in particular the supply of improved stoves to reduce the consumption of firewood, and solar technologies depending on feasibility and localized context and needs.

18. **Dissemination of digital tools**. This intervention will be accompanied by the development and use of digital tools set up in collaboration between the WFP and MEN to facilitate the integration of local producers into markets. The aim of these digital trading platforms is to make it easier for schools to calculate the quantities of foodstuffs required for the school menu, and to enable producers to bid on an offer (alone or in a group), and to validate and monitor each stage through to delivery. The training required to use this tool effectively will be provided to producers and schools. The producer card initiative currently being implemented by the government could feed into the process in the future.

Output II: Supporting the sustainable development of natural resources for resilient food systems

19. **WFP, in close collaboration with the government, will strengthen the processing and storage capacities of 20,000 producers, 40 percent of whom will be women, in the intervention zones.** By promoting diversification and value addition for better income, nutrition and health outcomes, this sub-component will provide agrifood technologies with the dissemination of sustainable energy sources that improve the availability and quality of healthy food products, climate-change adapted agricultural practices integrated with sustainable natural resource management, and associated income opportunities, thus contributing to household resilience to climate change. The provision of these agrifood and energy technologies will be accompanied by thematic training courses to share best practices and lessons learned.

20. **Activity 2.1: Diversification and strengthening of agricultural production, processing and storage to meet the needs of a nutritious, locally based, sustainable and resilient food system.** The project will support the producer training and extension needed to enable producers to join the school feeding program as suppliers under contractual arrangements. Training will therefore cover elements such as program management processes, quality standards to be followed, strengthening the organization of farmers' associations and the financial inclusion of its members to enable them to cover the needs of schools.

21. **Investments in agricultural extension services, dissemination, and communication will improve access to agricultural services,** in particular agro-ecological and agro-forestry practices and phytosanitary rules, for producers integrating the school feeding program, through the training and equipping of extension agents (an average of 10 agents supported per district, for a total of 230).

22. **Wherever possible, the project will also promote the Farmer Field School (FFS) approach,** with local managers being equipped to support these activities. The FFS typically comprises a group of 20 to 25 willing and available learners who meet once a week over the course of a winter season to learn how to cultivate a plot of land. The aim is to observe all the interactions around the plant, identify potentialities and constraints, and experiment with solutions to production problems, with a view to choosing the most promising technical itinerary and growing a healthy crop. In this way, FFS facilitates the learning and reasoned integration of new agricultural production techniques, while considering both the capacities of producers and the accessible resources linked to the ecosystem.

23. **In addition, this activity will also involve the dissemination and communication of research results capitalized on at national and international level and of climate-smart agricultural technologies,** as well as technical support for their application. The adoption of resilient agricultural technologies aimed at increasing the land under sustainable management will be targeted at 10,000 producers, considering an average of 0.5ha of cultivated land per farmer.

24. **Investments in storage and loss/waste management will focus on needs at producer level,** with the provision of basic equipment, such as hermetic bags and/or other technologies, for the intermediate storage of commodities. In addition, training will cover the most appropriate methods and tools for limiting post-harvest losses and improving the quality of final products.

25. **Targeted producers will be supported in diversifying their production through the provision of a starter kit of seeds, inputs, and small equipment** for more resilient production and with practices better adapted to climatic hazards, to increase the reliability of supply systems for the school feeding system.

26. **A value chain study is currently underway focuses on the agricultural commodities to be prioritized by intervention zone to supplement school food requirements based on the nutritional recommendations of the school canteen menu and considerations of the agro-climatic context.** Agricultural commodities could include groundnuts, cassava, sweet potatoes, cowpeas, sorghum and vegetables, as well as poultry (meat and eggs), cajanus cajan and brachiaria for cattle and goat feed (meat and dairy products). Options for replacing oil will also be explored. This list will have to be adjusted and fixed according to the other analyses in progress by the other components of the parent project.

