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IMPLEMENTATION COMPLETION AND RESULTS REPORT

IDA-H8900, TF-16288, and TF-16307

ON

A GRANT IN THE AMOUNT OF SDR 7.9 MILLION
(US\$12 MILLION EQUIVALENT)

AND

A GRANT IN THE AMOUNT OF US\$6.57 MILLION
FROM THE GLOBAL ENVIRONMENT FACILITY TRUST FUND

AND

A GRANT IN THE AMOUNT OF US\$1.85 MILLION
FROM THE LEAST DEVELOPED COUNTRIES FUND

TO THE

REPUBLIC OF MALI

FOR A

NATURAL RESOURCES MANAGEMENT IN A CHANGING CLIMATE IN MALI PROJECT

June 1, 2020

Environment, Natural Resources and The Blue Economy Global Practice
Africa Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective: September 30, 2019)

Currency Unit = West African Franc (CFAF)

CFAF 602 = US\$1

US\$1.363 = SDR 1

FISCAL YEAR
January 1 – December 30

ABBREVIATIONS AND ACRONYMS

AEDD	Agency for the Environment and Sustainable Development (<i>Agence de l'Environnement et du Développement Durable</i>)
CBA	Cost-Benefit Analysis
CEA	Cost-effectiveness Analysis
CPF	Country Partnership Framework
DNA	National Directorate of Agriculture (<i>Direction Nationale de l'Agriculture</i>)
DNEF	National Directorate of Water and Forests (<i>Direction Nationale des Eaux et Forêts</i>)
DNPIA	National Directorate of Animal Productions and Industries (<i>Direction Nationale des Industries et des Productions Animales</i>)
ESMF	Environmental and Social Management Framework
FM	Financial Management
GEF	Global Environmental Facility
GGW	Great Green Wall
GoM	Government of Mali
GRM	Grievance Redress Mechanism
ICR	Implementation Completion and Results Report
IGA	Income-generating Activity
ISN	Interim Strategy Note
LDCF	Less Developed Countries Fund
LDN	Land Degradation Neutrality
NAPA	National Adaptation Program of Action to Climate Change
NDC	Nationally Determined Contribution
NGO	Nongovernmental Organization
M&E	Monitoring and Evaluation
MTR	Midterm Review
NAPA	National Action Plan of Adaptation to Climate Change
NRM	Natural Resource Management
PAD	Project Appraisal Document
PDO	Project Development Objective
PDSEC	Social, Economic, and Cultural Development Plan (<i>Plan de Développement Social, Economique, et Culturel</i>)
PIU	Project Implementation Unit

PRAPS	Regional Sahel Pastoralism Support Project (<i>Projet Régional d'Appui au Pastoralisme au Sahel</i>)
RPF	Resettlement Policy Framework
SAWAP	Sahel and West Africa Program
SCCF	Special Climate Change Fund
SDG	Sustainable Development Goal
SLWM	Sustainable Land and Water Management
SNGIE	National Environmental Information Management System (<i>Système National de Gestion de l'Information Environnementale</i>)
ToC	Theory of Change

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P145799	NATURAL RESOURCES MANAGEMENT IN A CHANGING CLIMATE IN MALI
Country	Financing Instrument
Mali	Investment Project Financing
Original EA Category	Revised EA Category
Partial Assessment (B)	Partial Assessment (B)

Related Projects

Relationship	Project	Approval	Product Line
Supplement	P129516-NATURAL RESOURCES MANAGEMENT IN A CHANGING CLIMATE IN MALI	06-Dec-2013	Global Environment Project

Organizations

Borrower	Implementing Agency
Ministry of Environment, Water and Sanitation	Agence de l'Environnement et du Developpement Durable - AEDD

Project Development Objective (PDO)

Original PDO

The Project Development Objective is to expand the adoption of sustainable land and water management practices in the target area in Mali.

**FINANCING**

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
World Bank Financing			
P145799 IDA-H8900	12,000,000	11,878,308	10,952,979
P129516 TF-16288	6,574,074	6,503,579	6,503,579
P129516 TF-16307	1,851,851	1,702,234	1,702,234
Total	20,425,925	20,084,121	19,158,792
Non-World Bank Financing			
Borrower/Recipient	2,000,000	1,000,000	1,000,000
Total	2,000,000	1,000,000	1,000,000
Total Project Cost	22,425,925	21,084,121	20,158,792

KEY DATES

Project	Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
P145799	06-Dec-2013	24-Mar-2014	01-Feb-2017	31-Mar-2019	30-Sep-2019

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US\$M)	Key Revisions
21-Jun-2018	8.62	Change in Results Framework Change in Components and Cost Reallocation between Disbursement Categories Other Change(s)
25-Apr-2019	10.27	Reallocation between Disbursement Categories

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Moderately Satisfactory	Moderately Satisfactory	Modest



RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	30-Mar-2014	Satisfactory	Satisfactory	0
02	27-Oct-2014	Satisfactory	Moderately Satisfactory	.42
03	17-Apr-2015	Moderately Satisfactory	Moderately Satisfactory	.58
04	12-Nov-2015	Moderately Satisfactory	Moderately Satisfactory	1.05
05	10-Jun-2016	Moderately Satisfactory	Moderately Satisfactory	1.99
06	26-Dec-2016	Moderately Unsatisfactory	Moderately Unsatisfactory	3.41
07	29-Jun-2017	Moderately Unsatisfactory	Moderately Satisfactory	5.97
08	18-Jan-2018	Moderately Satisfactory	Moderately Satisfactory	6.64
09	17-Oct-2018	Moderately Satisfactory	Moderately Satisfactory	9.39
10	11-May-2019	Satisfactory	Satisfactory	10.27
11	18-Mar-2020	Satisfactory	Satisfactory	11.05

SECTORS AND THEMES

Sectors

Major Sector/Sector (%)

Agriculture, Fishing and Forestry 38

Public Administration - Agriculture, Fishing & Forestry 17

Other Agriculture, Fishing and Forestry 21

Public Administration 20

Central Government (Central Agencies) 6

Sub-National Government 14



Social Protection		42
Social Protection		42
Themes		
Major Theme/ Theme (Level 2)/ Theme (Level 3)		(%)
Private Sector Development		100
Jobs		100
Social Development and Protection		24
Social Inclusion		22
Other Excluded Groups		22
Fragility, Conflict and Violence		2
Forced Displacement		2
Environment and Natural Resource Management		108
Climate change		42
Mitigation		10
Adaptation		32
Environmental Health and Pollution Management		24
Air quality management		8
Water Pollution		8
Soil Pollution		8
Renewable Natural Resources Asset Management		14
Biodiversity		14
Environmental policies and institutions		28
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

- Mali is a landlocked, least developed country in West Africa, with a predominantly rural population.** At appraisal, 14.5 million inhabitants were estimated to live in over 1.2 million km², making Mali one of the countries with the lowest population densities in the world. The fertility rate, however, was and continues to be among the highest in the world, with about half of the population under 15 years of age. The country is divided into three natural zones: the southern cultivated Sudanese zone, the central semiarid Sahelian zone, and the northern arid Saharan zone. Agriculture accounted for 70 percent of the workforce and 34 percent of the land use, of which 6 percent was arable and 28 percent was permanent pasture. Forests occupied 10 percent of the land. Rural poverty was and continues to be prevalent (57.6 percent estimated at appraisal) with high rates of malnutrition.
- Degradation of forest and land ecosystems was assessed as severe in Mali, with a total annual cost to gross domestic product estimated at 12 percent in 2011.**¹ At appraisal, the annual deforestation and land degradation rate was estimated to be 10 percent from 1980 to 2010, with 100,000 ha of forest land lost each year.² Over half of Mali's land resources were identified to be affected by human-induced land degradation, with the most severity in the central and southern region. It was also highlighted that Mali is highly vulnerable to droughts because much of the rainfed arable land is grown under conditions of minimal rainfall and because the resilience of pasture lands has been reduced by continuous high grazing pressures. Between 1987 and 2007, Mali experienced five major episodes of drought, and rainfall declined by about 20 percent between 1970 and 2000.
- Poverty, lack of knowledge, and inadequate governance were identified as the main drivers of deforestation and land degradation in Mali.** A key assumption of the project was that lack of opportunities and alternatives to livelihoods that depend on forest and land had negative structural impacts on the natural resource base, through practices that maximize short-term personal gains at the expense of deforestation and land degradation. Insecure traditional land tenure, lack of sustainable land use planning, high demographic rate, migration, and climate variability constituted aggravating factors. The recent 2012 sociopolitical crisis displaced thousands of people from their residential settlements to non-conflict zones of the country, where the project area was located and where agro-demographic pressure was already high, threatening to degrade natural resources even further. In the project intervention area, this translated to (a) increased cattle density and overgrazing (degradation of rangelands), (b) encroachment of agricultural land onto forests and pasture land, (c) overharvesting of fuelwood and charcoal production, (d) persistence of bushfires (deforestation and loss of habitat), and (e) depletion of soil fertility.

¹ IFPRI (International Food Policy Research Institute). 2011. *The Economics of Desertification, Land Degradation, and Drought*.

² Government of Mali. 2012. *Report on the State of the Environment*.



4. **Institutional context.** Over the last two decades, the Government of Mali (GoM) defined several policies and strategies in relation to natural resource management (NRM)³ and committed to regional initiatives. The National Adaptation Program of Action to Climate Change (NAPA) of 2007 identified among its key priorities (a) sensitizing and organizing communities for the preservation of natural resources; (b) using meteorological data to improve agricultural productivity and food security; (c) expanding sustainable land management practices, controlling bushfires, and intensifying fodder crop production; and (d) rehabilitating water points. In July 2010, the Government adopted the Country Strategic Investment Framework for Sustainable Land and Water Management (SLWM), which transferred natural resources management to decentralized entities and local governments (regional assemblies and communes). However, adequate expertise and financial resources have not yet been fully transferred to those entities, thereby challenging effective implementation of locally approved policies.

5. **The GoM is part of the Great Green Wall (GGW) Initiative,** launched in 2005 and endorsed in 2007 by the African Union. The GGW Initiative aims at combating desertification and improving the population's living conditions through the "promotion of SLWM as a more ecologically appropriate, socioeconomically sustainable, and holistic approach at the landscape level, to directly benefit local land and water users (farmers, agropastoralists, and nomad pastoralists)." The Sahel and West Africa Program (SAWAP) in Support of the GGW Initiative was approved by the Global Environmental Facility (GEF) and Less Developed Countries Fund (LDCF)/ Special Climate Change Fund (SCCF) Councils in May 2011. The overall objective is to expand SLWM in targeted landscapes and in climate-vulnerable areas of West African and Sahelian countries. The project is part of SAWAP and contributes to the GGW Initiative.

6. **The World Bank's Interim Strategy Note (ISN) for FY14–FY15 was prepared in the aftermath of the sociopolitical conflict in 2012 and focused on a selective program in support of post-conflict needs and long-term development objectives.** The project supported Priority Area 3 (Preparing the Conditions for Economic Recovery) under which one of the objectives was to improve access to finance for agricultural women. The ISN highlighted land degradation and climate change adaptation as priority issues for Mali in the context of increasing vulnerability. The World Bank's engagement in Mali focused on the provision of basic social services and other immediate needs following the unrest in 2012. The Project Development Objective (PDO) was highly relevant to Mali's development agenda as the proper management of renewable natural resources can generate sustainable streams of income for the population, thereby building resilience to climate change and other external shocks and reducing poverty.

Theory of Change (Results Chain)

7. **The theory of change (ToC) is organized around three results chains to expand the adoption of SLWM practices (see figure 1).** The first chain is rooted in closing the knowledge gap, improving governance of natural resources, and broadly sensitizing the general population to SLWM practices and the risks of climate change. This was assessed to help create an enabling environment in which SLWM practices may be adopted on a wider basis. The second chain is anchored in directly increasing SLWM practices by scaling up locally appropriate techniques through pilot farmers provided with training, equipment, and investments in crops and working animals to increase soil fertility and reduce erosion of

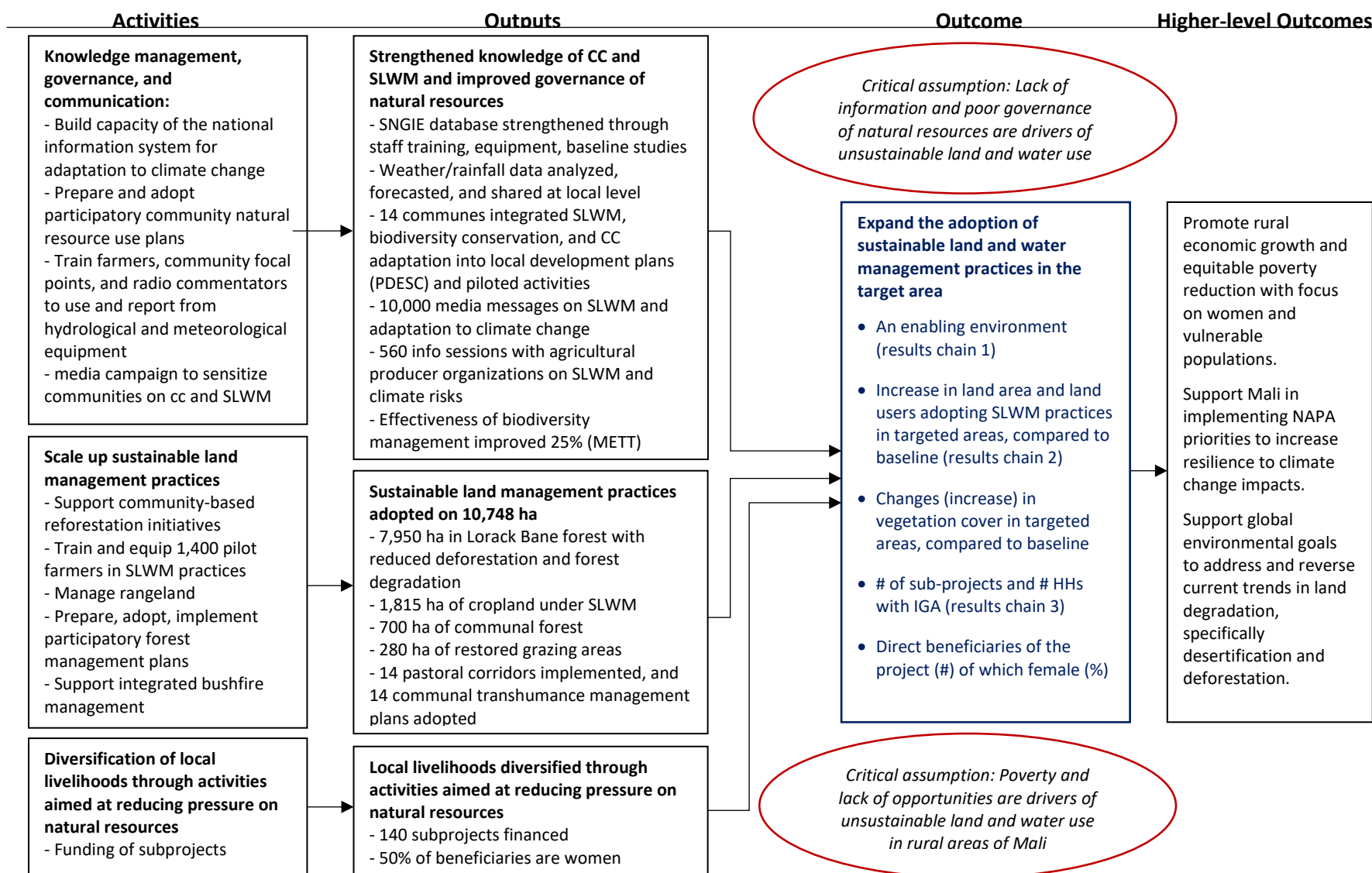
³ National Policy for Environmental Protection (adopted in 1998), National Action Plan for the Environment and the Fight against Desertification (1998), National Strategy for the Domestic Energy Policy (1998 and adjusted in 2006), Action Plan of Biodiversity (May 2001), NAPA (July 2007), National Strategy for Reforestation (2004), Water Policy (adopted in 2006), National Action Plan for Integrated Water Resources Management (December 2007), and Policy of Wetland Conservation (2003).



pastures. As each farmer is typically part of a cooperative, it was assessed that farmers would become advocates of SLWM practices with the potential to influence their cooperatives to adopt more SLWM practices over time. The third chain stems from financing subprojects aimed at diversifying livelihoods and boosting incomes through activities that would also reduce the pressure on the natural resource base, by providing alternatives for people to shift away from unsustainable land and water use. The activities promoted aimed at reducing the need for grazing, reducing the encroachment of agriculture into the forest, and providing an alternative for women to abandon unsustainable fuelwood collection and charcoal production as a livelihood. As such, the project addressed the identified drivers of unsustainable land and water use: lack of knowledge, inadequate governance, and lack of alternative opportunities due to poverty. It also contributed to higher-level outcomes related to rural economic growth with a focus on gender quality; supported Mali in implementing priorities outlined in the NAPA; and contributed to global environmental goals to address and reverse current trends in land degradation, specifically desertification and deforestation.



Figure 1. Theory of Change





Project Development Objectives (PDOs)

8. The PDO was to expand the adoption of sustainable land and water management practices in the target area in Mali.

9. **Target area.** The intervention area originally covered 14 communes in three provinces⁴ (Nioro, Banamba, and Nara) located in two regions (Kayes and Koulikoro).

Key Expected Outcomes and Outcome Indicators

10. The Project Appraisal Document (PAD) defined three key outcomes and three related outcome indicators (Table 1).

Table 1. Key Expected Outcomes and Outcome Indicators

#	Key Expected Outcomes	Outcome Indicators	Target (unit)	Definition
1	Increased adoption of SLWM practices by stakeholders and beneficiaries in targeted communes	Increase in land area with SLWM practices in targeted areas, compared to baseline (hectares reported by crop, range, forest, wetlands, protected areas)	10,748 (ha)	Aggregation of areas managed using SLWM practices, such as sustainable forest management, anti-erosion techniques, no-fire techniques, organic fertilizer, and so on as a result of the project intervention
2	Improved vegetative cover in targeted areas	Changes (increase) in vegetation cover in targeted areas, compared to baseline (diachronic mapping)	5 (%)	Percentage of vegetation recovery or increase through the reversal of degradation and the increasing of agroforestry surfaces in the Lorack Bane gazetted forest and the Ouagadou forest
3	Communities vulnerable to climate risks and hazards directly benefiting from project activities	Direct beneficiaries of the project (number) of which female (percentage)	3,025 (#) 50 (%)	Number of direct beneficiaries vulnerable to climate risks, who have received capacity-building or financing support for strengthening productive capacity or increasing revenues

11. Although not included as PDO indicators, two other critical outcome indicators are the number of income-generating activities (IGAs) financed, which would reduce dependence and pressure on the natural resource base and contribute to SLWM, and the number of households who benefitted from these.

Components

Component 1: Knowledge management, governance, and communication (Estimated US\$4.86 million: IDA US\$2.90 million; GEF US\$0.76 million; LDCF US\$0.5 million; GoM US\$0.70 million. Actual US\$2.80 million: IDA US\$1.45 million; GEF US\$0.39 million; LDCF US\$0.26 million; GoM US\$0.70 million)

⁴ 'Cercles' as of the Mali decentralization law.



12. This component aimed to support natural resources management, governance, and communication. Planned activities were as follows: (a) building the capacity of the national information system for adaptation to climate change; (b) strengthening grass-root mechanisms for preventing competition, over-exploitation, and degradation of productive resources (rangelands, croplands, water resources, and forests), through management tools and equitable regulations on access to and use of local natural resources; and (c) supporting the implementation of the national communication strategy for raising awareness on SLWM and climate change, approved in 2011.

Component 2: Scaling-up sustainable land management practices (Estimated US\$7.06 million: IDA US\$2.0 million; GEF US\$4.3 million; LDCF US\$0.76 million. Actual US\$7.49 million: IDA US\$2.10 million; GEF US\$4.58 million; LDCF US\$0.81 million)

13. This component sought to scale up SLWM through knowledge consolidation, creation and dissemination, promotion of resources management tools, and technical assistance and investments. Planned activities were as follows: (a) promoting sustainable management of biodiversity in accordance with an ecosystem-based adaptation approach; (b) supporting the promotion of indigenous sustainable modes of production and consumption; (c) supporting community-based reforestation initiatives; (d) supporting the preparation, adoption, and implementation of participatory management plans of the Ouagadou, Gadjaba Khadiel, and Lorack Bane forest ecosystems; (e) promoting the use of improved agroforestry and other related SLWM technology packages in the adjacent lands of the three targeted forests; (f) supporting the management of rangelands including pastoralism corridors; and (g) strengthening the capacity of local NRM committees in the integrated management of bushfires.

Component 3: Diversification of local livelihoods (Estimated US\$6.69 million: IDA US\$5.00 million; GEF US\$1.19 million; LDCF US\$0.50 million. Actual US\$6.15 million: IDA US\$4.69 million; GEF US\$1.05 million; LDCF US\$0.41 million)

14. This component aimed to diversify rural livelihoods through a virtuous cycle of reinvestment in different opportunities that would reduce the structural impact of poverty on land degradation and deforestation while increasing rural households' resilience to climate change and other external shocks. Planned activities were as follows: (a) financing sound IGAs, which do not threaten the conservation of biodiversity and (b) training the beneficiaries of funded IGA on management (procurement, accounting, saving and reinvestment for business development) and demonstration of opportunities from sustainable management of forest and non-timber forest products. The focus was on reducing the vulnerability of women, uneducated youth, and displaced persons by providing them with opportunities for jobs and revenues.

Component 4: Project coordination, monitoring and evaluation (Estimated US\$2.82 million: IDA US\$2.1 million; GEF US\$0.33 million; LDCF US\$0.092 million; GoM US\$0.30 million. Actual US\$3.73 million: IDA US\$2.71 million; GEF US\$0.49 million; LDCF US\$0.22 million; GoM US\$0.30 million)

15. This component covered the cost of project coordination and monitoring and evaluation (M&E).



B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

Revised PDOs and Outcome Targets

16. The PDO was not revised. It reflects two outcomes related to SLWM: (a) the direct adoption of SLWM practices and (b) the reduced pressure on natural resources through IGAs related to SLWM.

17. The project outcome targets were revised in the first level-two restructuring approved on June 21, 2018 (The three original PDO indicators were revised and three new PDO indicators were added in the June 2018 restructuring (**Error! Not a valid bookmark self-reference.**)). In view of the revisions to the project outcome targets, the ICR has applied a split evaluation in rating the achievement of the PDO (see Section II).

18. Table 2). The restructuring also added a PDO indicator to reflect more explicitly the outcome related to IGAs. At the time, the disbursement rate was 71 percent.

Revised PDO Indicators

19. The three original PDO indicators were revised and three new PDO indicators were added in the June 2018 restructuring (**Error! Not a valid bookmark self-reference.**)). In view of the revisions to the project outcome targets, the ICR has applied a split evaluation in rating the achievement of the PDO (see Section II).