27. **Menu catalogs based on local and regional products have been drawn up, but they will not be standardized in every school.** Although nutritional analyses are not necessarily part of this project, they may be made available through complementary activities, such as the Fill the Nutrient Gap (FNG) study. The catalogs consider nutrient-rich varieties that are adapted to local conditions and already grown by producers. These different crops will be developed as flagship value chains (these could be specific to each region) to gradually replace imported cereals and ensure sustainable availability and the project's exit strategy after 3 years.

28. **Processing activities involve support for the construction and/or community rehabilitation of five processing units,** as appropriate, including the supply of equipment and input kits for each unit, with technical support for farmers' organizations in the management and use of their processing units, small machinery and tools. These units will contribute to the processing of products selected based on the results of the value chain analysis currently underway, such as flours,

oils or other products derived from the targeted commodity chains for school feeding. The project will exploit the incorporation of food (bio)fortification in line with feasibility and needs.

29. **Activity 2.2: Strengthening agrometeorological data and information management systems and services for small-scale farmers involved in school feeding.** This activity will support the development of digital data and information systems to help manage weather- and market-related risks, and better inform decision-making by stakeholders in the agricultural value chain. The project will extend the coverage of climate services, with investments in substation equipment for the analysis and collection of agrometeorological data (parameters of agricultural seasons, sowing dates, soil moisture, etc.), as well as links with complementary information, such as satellite images (in connection with the European Space Agency's GDA 2020-2025 project) to measure and forecast the impacts of real-time conditions on production, animal, plant and soil health, or prices and stock availability.

Output III: Technical support for food security policy and integrated crisis response

30. ***Activity 3: Technical support for food security policy and integrated crisis response Implementation of food reserve and integrated crisis response systems.*** **Supporting** integrated coordination in the face of crises and climate change will support feasibility studies for the implementation of a food reserve system and the definition of its operational plan. This technical support is accompanied by investments in storage equipment for the food/cereal reserve systems selected in key districts such as Amboasary, Ambovombe, Tsihombe and Bekily.

31. **The activity will focus on strengthening the food reserve system, the network of community storage facilities, and targeted schools.** It will contribute to the reduction of post-harvest losses and the integration of local production to ensure food availability in the event of future shocks, including its use in various response programs (school feeding, targeted distributions, etc.). The food reserve system will form the basis for the development of an action plan for early response to food crises.

Instruments for studying environmental and social issues

32. **The government has prepared and is required to implement the ESMF for the project,** which includes a SEP, in accordance with its obligations under the World Bank's Environmental and Social Framework. The ESMF has been reviewed and approved by the Bank and forms part of the Financing Agreement. It defines the material measures and actions required to manage environmental and social risks and impacts, as well as the specific environmental and social assessment instruments and the implementation schedule for the latter.

33. **The WFP is responsible for the preparation and implementation of the environmental and social provisions of the project and for sending quarterly reports to the PIU.** The WFP contract includes budgets and specialists for the implementation of environmental and social aspects. WFP will play a particularly important role in the implementation of the following management instruments: the ESMF; the RF; the IPMP; the LMP; the SEP; the Action Plan against Sexual Abuse and Exploitation and Sexual Harassment; and the GRM. These instruments, which describe the mitigation measures proposed for the management of Project risks, including risks associated with the spread of the COVID-19 virus during the implementation of activities, as well as the Code of Conduct to be respected proscribing sexual harassment and sexual abuse and exploitation in the workplace, will be taken into account by WFP in accordance with its environmental and social policies and procedures. It is understood that WFP shall require its consultants and subcontractors, to comply with the obligations set forth above, which are applicable and relevant.

Institutional governance framework

34. **To ensure the catalytic success of the intervention as an engine for development, the project will follow an established institutional framework to guide the multi-sectoral approach.** This framework will enable effective planning for the involvement of stakeholders from different sectors of government and civil society. It is also planned to include representatives from other ministries such as Agriculture and Livestock, Education, Nutrition, Health, Environment and Water on the Project Steering Committee. Their participation will contribute to the orientation and monitoring of project implementation.