Table 2. Revised Outcome Indicators

#	Original Indicator	Original Target	Approved Revision	Revised Target	Rationale (from Restructuring Document)
1	Increase in land area with SLWM practices in targeted areas, compared to baseline (hectares reported by crop, range, forest, wetlands, protected areas)	10,748 ha	Land area under sustainable land and water management practices in targeted areas (ha)	3,000 ha	Indicator revised for clarity. Disaggregation dropped as distribution to each of the categories would be difficult. ^a
2	Changes (increase) in vegetation cover in targeted areas, compared to baseline (diachronic mapping)	5%	Dropped	—	The indicator proposed was dropped due to potential attribution issues and lack of reliable counterfactuals. However, as a core GEF indicator it remained part of the Results Framework, with no outcome target.
3	Direct beneficiaries of the project (#), of which % female	3,025 (50%)	Continued	15,000 (50%)	Target revised upward to reflect activities on the ground.
4		1,400	Land users adopting sustainable land management	1,600	Existing intermediate indicator moved to the outcome level, and target revised upward to reflect progress on the ground.



#	Original Indicator	Original Target	Approved Revision	Revised Target	Rationale (from Restructuring Document)
			practices as a result of the project (#)		
5			Households with access to alternative livelihood activities related to sustainable land and water management practices supported by the project (#)	2,000	New indicator introduced to reflect the support to alternative livelihood activities and their relation to adoption of sustainable land and water management practices. ^b
6			Land area under sustainable landscape management practices (ha)	—	New core indicator added. ^c

Note: a. The ICR notes that the Restructuring Document provides no explanation for the 72 percent reduction of the target value of outcome indicator #1. However, through triangulation of data the ICR team concludes that the target was reduced to reflect progress on the ground related to the Lorack Bane forest, specifically. See the rationale below in paragraph 233 and Section III.B.a (Key Factors that Affected Implementation and Outcome) for further details.

b. The increased focus on the IGAs, with an increase from 140 to 500 sub-projects (benefiting 2,000 households) would help to compensate for the reduced area under SLWM in the Lorack Bane forest.

c. No target was defined for the indicator, and as such it was never tracked. Therefore, the ICR did not consider this indicator in the project evaluation.

Revised Components

20. The components were not revised.

Other Changes

21. Other changes approved in the June 2018 restructuring and/or amended in the IDA Financing Agreement are as follows:

- **The project intervention area expanded from 14 to 30 communes.** According to the Restructuring Document, 16 new communes in Nioro province were added to the project area due to the deteriorating security situation in the two other project provinces of Banamba and Nara. Given their relatively late addition, the activities undertaken in the new communes related to dissemination of media messaging in support of SLWM.
- **Of the 14 original intermediate outcome indicators, 4 were dropped, 1 was moved to the PDO level, and 5 were revised.** One new indicator was added. Changes to the intermediate indicators are summarized in Table 3. The four indicators, which remained unchanged, are included in table 3 for completeness.
- **The funding ceiling for group-based IGAs was raised.** In an amendment of the IDA Financing Agreement signed on August 1, 2018, the funding ceiling for group-based subprojects was



raised from XOF 10 million to XOF 15 million (US\$17,000 to US\$25,000 equivalent) to better accommodate the cost for underlying technical studies related to subprojects submitted by groups.

- **Component costs were revised and funds reallocated between categories, as shown in Table 4.** According to the Restructuring Document, the MTR revealed a weak operational resource allocation during the project design, which reduced the mobilization capacity of the implementing agencies and their field staff. An increase in operational resources aimed to (a) support the improvement of working conditions for field staff, (b) operationalize regional steering committees, (c) increase the number of field visits by the Project Implementation Unit (PIU) staff, (d) improve M&E of project activities, and (e) provide additional technical support and training to the PIU. Consequently, resource commitments for Component 4 were increased. Additional funds for Component 2 were allocated to prepare a forestry sector investment plan that would align with Mali's Nationally Determined Contribution (NDC) Investment Plan, approved in 2018.

Table 3. Revised Intermediate Indicators

Original Indicator	Original Target	Approved Revision	Revised Target	Rationale
Component 1: Knowledge management, governance, and communication				
Client days of training provided (#)	325	Dropped	—	Indicator related to an output rather than an outcome.
Number of sensitization materials on SLWM and adaptation to CC disseminated through accessible media (#)	10,000	Messages on SLWM and adaptation to climate change disseminated through accessible media (#)	15,000	Indicator revised for clarity and content. Target increased to reflect current activities.
Number of Communes in which Development Plan (PDSEC) integrate SLWM and adaptation to CC issues (#)	14	Continued	14	
Number of Local conventions or any other Agreements on SLWM and NRM approved, disseminated and implemented (#)	14	Continued	14	
Number of sensitization sessions organized on climate hazards and adaptation options (#)	3,640	Target revised from 3,640 to 10,000.	10,000	Target increased to reflect achievement at midterm review (MTR).
Number of dissemination sessions on SLWM, NRM and climate risks held with producer organizations (#)	560	Target revised from 560 to 50.	50	Target decreased to reflect achievement at MTR.
Component 2: Scaling-up sustainable land management practices				
Effectiveness of biodiversity management in targeted areas (METT score) [BD2]	51	Continued	51	



Original Indicator	Original Target	Approved Revision	Revised Target	Rationale
Government institutions provided with capacity building to improve management of forest (CCM5, SFM1)	3	Continued	3	
Lands under SLWM practices: - Farmlands (ha) - Rangelands (ha)	1,815 280	Dropped	—	Indicator dropped due to overlap with outcome indicator #1.
Land users adopting sustainable land management practices as a result of the project (#)	—	Moved to PDO level	—	
Total vegetative land areas created/rehabilitated by local communities (ha) [BD2, CCM5, SFM1]	700	Target revised from 700 to 1,600.	1,600	Target increased to reflect achievement at MTR.
		Pastoral corridor management plans developed in participatory manner.	14	New indicator related to transhumance and management of pastoral corridors.
Component 3: Diversification of local livelihoods				
Number of alternative income-generating activities financed by the project and satisfactorily implemented of which those benefitting female and other vulnerable groups (%)	140	Alternative livelihood activities supported by the project satisfactorily completed, of which those benefitting female and other vulnerable groups (%)	500	Indicator revised for clarity and target revised upward to reflect achievement at MTR and focus on completed subprojects rather than implementation.
Component 4: Project coordination, monitoring and evaluation				
Technical and financial management progress reports are prepared and timely submitted	Yes/No	Dropped	—	Indicator not directly linked to the PDO.
The safeguard instruments are implemented in a satisfactory manner	Yes/No	Dropped	—	Indicator not directly linked to the PDO.

Table 4. Reallocation of Funds between Components

Component	Appraised Cost (US\$, millions)	Revised Cost (2018) (US\$, millions)	Revised Cost (2019) (US\$, millions)
Component 1: Knowledge management, governance, and communication	4.86	3.45	2.94
Component 2: Scaling-up sustainable land management practices	7.06	7.43	7.73
Component 3: Diversification of local livelihoods	6.69	5.44	6.69
Component 4: Project coordination, monitoring and evaluation of project activities	2.81	5.10	4.06
TOTAL	21.42	21.42	21.42



22. A second level-two restructuring was approved on April 25, 2019, to reallocate funds between disbursement categories (Table 4).



Rationale for Changes and Their Implication on the Original Theory of Change

23. The rationales for most of the approved changes are provided in table 3.

24. **The rationale for the 72 percent reduction of the target value of outcome indicator #1 relates to challenges for the adoption of SLWM practices in the Lorack Bane forest.** The entire classified part of the Lorack Bane forest of 7,953 ha represented 74 percent of the target value for PDO indicator #1, given its particularity as a nationally protected area with important user rights for pastoralists. However, the project was unable to promote the adoption of SLWM among this stakeholder group who lives off the natural resources on public land (see Section III.B.a for further explanation), and therefore the target value was reduced to exclude this area. The target values for other land uses (farmland, forests, and pastures) remained the same.

25. **The changes to project indicators, component costs, target area, and other aspects of the project design did not fundamentally alter the ToC.** Overall, the three results chains remained the same, though changes to the outcome targets lifted part of the weight given to the second results chain that sought to directly increase the adoption of SLWM practices (Component 2). There was a significant increase in the target of project beneficiaries, primarily benefitting from IGAs (Component 3), from 3,025 to 15,000 persons. While these revisions affect the project differently, in effect the ToC did not change.

II. OUTCOME

A. RELEVANCE OF PDOs

Rating: Substantial

Assessment of Relevance of PDOs and Rating

26. **PDOs have remained substantially relevant to national, regional, and global development priorities.** In 2015, the GoM and the World Bank agreed on a Country Partnership Framework (CPF) for FY16–FY19. The project helped provide a sustainable stream of income to rural and vulnerable populations of Mali through the proper management of renewable natural resources while building the resilience of productive assets and improving local governance. As such, it aligned with the CPF's Focal Area 2 (Create Economic Opportunities), which sought to increase productivity and market access in key agricultural value chains and improve water and natural resources management, and also with Focal Area 3 (Build Resilience), which sought to strengthen safety nets and reduce the risk of the poor and vulnerable to exogenous shocks. The CPF and Systematic Country Diagnostic recognized the importance of reducing poverty through increasing the productive capacity and raising the income of rural communities that depend on natural resources. These documents also recognized Mali's vulnerability to the impacts of climate change, poor households' exposure to external shocks, and their potential to exacerbate conflict.

27. **The project supported national development objectives outlined by the GoM in its Strategic Growth Framework for Poverty Reduction (2012–2017),** which focused on strengthening the foundations of long-term development and equitable access to quality social services by, among others, strengthening the resilience and creating economic opportunities for rural households in Mali and preserving the environment and natural resource base in a climate change context. Furthermore, it contributed to the Country Strategic Investment Framework for SLWM (2010), which aimed to transfer natural resources



management to decentralized entities and local governments and reinforce their capacity. The project was also significantly aligned with Mali's NAPA (2007) and National Strategy and an Action Plan for Climate Change (2011).

28. **The PDO supports global priorities related to the current GEF-7 framework and the Sustainable Development Goals (SDGs).** The PDO remains highly consistent with global priorities of the current 2018–2022 GEF-7 land degradation strategic focal area, which emphasizes sustainable land management of dryland landscapes to (a) enhance on-the-ground implementation of land degradation neutrality (LDN) and (b) create an enabling environment to support LDN implementation globally. The PDO supports the achievement of SDG 15 of the 2030 Agenda, which aims to “protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.”

B. ACHIEVEMENT OF PDOs (EFFICACY)

Rating: Substantial

Assessment of Achievement of Each Objective/Outcome

29. The assessment of project achievements is organized around each of the result chains presented in the ToC.

I. The project created an enabling environment for the wider adoption of SLWM practices by strengthening knowledge, governance, and communication on SLWM, climate change, and adaptation.

30. **All the 14 communes incorporated SLWM and climate adaptation into local development plans (100 percent of original target).** In each of the 14 project communes, the local Steering Committee for Development Coordination and Actions drafted and adopted communal Social, Economic, and Cultural Development Plans (PDSECs), which integrate SLWM, conservation of biodiversity, and adaptation to climate change as strategic priorities for building resilience and reducing land degradation and deforestation. The process was brought to bear on diagnostic studies, training, capacity building of multiple stakeholders, and work in focus groups to identify objectives and strategic actions to expand the adoption of SLWM practices. While the project has not been able to follow the implementation of the PDSECs after project closure, it is worth noting that the PDSECs are the guiding documents for all activities in the commune and are the basis for resource allocation from national sources and mobilization of funds from external partners. The activities integrated in the plan are location-specific and costed.

31. **In a similar vein, 15 community or intercommunity NRM agreements were signed.** These agreements define access and user rights to shared natural resources and were signed by stakeholders in each of the project communes, as well as for the commune of Tougouné Rangabé in Nioro province, which covers much of the Lorack Bane forest. As such, the agreements lessen natural resources as a source of conflict within and between communities. The National Directorate of Water and Forests (DNEF) uses the plans as a basis for its technical support to the population in the project communities, and their implementation is monitored at the national level.

32. **The general public was sensitized to the impacts of climate change and the need to adopt SLWM practices to preserve biodiversity and prevent the degradation of ecosystems.** The project implemented a comprehensive media campaign with more than 17,000 messages over the life of the project (174



percent of original target and 116 percent of the revised target achieved) with the objective to sensitize the general public to the issue of land degradation and increase awareness of SLWM as an appropriate response in the project area. The campaign was built around nearly 10,000 radio messages, strategic messaging in public debates, sketches on climate change and SLWM, film documentaries about the project and key achievements translated into multiple languages, and various print material distributed across 30 project communes.

33. Three years of mobile-supported weather data improved agricultural decision making in real time for farmers in the project area. The project supported the collection, analysis, and dissemination of rainfall and weather forecast for three years (2016, 2017, and 2018) to help farmers make better decisions. The project acquired and installed seven automatic weather stations in seven project communes for collection and transmission of meteorological data, supplied 1,400 producers with rain gauges and trained and engaged 370 village focal points and 18 radio communicators in the collection, analysis, and distribution of weather information using mobile phones.

34. The project strengthened institutional data gathering, monitoring, and reporting on environmental information. Biophysical and socioeconomic data collected by the project were shared with various institutions to build their databases and help inform analysis of environmental issues more generally. Specifically, the project supported the 2015–2017 Report on the State of the Environment in Mali. The National Environmental Information Management System (SNGIE) benefitted from support for the collection and analysis of environmental data and metadata, as well as from information generated by the project. The project also undertook a study to identify sustainable funding mechanisms for SNGIE and developed a strategic framework document.

II. The project expanded the adoption of SLWM practices on 3,667 ha of cropland, pastureland, and forestland in the project area (original target 34 percent and revised target 122 percent achieved)

35. The 3,667 ha were tallied based on the type of SLWM technique applied and are presented in annex 1 under outputs by Component 2. In this section, the achievements are presented by type of land used to give a better overview of project outcomes. The gap in the achievement of outcome indicator #1 relative to its original target relates to interventions that were planned on 7,952 ha in the protected part of the Lorack Bane forest and which could not be undertaken due to land tenurial issues. The project achieved or exceeded the aggregate revised targets for other land included in the project (cropland, pastureland, and forestland).

- (a) **Cropland.** The project supported 1,652 farmers (118 percent of original target and 103 percent of revised target achieved) to improve soil fertility on 1,229 ha through the adoption of locally traditional and SLWM practices such as the use of organic manure, crop residue, ridge tillage, and planting pits to harvest rainwater. In collaboration with farmer cooperatives in the 14 original project communes, the project identified pilot farmers to receive training, equipment, crops, and technical assistance to adopt SLWM practices. Three irrigated gardens were established in Nioro province. The project supported local communities to assist natural regeneration on 828 ha of cropland and rangeland using techniques for fire suppression, weed control, effective pruning, and so on. Community fire brigades are in place and operational with seven members at the village level in each of the 14 project communes. Their role is to monitor and protect against forest fires while reporting slash-and-burn practices to the competent authorities.



- (b) **Pastureland.** The project provided enriched forage seeds and enclosed 12 pastoral sites on 790 ha of pastureland. In addition, 245 km of transhumance trails were demarcated, of which 50 km are in Banamba province and 195 km are in Nara province. In Nioro province, the project developed the infrastructure for two pastoral sites, including wells, generator, livestock watering facilities, and housing for guards. These serve the different communes as a place to water livestock, provide fodder for livestock feed, and provide a rest place for herds. Seven new wells were constructed with solar pumps, and several other pastoral wells were rehabilitated. Two seasonal watering holes for livestock in Gadiaba Kadiel were improved. Through livestock vulnerability studies at the communal level, participatory consultation and delimitation of areas with direct involvement of stakeholders, the project enabled the creation of 14 pastoral cooperatives and the adoption of 14 communal transhumance management plans covering 14 project communes (100 percent of revised target). The project was also synergetic with Mali's Regional Sahel Pastoralism Support Project (PRAPS, P147674) as they both intervened in the same geographical area. While the project focused on SLWM activities that secured fodder resources and strengthened the capacities of local communities and the local NRM committees, PRAPS focused on animal healing, commercialization, and the setting up of a pastoral transboundary mechanism with Mauritania.
- (c) **Forestland.** The project provided support to local farming cooperatives to promote reforestation and afforestation on 820 ha. Local communities were supported in mapping and demarcating four communal forests. In 2017, three participatory forest management plans were approved and adopted by the ministry in charge of the environment for the protected forests of Gadiaba Kadiel and Lorack Bane and by the Governorate of Koulikoro for the forest of Ouagadou (100 percent of the original target). This was achieved on a participatory basis by diagnosing land use in collaboration with surrounding communities and stakeholders (breeders, users of forest products such as timber, charcoal consumers, hunters, traditional healers, and so on). The project raised awareness on woodless construction modes to promote the preservation of forest resources.

III. The project reduced pressure on natural resource through IGAs related to SLWM while also strengthening the livelihoods of vulnerable communities

36. **The project provided 658 sub-grants to 16,249 beneficiaries organized individually or in groups for IGAs (470 percent of original target and 132 percent of revised target achieved).** This achievement is far beyond the target of 140 IGAs and 3,025 beneficiaries identified in the PAD. By directly addressing the underlying project assumptions that poverty and lack of opportunities are key drivers of unsustainable land and water use in rural areas of Mali, the IGAs were instrumental in promoting a change in land use practices. Furthermore, the success evidenced at the local level encouraged non-beneficiary people to pursue similar activities, thereby obtaining a multiplier effect. Anecdotal evidence from project reports and the final stakeholder workshop confirmed the causality between IGAs and their positive impact on household incomes and on reducing pressure on the natural resource base to support SLWM.

37. **The IGAs reached 16 percent of the population in the original 14 project communes (258,978 people/16,249 beneficiaries) and 15 percent of all households in the same area (41,279 households/2,708 beneficiary households).** The 12,334 women recipients accounted for 75 percent of all IGA beneficiaries and 67 percent of all project beneficiaries (134 percent of target achieved). A total of



US\$4.4 million of project funds were invested alongside a 10 percent personal co-financing from IGA beneficiaries of US\$400,000 (Table 5).

Table 5. IGAs by Province and Year

Income-generating Projects	Nioro Province		Banamba Province		Nara Province		Total	
	#	US\$	#	US\$	#	US\$	#	US\$
1st round of IGA subgrants (2015)	54	292,746	63	392,614	134	654,235	251	1,339,595
2nd round of IGA subgrants 2016	52	335,673	42	427,909	106	756,069	200	1,519,651
3rd rounds of IGA subgrants 2017/2018	41	350,417	35	325,742	131	815,753	207	1,491,911
Total IGAs (2015–2018)	147	978,836	140	1,146,265	371	2,226,057	658	4,351,157

38. **Nearly two-thirds of all IGAs were approved for sheep and bovine fattening (55 percent and 8 percent, respectively), which reduces the pressure on pastureland, strengthens the resilience of local communities against the impacts of land degradation and promotes SLWM.** Other IGAs aimed at reducing the encroachment of agriculture into the forest and providing an alternative livelihood to women involved in unsustainable fuelwood collection and charcoal production. Nearly 68 percent of IGAs were in Nara province, which is also the most populous. Sheep/bovine fattening reduces the transhumance movements of herds and their need for grazing, thereby easing the pressure on parts of the natural resource base. Furthermore, harvesting herbaceous species to serve as a cattle fattener limits the spread of wildfires, which constitute a pressure factor on natural ecosystems, because the areas where the harvest takes place act as firewalls. Another 15 percent of the projects focused on market gardens, of which about half were in Banamba province. Market gardens also have a positive impact on land degradation, as they reduce the encroachment of agriculture into the forest. The remaining 20 percent of IGAs were distributed over various commercial activities, such as the manufacture of agricultural tools, arboriculture, fish farming, poultry farming, and beekeeping, and a few sesame and milk processing projects. These IGAs provide alternative livelihoods mostly to women who were previously engaged in unsustainable fuelwood collection and charcoal production.

IV. Split evaluation

39. **Against the PDO and original outcome targets, the project performed substantially well.** The project supported the development of an enabling institutional environment that was foundational to the adoption of SLWM practices, and which remains in place for the post-project period. This was achieved by generating and sharing information on SLWM practices and by providing training and capacity building to a wide group of stakeholders in public offices and community organizations, which led to the approval of numerous plans and agreements (*substantial*). The Project expanded the adoption of SLWM practices on 34 percent of the intended 10,748 ha of land, excluding the Lorack Bane forest. For all other areas, the project achieved or exceeded the original targets for SLWM adoption in cropland, pastureland and community forests (*modest*). The project reached over 18,000 beneficiaries (606 percent of target), which included 1,652 land users adopting SLWM practices and over 16,000 direct beneficiaries moving away from unsustainable land use practices through alternative livelihoods sub-projects. A total of 658 subgrants were approved benefitting 2,708 households (*high*). This assessment will be weighted 71 percent in proportion to the amount disbursed before June 2018.



40. **Against the PDO and revised outcomes targets, project performance was high.** Similar to the analysis above, the project supported the development of an enabling institutional environment that is also foundational to the future adoption of SLWM techniques in the post-project period, based on the approval of numerous plans and agreements between public offices, provincial institutions, and local community organizations (*substantial*). The project expanded the adoption of SLWM practices to 122 percent of the revised target land area of 3,000 ha by introducing 1,652 farmers and herders (103 percent of the target) to SLWM techniques in their agricultural practices and by helping create awareness of SLWM on a broader scale at the community level (*high*). A total of 2,708 households gained access to IGAs (135 percent of target) and adopted alternative livelihoods that helped reduce pressure on degraded land areas and strengthened their resilience against the impacts of land degradation. The total number of beneficiaries reached over 18,000 people (122 percent of the target), which constitutes 16 percent of the population in the 14 communes where physical investments and subgrants were disseminated (*high*). This assessment will be weighted 29 percent in proportion to the amount disbursed after June 2018.

Justification of Overall Efficacy Rating

41. **Overall project efficacy is rated Substantial.** This is justified in a split evaluation that gives 71 percent weightage to the evaluation of project performance against the PDO and original outcome targets, which is assessed as Substantial, and 29 percent weightage to the evaluation of project performance against the PDO and revised outcome targets, which is assessed as High.

C. EFFICIENCY

Rating: Modest

Assessment of Efficiency and Rating

42. The efficiency analysis is based on two criteria: (a) economic analysis and (b) implementation efficiency, presented in the following paragraphs.

Economic Analysis

43. At the end of the project, limited data availability on its impacts—due to security concerns, presence of a wide variety of interventions, and potential long-term time frame for some of them to show impacts⁵—makes it impossible to conduct a cost-benefit analysis (CBA) for the whole project or even for single activities. The same constraints also applied to the economic analysis of the PAD: based uniquely on results of previous studies and operations, it indicated possible economic rates of returns of about 19 percent to 53 percent for different IGAs⁶ and of 34 percent for selected SLWM technologies. The present economic analysis covers a description of project benefits, a cost-effectiveness analysis (CEA), and an incremental and adaptation cost analyses for the GEF/LDCF resources (see annex 4).

⁵ For example, it takes about four years for eucalyptus and seven years for acacia plantations to produce tangible benefits (communications PIU), and even longer to show visible environmental benefits.

⁶ These include small-scale irrigation for vegetable production, processing of peanut butter, small ruminant fattening, and beekeeping.