35. **Coordination between implementing partners will be a key factor in carrying out the planned activities. This coordination will be ensured through the appropriate mechanisms within the state apparatus.** Existing or to-be-developed protocols will be needed to clarify the responsibilities, roles and implementation modalities of each stakeholder. In addition, these mechanisms will mobilize existing structures such as the multi-sectoral steering committee for school food, nutrition and health set up under the 2019-2024 strategic plan for school food linked to local production. These existing structures will be supplemented where necessary to ensure effective coordination between all the players involved.

Ministries	Collaboration on HGSF
MINAE	Ministry takes the lead through the coordination unit to Monitors project implementation Ensures multi-sectoral coordination through the project coordination unit, by mobilizing the various sectors and organizing meetings at different stages. Provides human and material resources to monitor project implementation. Supports advocacy within the government for the implementation of the project's sustainability elements in the rural development component at the level of financing, institutionalization, legal and policy framework. Ensures that implementation follows Ministry guidelines, standards and regulations, specifically in support of producer capacity-building (organization, management, production, processing, storage, application of digital tools, resilience to climate change and shocks, support for financial inclusion, food reserve system).
MEN	Co-leads in project implementation and work closely with PAM and MINAE Coordinates the national school feeding program based on local purchasing Monitors project implementation Support advocacy within the government for the implementation of the project's sustainability elements in the canteen sustainability activity in terms of financing, institutionalization, legal and political frameworks. Places its technical structure at your disposal to support implementation by providing the necessary information and expertise, and specifically capacity-building for players involved in program management and implementation at all levels.
ONN	Ensures high-level advocacy for school nutrition, food and health investments. Provides its technical structure to support the implementation of nutrition and health guidelines at school level, specifically in the areas of nutrition education, quality control and safety, conservation, menu planning and preparation, training (cooks, communities, behavior change).

Project sustainability

36. To ensure the sustainability of project results beyond the implementation phase, the project will invest in institutional capacity-building for the management and sustainability of the National School Feeding Program at the local, regional and national levels on the institutional, financial and operational aspects of the program within the government with a multi-sectoral, multi-level approach that leverages the different expertise of the sectors involved in school feeding based on local purchasing.

37. Within the framework of financial sustainability, the project is based on commitments made by the Government and the community and its intention to increase the school canteen budget, technical support will be provided to develop tools enabling the Government to advocate and mobilize resources for the national school feeding program with a specific budget line and stable allocations.

38. To strengthen advocacy, WFP will provide information, knowledge and tools to enhance understanding of the long-term benefits and advantages of school feeding in different sectors and beyond education outcomes (e.g. health, agriculture, social protection), with a special focus on the impact on the country's economy, human capital development, and how this affects the child at school and later in life.

39. On the institutional side, the project will strengthen the legal and policy framework for the regulation of school feeding and help institutionalize capacity in the management and implementation of the national program based on local purchasing, involving government structures at all levels and the school community. On this basis, there is an ongoing commitment with the school meals coalition to perpetuate school food as a competing ministerial priority. To this end, efforts are underway to establish and publish a plan of priorities for the coordination of school meals, including advocacy for its funding. A national forum, with the involvement of the Presidency, is being prepared to support advocacy and efforts to make the program sustainable.

40. At the operational level, the project aims to empower producers by improving the quality of end products, which will enable production to be channeled toward endogenous market alternatives, adapted to local conditions in terms of price, diversity, and packaging. The project will also ensure greater involvement and commitment of local stakeholders in school feeding programs, including the training of school committees in canteen management, cash management, local food procurement, food preparation, and account performance. These training sessions will be decentralized and accompanied by round-table discussions on financing issues, while the creation of school gardens (with both pedagogical and integrated resilience objectives for schools) will raise awareness of local food production and agriculture among both children and the wider community.