Project Benefits

44. The project generated the following:

- **Local benefits.** The project increased the production of vegetables, livestock, fish, crafts, and so on due to alternative IGAs and improved agricultural productivity on the land subject to SLWM practices. While most IGAs provided net benefits by 2016, it is not known either how many have been maintained by the end of the project or the extent to which they released pressure on the environment.
- **National benefits.** Improved ecosystem services due to the adoption of SLWM. Results of land cover maps conducted in 2014 and 2019 indicate an increase in vegetal cover by 2–4 percent of the area of five communes supported by the project. However, the extent to which the project contributed to this increase is not known. In addition, lack of data on changes in ecosystem services (for example, reduced erosion and sedimentation and improved fertility) make it hard to quantify the actual magnitude of these benefits.
- **Global benefits.** Through its interventions on adopting SLWM, the project also provided benefits with global significance: promoting reversal of current trends in land degradation (3,667 ha with SLWM), stimulating conservation and sustainable use of biodiversity (820 ha reforested), and supporting enhancement of carbon benefits from reforestation and reduced forest fires.

45. **CEA.** Table 6 presents the results of a CEA conducted at the project level and for different components. The overall cost-effectiveness of the project is relatively low. It disbursed US\$20.2 million and reached about 18,300 direct beneficiaries, which overall corresponds to US\$1,100 per beneficiary. Although this is lower than the \$7,000 per beneficiary estimated at appraisal, it is higher than the costs in other comparable countries in the region. The unit cost of adopting SLWM practices (US\$2,000 per ha) is in the range found for other African countries (US\$200–US\$2,300, with a median of US\$670⁷). It should, however, be noted that comparing the unit cost of a wide range of SWLM practices among countries is rather difficult: such costs can vary considerably, depending on the type of practice (for example, reforestation, enhancement of soil fertility, crop cultivation, and assisted natural regeneration); site characteristics (for example, slope and distance to roads); size of land (for example, small or medium or large plots); climate; and so on.

46. The costs of certain activities (for example, reforestation, pasture enrichment, and IGAs) are in line with those of other projects in the region. Although physical quantification of the impact of these interventions is not available, available studies in other areas (Kelka forest, Mali) indicate that reforestation and agroforestry could be very attractive, with benefit-cost ratios of 2–5.⁸ In addition, many IGAs supported by the project can also be beneficial; a CBA of these activities was conducted in 2016 and

⁷ Based on Giger et al. (2015) values adjusted to 2019 prices. The values represent establishment costs drawn from 167 case studies in Africa dealing with different types of SLWM measures (for example, improvement of soil cover; plantations and reseeded of trees, grasses, and perennial plants; change of land use types; and so on).

⁸ Sidibe, Y., M. Myint, and V. Westerberg. 2014. *An Economic Valuation of Agroforestry and Land Restoration in the Kelka Forest in Mali. Assessing the Socioeconomic and Environmental Dimensions of Land Degradation*. Report for the Economics of Land Degradation Initiative, by International Union for Conservation of Nature. The study also points out that relatively high investment costs and open access resource are challenges to their adoption.



indicated that (a) most of these activities provided positive net benefits in 2015, with benefit-cost ratios of 1.4–5.0 and (b) if they were sustained for a period of 10 years, they would have internal rates of return of about 13 percent.⁹ Finding effective ways to monitor the impacts of future interventions (for example, improved on-site productivity, reduced erosion and sedimentation, and increased area of vegetal cover) in the country's security context would be crucial to better understand and estimate their economic viability.

Table 6. CEA of Different Project Activities

	Unit Cost		
	Present Project at Completion	Present Project at Appraisal	Other Projects ^a
Project level Unit cost (US\$/beneficiary)	1,100	7,100	130 in Ethiopia 155 in Sudan 630 in Ghana
Component 2 Cost of SLWM (US\$/ha) ^c Cost of individual practices ^d	2,000	660	200–2,300 for Africa ^b (median value of 670)
• Reforestation (US\$/ha)	1,000–2,000	n.c.	1,500 in Kenya
• Pasture enrichment (US\$/ha)	50	n.c.	160 in Kenya
Component 3 Micro-grants (US\$/beneficiary)	290	n.c.	200 in Ghana and Togo 340 Cameroon

Note: a. Cameroon Ngoyla Mintom Project (P118018), Ghana Landscape Restoration and Small-scale Mining Project (P171933) for project-level CEA; Ghana Sustainable Land and Water Management Project (P098538) for Component 3 CEA, Ethiopia Sustainable Land Management Project (P133133), Kenya - Lake Victoria Environmental Management Project Phase II (P100406), Sudan Sustainable Natural Resources Management (P129156), and Togo Integrated Disaster and Land Management Project (P123922).

b. Giger, M., H. Liniger, C. Sauter, and G. Schwilch. 2015. *Economic Benefits and Costs of Sustainable Land Management Technologies: An Analysis of WOCAT Global Data*. Land Degradation and Development.

c. Investment cost only.

d. Present value of investment and maintenance costs over 10 years, discount rate 6 percent.

n.c. = not calculated.

Implementation Efficiency

47. Aspects of the project design that reduced efficiency relate to (a) an implementation arrangement without a dedicated PIU, which caused significant implementation delay in the early phase due to the lack of engagement from public officials with multiple and competing responsibilities; however, this was later addressed during project implementation and through the restructuring (see Section III) and (b) the recognition, at the time of project preparation, that land tenure is key to overcoming unsustainable land and water use, but failing to address this issue in the project design.

48. During implementation, efficiency was hampered by a fairly high level of staff turnover in the ministries and agencies charged with implementing the project through participation in the Project

⁹ Cisse, Y. *L'étude de la viabilité économique des activités génératrices de revenus (AGR) dans les communes d'intervention du projet de gestion des ressources naturelles et changements climatiques (PGRNCC) au Mali*.



Steering Committee. This was mainly due to delayed appointments of open leaderships posts and replacement of retiring staff (see Section III).

49. Cost overrun was most pronounced in Component 4 (project coordination, monitoring and evaluation). The component saw an increase of 33 percent over the estimated cost of US\$2.81 million, which accounts for 18 percent of the total project costs.

50. Overall, due to the cost-effectiveness aspects and difficulties faced during implementation (for example, initial delays, not being able to promote SLWM adoption in the Lorack Bane forest), the project efficiency is rated Modest.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

51. **The overall project outcome rating is Moderately Satisfactory.** This is justified by (a) a substantially relevant PDO, (b) a substantial project performance against the PDO and original and revised outcome targets, and (c) a modest level of efficiency. Table 7 summarizes the split evaluation.

Table 7. Split Evaluation of Project Outcome

		Against Original Outcome Targets	Against Revised Outcome Targets	Comment
	Relevance of PDO	Substantial		
	Efficacy	Substantial	High	
	Efficiency	Modest		
1	Outcome rating	Moderately Satisfactory	Moderately Satisfactory	
2	Rating value	4	4	
3	Disbursement (US\$ millions)	13.68	5.49	Before and after June 21, 2018
4	% disbursed of US\$19.16 million	71	29	= 100
5	Weighted disbursement factor	0.71	0.29	
6	Weighted rating value	2.84	1.16	2.84 + 1.16 = 4
7	Final rating (rounded)	Moderately Satisfactory (4)		

E. OTHER OUTCOMES AND IMPACTS

Gender

52. **The project was gender tagged and supported women-managed livelihoods subprojects.** The project was and remains highly consistent with current regional and global development priorities, which specifically target women in closing gender gaps. The geographic area covered by the project is characterized by very conservative social values and the actual economic role of women in the economy is limited. It is commendable that the project was able to successfully support women's participation in creating alternative livelihoods that reduce pressure on the environment while contributing to increasing women's assets, income earning, employment, and meaningful participation in managing natural resources and project activities.



53. **Overall, women made up 68 percent of project beneficiaries, and 75 percent of community members who benefitted from IGA subgrants (136 percent of the target).** The high percentage was achieved by targeting some subprojects to be led and operated by women. Women tend to organize in groups and favored sheep fattening as a livelihood option, as sheep are typically fed and watered close to the homestead. Anecdotal evidence shows that the impact of the subprojects on the beneficiary household is substantial. During the final stakeholder workshop, women beneficiaries expressed that the livelihoods resulted in better educational outcomes for children enrolled in school again and provided essential nutritional value to women and children.

Institutional Strengthening

54. Extensive training, sensitization, and capacity building of staff in the Agency for the Environment and Sustainable Development (AEDD), sector ministries, and national institutions helped strengthen institutional capacity on land degradation, SLWM, and climate adaptation. The choice to work with a core team in AEDD and technical staff in partner institutions helped ensure that those capacities are embedded institutionally. This in turn will benefit future World Bank and donor engagement with Mali in general, and other land management projects specifically. For example, AEDD is Mali's NDC focal point and is overseeing potential investments that can contribute to Mali's climate change goals. Furthermore, with project funds, AEDD has also developed an investment plan in the forest sector, based on which it intends to submit project to donors, including the World Bank, for funding.

Mobilizing Private Sector Financing

Not applicable.

Poverty Reduction and Shared Prosperity

55. The project design targeted poor and vulnerable rural households in delivering subgrants for IGAs averaging US\$290 to 16,249 beneficiaries organized in groups or as individual recipients. The project reached 16 percent of the population living in the project area, which included 14 communes classified among the most vulnerable municipalities in Mali and located on the line of the GGW Initiative. Anecdotal evidence suggests that the project had a positive economic, social, and health impact at the household level through various livelihoods projects. According to some beneficiary recipients of IGAs, the project raised incomes, reduced malnutrition, improved the school attendance of children, and reduced poverty especially among women.

Other Unintended Outcomes and Impacts

Not applicable.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

56. **In the context of the ISN FY14–FY15, project activities fulfilled an urgent need to bolster household resilience in a post-conflict environment.** The ISN described the contribution of the project as “support for income generating activities of vulnerable groups of people, such as displaced poor



households, shepherders, smallholder farmers, with a priority to women and youth. These micro projects will help enhance the resilience of beneficiaries while reducing pressure on natural resources.” The project directly supported ISN indicator: ‘Percentage of women benefitting from access to finance through sub-projects increased’.

57. **The PDO and related outcome targets were narrowly focused on hectares under SLWM practices and did not sufficiently reflect the objective of reducing pressure on natural resources through IGAs related to SLWM.** Given the role of the project in the ISN and the allocation of nearly one-third of the budget to Component 3, comparable to the allocation for Component 2, it might be inferred that reducing pressure on natural resources through IGAs was an equal part of the strategy for achieving the PDO. While the project may have been ambitious at the right level and comparable to similar projects in the region (that is, Ghana Sustainable Land and Water Management Project - P098538), the target for the PDO indicator on land area under SLWM practices was not realistic given the lack of prefeasibility studies for the Lorack Bane forest activity (which is on public land). Baselines were missing for key indicators, such as vegetation cover, at the time of project preparation and were deferred to the implementation phase (PAD activity 1.1.1.).

58. **Planned activities under each of the components were clearly defined in the PAD, though better integration and timing of those activities would have improved operational logic.** The project design was comprehensive in addressing unsustainable land and water use from multiple perspectives (closing the knowledge gap, improving governance of natural resources, material investments in SLWM, and diversifying livelihoods to reduce pressure), which is commendable yet challenging in the context of a resource-strapped public sector and without strong community organizations. With more attention paid to sequencing, there could have been greater synergy between activities. For example, if a prefeasibility study had been carried out for the Lorack Bane forest at the preparation stage this would have facilitated timelier implementation and outcome of project activities.

59. **The project was technically based on a national assessment from 2011, in which 60 SLWM techniques and practices were locally identified as the most appropriate in Mali.** These included integrated crop-livestock systems, rotational grazing, limiting/no use of bushfire, manure management, and so on, all of which were embedded into the project design.

60. **Implementation arrangements were complex given the country context and the relatively low capacity for project management.** The project was designed without a dedicated PIU, instead relying on a core team of staff appointed in AEDD to coordinate the daily management and monitoring of tasks. The core team included technical, monitoring, safeguards, communication, procurement, and financial management (FM) specialists. Implementation was carried out by key partner institutions directly involved in the execution of subcomponents and activities as part of their regular tasks. These included (a) AEDD, (b) DNEF, (c) National Directorate of Agriculture (DNA), (d) National Directorate of Animal Productions and Industries (DNPIA), and (e) National Agency of Meteorology (MALI-WEATHER). While the selection of stakeholders was appropriate to encourage coherent action for the wider adoption of SLWM practices, it required a high degree of inter-ministerial, interagency, and intercommunity coordination, which was further complicated by the security situation, which made travel and supervision difficult.

61. **At the time of project approval, project readiness was advanced and operational risks to safeguards, procurement, and FM were all adequately mitigated.** Effectiveness was declared three months after Board approval. Operational risks were identified and assessed to be substantial due to the



vulnerable sociopolitical context. Mitigation of institutional stakeholder risk involved ensuring full participation of communities and local authorities in the decision-making process to foster ownership. FM risk was also rated Substantial based on a pre-appraisal assessment given the high levels of corruption and generally poor governance of accounts. Several conditions were set and met before declaring effectiveness.

B. KEY FACTORS DURING IMPLEMENTATION

(a) Factors Subject to the Control of the Government and/or Implementing Entities

62. **Coordination and engagement were challenged by the complex implementation arrangements and the lack of effective incentive structures, causing implementation delay.** Leading up to the MTR, slow implementation progress was linked to a lack of incentives to commit public officials to new assignments and to reach across silos and work collaboratively on projects led by other authorities. This was evident in the Steering Committee, which did not provide guidance and conduct field visits as expected and which approved annual work plans without recommending additional implementing resources. Sector ministries also requested additional resources from the project to bear the cost of implementation. Following the MTR, the GoM proposed a national incentive framework, using counterpart funding, that allowed for bonuses and other benefits to align public officials' responsibility with project implementation and ensured additional funds for the Steering Committee to conduct biannual field visits. These resolutions improved the overall engagement with the project.

63. **The project was brought to bear at the local level and with the support from nongovernmental organizations (NGOs), who showed consistent commitment to the project and its beneficiaries.** The project team relied heavily on decentralized service providers and NGOs to provide technical assistance and monitoring support in the implementation of Components 2 and 3. Their involvement in project activities leveraged the experiences and local knowledge of those service providers to the benefit of project beneficiaries and outcomes. The partnerships and personal relations forged through years of collaboration in the field will help sustain project outcomes.

64. **Lack of clear land tenure rights hindered land restoration on public land, particularly in forests.** These same areas also faced security risks during the last years of implementation. Inadequate protection of land user's right to benefit from their efforts to restore public land through SLWM practices likely caused the project to fail in its achievement of the original outcome target. The entire classified part of the Lorack Bane forest of 7,953 ha formed part of the project outcome target (74 percent) given its particularity as a protected area with pastoral vocation for a sheepfold with important user rights to the forest. Neighbors' cattle were also allowed to cross the forest following the permanent tracks connecting the villages surrounding the forest. The most probable key explanatory factor for why the project failed to introduce SLWM practices in the Lorack Bane forest relates to land tenure rights. Living off public land, the stakeholders had lower levels of ownership of the resources and, in the absence of proper incentives, considered their individual interests. The project was unable to overcome this obstacle to effectively engage this group of stakeholders in the expansion of SLWM practices on this part of the project area. It was also reported that this area faced security risks during the last years of project implementation.

65. **In general, the GoM showed strong commitment to the project and to strengthening capacity at the institutional level.** Following the MTR, the GoM enacted the time-bound recommendations of the mission aimed at strengthening coordination and engagement in the Steering Committee and in other



institutional stakeholders. The GoM ensured timely counterpart funding and supported training and capacity building for a core team of staff members as well as assigned staff in other sector ministries and national institutions on all aspects of project management, including procurement and FM. This helped embed stronger capacities for donor-funded projects at the institutional level.

(b) Factors Subject to the Control of the World Bank

66. A low turnover of task team leaders helped ensure continuity in supervision. However, a number of factors subject to the control of the Word Bank influenced implementation.

67. **Lack of detailed reporting on progress may have left resolutions unexplored, which could have led to better project outcomes.** The Restructuring Document, as well as the project reporting and correspondence preceding the restructuring, such as the MTR, Aide Memoires, or Implementation Status and Results Reports, did not provide enough information on the underlying reasons that led to the main outcome indicator being reduced so significantly. More detailed reporting on the challenges faced in reaching the main outcome target could have opened the discussion for better resolution of key obstacles related to the expansion of SLWM practices on public land. However, it is important to note that ongoing security concerns made field visits for the World Bank staff difficult.

68. **Low disbursement levels at MTR were tackled through a change in the IGA manual to allow for subgrants to be disbursed to beneficiaries in lump-sums rather than in three-part tranches.** At MTR, there was a significant disbursement gap with just 31 percent of project funds disbursed. One of the key challenges reported by the beneficiaries of the 254 IGAs approved by then related to the transfer of subgrant funds in three separate tranches. The MTR mission recommended to speed up the flow of funds to all new IGAs by paying grants in single tranches going forward. Additional measures were also taken to improve the project's procurement and FM.

69. The transition arrangements were adequate at the time of closing.

(c) Factors Outside the Control of the Government and/or Implementing Entities

70. The project was implemented in a post-conflict environment following the unrest in 2012. Ongoing security concerns affected the project by making field visits for the World Bank staff difficult and delaying the implementation of proper monitoring arrangement and baseline studies.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

Rating: Modest

M&E Design

71. The ToC was built around three results chains leading to a single shared outcome: the expansion of SLWM practices in the project area (see Section I). The first two chains are directly and clearly linked to the PDO, while the third chain (IGAs) complements the PDO by aiming to reduce unsustainable land and water management practices. The team took care to identify the critical assumptions underpinning the



results chains. In hindsight, however, those assumptions may have been unrealistic to rely on within the time frame of the project, that is, poverty reduction as a factor in SLWM expansion.

72. **Original Results Framework.** Given the PDO, the Results Framework was appropriately focused on capturing a measurable outcome from both hard and soft interventions as evidenced in two complementary land-based outcome indicators. Those were both measurable, achievable, relevant, and time bound. However, outcome indicator #1 lacks in specificity. The PAD does not clearly explain how it arrived at the target of 10,748 ha, which made it difficult to understand the revised target and analyze the underachievement of this indicator (see annex 1, outcome indicator #1). Increase in vegetation cover is geared at the impact level, but it is a well-established indicator of SLWM interventions and forms part of GEF's core indicators for land degradation projects. However, both indicators require proper baseline studies to develop evidence and test the links in the results chains at project closing. Arrangements for M&E deferred baseline studies to the first year of the implementation phase.

73. **Revised Results Framework.** The revised Results Framework added an indicator on the number of households with access to IGAs and moved one indicator from the intermediate to the outcome to track the number of pilot farmers engaged by the project. Together, they indicate more broadly how SLWM approaches are introduced as measures of resilience in local communities in the project area, even if they remain output focused. For some new and revised indicators, the Restructuring Document lacked clear information which challenged the analysis of project outcomes against the revised Results Framework. This was most pronounced for PDO outcome indicator #1, the target of which was reduced 72 percent without providing a clear rationale. Through triangulation of data and information obtained, the ICR team concluded that PDO indicator #1 was revised to exclude the number of hectares related to the Lorack Bane forest. In addition, one PDO outcome indicator was added without a defined target: 'Land area under sustainable landscape management practices (ha)'. However, this indicator is similar to PDO indicator #1 ('Land area under sustainable land and water management practices in targeted areas'), which was successfully tracked.

M&E Implementation

74. Due to the security situation on the ground, the World Bank relied heavily on local field officers from AEDD and partner institutions as well as NGOs to collect monitoring data from project activities implemented on the ground. There was an initial delay in composing the M&E team and finalizing the monitoring system. However, once the system was up and running, M&E data were consistently collected on the different aspects of project implementation.

75. As part of the reallocation of funds between components, M&E under component 4 received additional resources to strengthen monitoring activities. Evidence from the final project workshop shows that local stakeholders formed an active part of project monitoring activities, which strengthened project ownership and improved reporting on implementation progress.

76. However, baseline studies for vegetation cover and beneficiaries were not carried out as planned. This precludes the production of sufficient evidence to assess project outcomes to those ends. Satellite imagery purchased in 2016 does not lend itself to an analysis of changes in vegetation cover due to project activities from 2014 to 2019 without a deeper technical assessment of land use change. Similarly, without detailed information about the 16,249 beneficiaries of IGAs and their previous livelihoods, it is not



possible to ascertain to what degree the IGAs reduced pressure on natural resources or helped strengthen the economic resilience of households, thereby weakening the link in the ToC.

77.

M&E Utilization

78. Project monitoring was adequately used to inform project management and improve project performance. Leading up to the restructuring of the Results Framework, M&E data collected were used to adjust the outcome targets for each of the outcome indicators. However, lack of detailed reporting on key aspects of project performance, such as progress on the expansion of SLWM practices, precluded informed project management that could have led to authentic course correction and potentially to better outcomes for the Lorack Bane forest (see Section III).

Justification of Overall Rating of Quality of M&E

79. An overall Modest rating of M&E quality is justified by significant shortcomings related to (a) the design of the M&E system, given the lack of a clearly specified outcome indicator; (b) the implementation of the M&E system, as evident in the lack of baseline studies critical to test the links in the results chain; and (c) the utilization of the M&E system, due to a lack of more detailed reporting. It is recommended to design the M&E system before appraisal. Relegating the system's design to the implementation phase fails to capture early stage data and the system may become under-resourced. Stronger M&E would also have helped document better the economic impact of project activities and assess their efficiency.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

80. **The project was rated 'category B' (partial assessment).** Six safeguards policies were triggered: OP/BP 4.01 Environmental Assessment; OP/BP 4.04 Natural Habitats; OP 4.09 Pest Management; OP/BP 4.11 Physical Cultural Resources; OP/BP 4.12 Involuntary Resettlement; and OP/BP 4.36 Forests.

81. The project prepared the required Environmental and Social Management Framework (ESMF), Pest Management and Pesticides Plan, and a Resettlement Policy Framework (RPF). Environmental and social screening of 670 physical investments were carried out as part of Component 3, which resulted in 218 notices of expected environmental and social impact for IGAs.

82. The project safeguards instruments were prepared by the Government and cleared by the regional safeguards adviser for Africa. The project complied with all applicable and triggered safeguards policies and was consistently rated Satisfactory and Moderately Satisfactory. The World Bank provided safeguards training and capacity building to 127 staff of the implementing agencies in the proper implementation of World Bank policies.

83. The team responded effectively to safeguards issues that arose during implementation. Due to weak supervision of safeguards activities in the field by the PIU because of the problems identified during the MTR, the task team reinforced the safeguards capacity of the PIU team and appointed environmental and social focal points in each implementation agency. Training on environmental and social safeguards was provided and more field resources were allocated to ensure field project monitoring during implementation. The World Bank team requested that quarterly safeguard implementation reports be



prepared and reflected in the overall project progress reports for better monitoring of compliance with safeguards policies. A simplified grievance redress mechanism (GRM) was put in place to receive written and verbal complaints. The GRM was mainly applicable for Component 3 on IGA subgrants. Most of the complaints received related to the delay in disbursement. In the early phases, costs for environmental and social compliance of the investments were not included in the proposals for IGAs. AEDD worked to ensure that any safeguard costs were included in the subgrants for IGAs to be financed for communities, which is what prompted the borrower to request a raise of the funding ceiling for group-based IGAs.

C. BANK PERFORMANCE

Rating: Moderately Satisfactory

Quality at Entry

84. The project was based on a solid diagnostic of Mali's development challenges and supported the World Bank's engagement strategy in the region.

85. The team drew on the World Bank's extensive knowledge to address land degradation and deforestation and incorporated key lessons learned from other projects in Mali to empower local actors, tap local know-how and adaptation strategies, and involve local communities in NRM. The team paid close attention to poverty and gender issues in the project design. Provisions for safeguards, procurement, and FM were adequate at entry. High risk ratings were properly mitigated in the project implementation plan and as conditions for effectiveness. The PAD provided a detailed framework of planned activities, which functioned as a guide for tracking progress throughout the implementation period in the annual reports.

86. The development of baseline and prefeasibility studies during preparation would have laid the foundation for testing the links in the results chain and advanced early implementation, respectively. Implementation arrangements without a dedicated PIU were hampered by a lack of incentive structures to ensure project engagement from public officials at different levels of implementation. Insecure land tenure rights were identified as a driver of unsustainable land and water management practices in the PAD. The team failed to address this issue at preparation, that is, through a locally backed benefit-sharing mechanism, and it affected project achievements and outcomes negatively.

Quality of Supervision

87. The World Bank organized biannual supervision missions in support of the implementation of project activities. With just one change in task team leadership before midterm, the project enjoyed reasonably stable project management. Due to the security situation, the World Bank staff had limited possibilities to conduct field visits and observe progress on the ground, instead relying on an extended network of field officers to monitor and report on project implementation. The World Bank team provided adequate assistance on safeguards, FM, and procurement.

88. Progress toward the PDO, as measured in the underachievement of outcome indicator #1, was not candidly reported in the World Bank supervision documents and correspondence, which reduced the effectiveness of the M&E system. Numerous inconsistencies in the Restructuring Document and in the revised Results Framework challenged the tracking and analysis of project outcomes (see section on M&E).



Justification of Overall Rating of Bank Performance

89. Overall rating of the World Bank performance is Moderately Satisfactory. Though the PAD was based on solid analysis and supervision was conducted regularly and recommendations helped improve project performance, there were shortcomings in ensuring quality at entry and quality of reporting, which affected the achievement of project outcomes negatively.

D. RISK TO DEVELOPMENT OUTCOME

90. **Risk to the adoption of SLWM practices on 3,667 ha of land is high.** The biggest risk to the main development outcome is that the practices of SLWM will be discontinued among farmers and pastoralists. This may happen if maintenance costs and the price of enriched seeds are higher than the costs incurred before the project. Migrant labor may move on or the land may be reclaimed by the owner due to productivity increases from the implementation of SLWM practices. Central to these issues are insecure land rights. Without aligning the incentives to engage local stakeholders in land restoration and SLWM practices with a guaranteed benefit-sharing mechanism, it is unlikely that further progress will be achieved going forward.

91. **Signs of sustainability can effectively mitigate those risks.** One such example is the transformative impact of the pastoral perimeter of Guajaba-Kuagèle. Key to its successful implementation and continued operation is the intermunicipal nature of the perimeter (communes of Guétéma and Guajaba-Kuagèle). The perimeter serves herds coming from these two communes as a place to water livestock, provide fodder for livestock feed, and provide a rest place for herds. The municipalities have set up a management committee which allows them to levy a fee on the number of heads of the herd at the entrance to the perimeter. The resources of this intermunicipal fee allow the pastoral perimeter to be maintained, and the controlled movement of herds reduce their pressure on natural resources.

92. **Plans and agreements are a first step toward sustainable land and water management that must be followed by a strong commitment to act on their implementation.** The project supported numerous studies, development plans, investment plans, and local agreements, which lay the foundation for action to restore land through SLWM practices. These key documents will help secure future funds to implement approved plans. However, the GoM must commit to taking action to ensure implementation of next steps. Even then, certain aspects must be accompanied by progress on related parameters, or there is a risk that those agreements may not materialize in the foreseeable future. For instance, the forest management plans had been approved for two years before project closing, and yet the project was not able to meet its main outcome indicator primarily due to the challenges of restoration on publicly owned forestland (see Section III).

93. **Evidence from the final stakeholder workshop indicates that the training and knowledge sharing pays sustainability dividends to help sustain and grow the capacity for SLWM practices.** The creation of organizational and self-management capacities of local beneficiaries and the appropriation of sustainable NRM practices by farmers, local technical service providers, and communes, may have a multiplier effect of the activities implemented, encouraging non-beneficiary people to pursue similar approaches. The workshop reported a willingness among stakeholders to mobilize local funding to support some of the committees that were set up by the project to help maintain the activities. Furthermore, the creation of consultation frameworks at the local level facilitated a participatory and collaborative process and is proving to be continuous.



V. LESSONS AND RECOMMENDATIONS

94. **For land restoration projects to be successful, they must address land tenure issues and be based on clearly outlined benefit-sharing mechanisms, backed by communities and local authorities.**

While the dynamics causing unsustainable land and water use practices on public and private land differ, all land users seek assurances that the time and energy they invest in years of nurturing land restoration is protected for their later benefit. Without addressing the underlying land tenure insecurity, land degradation outcomes may not materialize, and they may not be sustainable. In this context, the project could have worked with local land institutions to help address some of these issues. It is also worth noting that the impacts of some land restoration techniques (assisted natural regeneration and afforestation/reforestation) take time to materialize and require a sustained effort often beyond the typical time span of a traditional project. In this context, future projects may consider a longer-term programmatic engagement to ensure sustainability of investments while replicating successes at scale. It is also important that these types of projects build in short-term incentives, while the longer-term benefits of land restoration materialize. In the case of this project, the short-term benefits from IGAs successfully incentivized beneficiaries to reduce unsustainable SLWM practices.

95. **The keystone to successful project implementation without a dedicated PIU is a proper incentive structure.** Implementation arrangements without a dedicated PIU is a model often used in countries with poor implementation capacity to strengthen institutions. The project relied on a core team of staff appointed within the implementing agency to coordinate the daily management and monitoring of tasks. This model is challenging but potentially rewarding, as the training and capacities enabled through the project are embedded in public institutions. Without a team fully dedicated to the project with adequate incentives, however, these public officials would be pulled into competing priorities of the implementing agency. This was eventually addressed through a national incentive framework, using counterpart funding, that allowed for bonuses and other benefits to align public official's responsibility with project implementation. In resource-strapped public sectors, particularly, providing proper incentives can advance implementation through improved engagement of public officials with project activities.

96. **Investing in local stakeholders pays sustainability dividends.** The project invested heavily in building local capacity, and the results are evident. During the final stakeholder workshop, beneficiaries highlighted, among the main project results, their appropriation of sustainable NRM practices and the organizational and self-management capacities created. They also highlighted the appropriation of activities and the strengthened capacity of local technical services, which allow them to continuously support local populations in these endeavors. Similarly, it was noted that the activities implemented had a multiplier effect, encouraging non-beneficiaries of the project to pursue them. In addition to this, beneficiaries shared their willingness to mobilize local funding to support the GRM committees that were set up by the project in each of the 14 communes to help monitor and resolve conflicts during implementation. This proves that those structures were both relevant and appropriate to meet local needs and sustainable to address local issues, such as land restoration and conflicts over NRM, going forward.



ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Expand the adoption of sustainable land and water management practices in the target areas in Mali

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Land area under sustainable land and water management practices in targeted areas	Hectare(Ha)	0.00 18-Oct-2013	10748.00 31-Mar-2019	3000.00 30-Sep-2019	3667.00 30-Sep-2019

Comments (achievements against targets):

Original target 34% and revised target 122% achieved. The indicator was revised for clarity in the first restructuring of June 2018. At the same time, the target value was reduced 72%. The PAD did not specify how the target value was composed. The ICR team reconstructed the target by adding the hectares planned for key activities in the PAD. The original target of 10,748 ha is defined as: i) 7,953 ha in the classified forest of Lorack Bane with reduced deforestation and forest degradation (PAD activity 2.2.2); ii) 1,815 ha of farmland where SLWM practices have been adopted by 1,400 farmer (PAD activity 2.2.2); iii) 700 ha of multi-species communal forest created by the community (PAD activity 2.1.3); and iv) 280 ha of fully restored grazing areas through assisted natural regeneration (PAD activity 2.2.3). At project end, 3,667 hectares of land are benefitting from the adoption of sustainable land and water management practices. This was achieved by: i) Adoption of SLWM practices by 1,652 farmers (outcome indicator #3) on 1,292 ha; ii) assisted natural regeneration on 828 ha of cropland and rangeland; iii) reforestation and afforestation on 820 ha; and iv) enriched pastures on 790 ha. The main reason why the project did not reach its original target of 10,748 ha relates to the single sub-target of the Lorack Bane forest, which account for 7,953 ha or 74 percent of the target. As a classified forest with pastoral vocation, forest and tree savannas occupy only about 8 percent of the territory, while shrub steppes, bare soil, and cultivated areas cover the remaining area. The project likely failed to introduce SLWM practices in the Lorack Bane forest because of insecure land tenure rights. On public land, there tend to be lower levels of ownership of the resources, and in the absence of proper incentives optimization of individual interests leads to degradation of the common resource base. Lorack Bane forest, as a classified protected area, is on publicly owned land, and the project



was unable to effectively engage the stakeholders living off the natural resources provided by the forest. It was also reported that this area also faced security risks during the last years of project implementation.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Changes (increase) in vegetation cover in targeted areas, compared to baseline	Percentage	0.00 18-Oct-2013	5.00 31-Mar-2019	0.00 30-Sep-2019	1.30 30-Sep-2019

Comments (achievements against targets):

Original target 26% achieved. The indicator formed part of the original results framework. It was proposed dropped in the first restructuring of June 2018 due to attribution issues and lack of counterfactual evidence. However, as a core GEF indicator it was kept in the RF, though its target value was dropped. The Restructuring Document highlights the centrality of vegetation cover to the project and reiterates that vegetation cover will continue to be monitored using spatial information systems. The target value was based on the annual rate of deforestation and degradation in the project area, which was 10 percent at project start. Aligned with the target for outcome indicator #1, a 10,748 ha reduction in deforestation and land degradation in year 5 would correspond with an annual deforestation land degradation rate of 5 percent for the same year. The increase in vegetation cover over the baseline would be monitored using spatiotemporal mapping techniques. While the project purchased satellite imagery of the project area to support data collection at AEDD, the maps have not been used to estimate the change in vegetation cover in the project area and any change observed could not be attributed to project activities with certainty. A better indication of project outcomes may be inferred from the achievements under outcome indicator #1, in which 3,667 hectares of land is now under SLWM practices, meaning the project contributed towards a 1.3 percent increase in vegetation cover through a reversal in land degradation and increase of agroforestry surfaces.



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Direct project beneficiaries	Number	0.00	3025.00	15000.00	18332.00
		18-Oct-2013	31-Mar-2019	30-Sep-2019	30-Sep-2019
Female beneficiaries	Percentage	0.00	50.00		68.01

Comments (achievements against targets):

For direct project beneficiaries: original target 606% and revised target 122% achieved. The target value was revised upwards 496% in the June 2018 restructuring. Direct project beneficiaries are defined as people or groups, who directly derive benefits from an intervention, such as the local population vulnerable to climate risks that has received capacity building or financial support to strengthen their productive capacity and increase their income. At project end, all concerned beneficiaries were tallied, including 16,249 beneficiaries of 658 income-generating activities and 2,083 beneficiaries at the level of other components such as 1,652 pilot farmers in agriculture, and 431 other members of pastoral cooperative societies, local tree planters, members of village brigades to fight against bush fires, etc.

For female beneficiaries: target 136% achieved. The indicator is defined to be inclusive of all female beneficiaries from sub-projects and training workshops. At project completion, 12,468 of the 18,332 direct beneficiaries were women, equal to 68%. Both the project design and the cultural context of rural Mali help explain the high achievement of women's participation in the income generating activities. First, the project specifically targeted women, vulnerable youth, and displaced people in offering support to developing alternative livelihoods. Second, women beneficiaries of the IGA tended to organize in groups. Therefore, even though the project intended for 50% of IGA to be women led, the high number of women applying in groups contributed to the majority of IGA beneficiaries being women. Third, 55% of the IGAs were related to sheep fattening (see Section 1.B, Component 3), and in Mali women are responsible for sheep husbandry. Unlike beef cattle, typically raised by men, sheep and goats can be fed and watered close to the homestead, where women tend to stay.



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Households with access to alternative livelihood activities related to sustainable land and water management practices supported by the project	Number	0.00 18-Oct-2013	0.00 31-Mar-2019	2000.00 30-Sep-2019	2708.00 30-Sep-2019
Comments (achievements against targets): Target 135% achieved. The indicator was introduced in the June 2018 restructuring to reflect project support to alternative livelihood activities at the household level and related to the adoption of sustainable land and water management practices. At project completion, 2,708 households in climate vulnerable communities have benefited directly from the project through the financing of 658 micro-income generating activities. This includes 1,212 households in the province of Nara (45%), 767 households in the province of Nioro du Sahel (28%), and 729 households in the province of Banamba (27%). This corresponds well to the distribution of 658 income-generating sub-projects. In Mali, several families will often live together as one household. Therefore, with 16,249 direct beneficiaries of 658 sub-projects indicates that on average 6 persons per household are directly benefitting from project activities as either a group or individually (see also outcome indicator #5 and intermediate indicator #1 for Component 3).					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Land users adopting sustainable land management practices as a result of the project (LDCF,LD3)	Number	0.00 18-Oct-2013	1400.00 31-Mar-2019	1600.00 30-Sep-2019	1652.00 30-Sep-2019



Comments (achievements against targets):

Original target 118% and revised target 103% achieved. The indicator was moved from the intermediate level to the outcome level and the target value was increased 14 percent in the June 2018 restructuring. The indicator is defined as the number of users (farmers, shepherders, artisans, etc.) adopting sustainable land management practices in the project areas. At project completion, 1,652 pilot farmers have adopted sustainable land and water management techniques in their farming practice at a combined area of 2,082 hectares of which 1,292 hectares are cropland and 790 hectares are enriched pastureland (see outcome indicator #1). This result was achieved by selecting the farmers through producer associations in each of the 14 project communes to act as advocates for SLWM practices. Of the farmers selected, 43 percent were in Nara province, 40 percent in Banamba province, and 17 percent in Nioro province. The pilot farmers were trained in sustainable land and water management techniques, such as composting with organic manure, ridge tillage, as well as traditional farming practices used in western Sahel to restore degraded drylands and increase soil fertility. The farmers were supported with improved seeds and agricultural equipment including working animals for the implementation of the technology.

A.2 Intermediate Results Indicators

Component: Component 1: Knowledge management, Governance and Communication

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Messages on SLWM and adaptation to CC disseminated through accessible media	Number	0.00	10000.00	15000.00	17435.00
		18-Oct-2013	31-Mar-2019	30-Sep-2019	30-Sep-2019

Comments (achievements against targets):

Original target 174% achieved and revised target 116% achieved. The indicator was revised for clarity in the June 2018 restructuring and the target adjusted upwards from 10,000 to 15,000 to reflect current activities. The indicator was defined as the cumulative number of messages disseminated and training sessions held on SLWM and climate adaptation. By project end, a total of 17,435 media messages had been disseminated in 30 communes, which



included the original 14 project communes as well as the 16 additional communes added during implementation. The high achievement may in part be explained by the additional radio messages on climate risk and SLWM under intermediate indicator #4. Other messaging was achieved through a sketch on climate adaptation and SLWM practices, which was translated into three local languages (Soninke, Peul and Bambara), and two documentary films about the project activities, which were prepared in multiple languages, including French, English and Portuguese as well as Bambara, Soninke and Peul.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of Communes which Development Plan (PDSEC) integrate SLWM and adaptation to CC issues	Number	0.00 18-Oct-2013	14.00 31-Mar-2019		14.00 30-Sep-2019

Comments (achievements against targets):

Target 100% achieved. The indicator was defined as the number of communes in which the local Communal Socio-Economic Development Plan (PDSEC) have integrated objectives and activities on SLWM and adaptation to climate change, due to project support, or have implemented at least one SLWM activity under the support of the project. At project end, all 14 original communes have incorporated SLWM and climate adaptation into the local development plans (PDSEC). This was achieved by i) organizing technical and social discussions in focus groups to identify objectives, strategies, and activities in each of the 14 beneficiary towns, ii) revising PDSEC documents, and iii) adopting the revised PDSEC documents by the local communal Steering Committee for Development Coordination and Actions.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
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Number of Local conventions or any other Agreements on SLWM and NRM approved, disseminated and implemented	Number	0.00	14.00		15.00
		18-Oct-2013	31-Mar-2019		30-Sep-2019

Comments (achievements against targets):

Target 107% achieved. The indicator was defined as the number of agreements on inclusive management of free-access natural resources (commons) adopted, disseminated, and implemented by stakeholders for reducing conflict of use and increasing sustainability. The original target which remained unchanged was 14. At project end, 15 natural resource management agreements were drawn up for each of the communes in the original project area as well as for the commune of Tougouné Rangabé in Nioro province, which covers much of Lorack Bane forest. The agreements have been signed by stakeholders after all prerequisites were completed, however, the agreements have yet to be implemented on the ground.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of sensitization sessions organized on climate hazards and adaptation options(number of radio messages)	Number	0.00	3640.00	10000.00	9976.00
		18-Oct-2013	31-Mar-2019	30-Sep-2019	30-Sep-2019

Comments (achievements against targets):

Original target 274% achieved and revised target 99.8% achieved. The indicator was revised in the June 2018 restructuring to increase the target from 3,640 to 10,000. The indicator was defined as the cumulative number of messages on preparedness to climate risks disseminated through radio to local communities and decision makers. At project end, a total of 9,976 sensitization sessions had been organized on climate risks and adaptation issues through



broadcast messages, public debates, or other radio programming. This was achieved by signing distribution agreements with nine local radio stations in the project area from 2016 to 2018.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of dissemination sessions on SLWM, NRM and climate risks held with producer organizations	Number	0.00 18-Oct-2013	560.00 31-Mar-2019	50.00 30-Sep-2019	57.00 30-Sep-2019

Comments (achievements against targets):

Original target 10% achieved and revised target 114% achieved. The indicator was revised in the June 2018 restructuring to reduce the target 91% from 560 sessions held with producer organizations (i.e. farmer cooperatives) to 50 such sessions. The indicator was defined as the cumulative number of SLWM forums organized between vulnerable agricultural producers and line departments on research and adoption of sustainable land management practices. At project end, 57 sessions on SLWM, NRM and climate risks had been held with farmer cooperatives.

Component: Component 2: Scaling-up Sustainable Land Management practices

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Total vegetative land areas	Hectare(Ha)	0.00	700.00	1600.00	2450.00



created / rehabilitated by local communities (BD2, CCM5, SFM1)		18-Oct-2013	31-Mar-2019	30-Sep-2019	30-Sep-2019
Comments (achievements against targets): Original target 350% achieved and revised target 153% achieved. The indicator target was revised upwards in the June 2018 restructuring from 700 ha to 1,600 ha, or 229%. It was defined as hectares covered with vegetation in agroforestry and grazing areas measured during the dry season.					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Effectiveness of biodiversity management in targeted areas (BD2)	Number	41.00 18-Oct-2013	51.00 31-Mar-2019		48.00 30-Sep-2019
Comments (achievements against targets): Target 92% achieved. The indicator was defined as the average of METT scores calculated for forests and other biodiversity conservation activities supported by the project. The project completed the Biodiversity Management Effectiveness Tracking Tools (METT) and the other Focal areas' tracking tools (TT) in collaboration with all key partners for the implementation of project activities. At project end, the METT score reached an average of 48, which consists of the individual scores for: (i) Lorack Bane (52); (ii) Gadiaba Kadiel (51); and (iii) Ougadou: 41.					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion



Govt institutions provided w/ capacity buildg to improve mgt of forest resources	Number	0.00 18-Oct-2013	3.00 31-Mar-2019		3.00 30-Sep-2019
Comments (achievements against targets): Target 100% achieved. The indicator was defined as the number of forest management plans approved by government act, including primary responsibility of surrounding communities and co-management principles. At project end, 3 participatory management plans have been drawn up for the forests of Gadiaba Kadiel (Forêt de Nioro), Lorack Bane and Ouagadou. The plans were approved by the Ministry in charge of the environment for the protected forests of Gadiaba Kadiel and Lorack Bane and by the Governorate of Koulikoro for the forest of Ouagadou. This was achieved on a participatory basis by diagnosing land use in collaboration with surrounding communities and other stakeholders (breeders, users of forest products such as timber, charcoal consumers, hunters, traditional healers, etc.). The plans were disseminated to surrounding communities in three workshops for each of the forests. Some implementation progress can be observed. In Gadiaba Kadiel and Guétéma, recovery works of 940 ha of degraded land have been carried out. In Banamba province, the development plan for the Fantela massif in Ouagdou forest (Commune of Sébété) has been validated. In addition, 5 ha of reforestation / afforestation with wire fence has been completed and assisted natural regeneration has been implemented on 50 ha of the forest. A 400 m2 nursery with a fence and a well for the committee in charge of managing the massif is under construction. In addition, the project supported the diffusion of woodless construction using Nubian vault technique by training 41 local masons, raising 28 demonstration buildings, promoting sustainable production and consumption modes with local artisans.					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Pastoral corridor management plans developed in participatory manner (#)	Number	0.00 18-Oct-2013	0.00 31-Mar-2019	14.00 30-Sep-2019	14.00 30-Sep-2019
Comments (achievements against targets):					



Target 100% achieved. New indicator added in the June 2018 restructuring to reflect planned activities related to transhumance, mapping, marking, and management planning of pastoral corridors. No target was approved, but the PAD outlines the adoption of 14 communal transhumance management plans (Activity 2.2.3). At project end, 14 communal transhumance management plans covering 14 project communes have been adopted. This was achieved through studies on the vulnerability of livestock at communal level, participatory consultation and planning workshops, and participatory delimitation of areas with direct involvement of stakeholders. In the process, 14 Pastoral Cooperative Societies (CPS) were created to represent the interests of pastoralists and assist in the enrichment of pastoral areas. Based on the plans, 245 kilometers of transhumance tracks have been completed of which 50 kilometers are in Banamba province and 195 kilometers are in Nara province.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Lands under SLWM practices (Farmlands, rangelands) - SFM1, LD3, and LDCF	Hectare(Ha)	0.00 18-Oct-2013	2095.00 31-Mar-2019	0.00 30-Sep-2019	0.00 30-Sep-2019

Comments (achievements against targets):

This indicator dropped because of overlap with PDO indicator "Land area under sustainable land and water management practices in targeted areas."

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Land users adopting sustainable land mgt. practices as a result of the project	Number	0.00 18-Oct-2013	1400.00 31-Mar-2019	0.00 30-Sep-2019	0.00 30-Sep-2019



Comments (achievements against targets):

This indicator was moved to the PDO level ("Land users adopting sustainable land management practices as a result of the project").

Component: Component 3: Diversification of local livelihoods

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Alternative livelihood activities supported by the project which those benefitting female and other vulnerable groups (percentage) (LDCF, SFM, CCM5, BD2)	Number	0.00 18-Oct-2013	140.00 31-Mar-2019	500.00 30-Sep-2019	658.00 30-Sep-2019

Comments (achievements against targets):

Original target 470% achieved and revised target 132% achieved. The indicator was revised in the first restructuring of June 2018. The emphasis of the wording changed from 'under implementation' to 'completed', and the target value increased 357% from 140 to 500 alternative livelihood projects to reflect actual implementation progress. The indicator was defined as the aggregation of individual and group revenue creation initiatives supported by the project for both the purpose of poverty reduction and lessening pressure on natural resources. At project end, 658 income-generating activities had been approved, of which 371 projects were located in Nara province (56%), 147 projects were located in Nioro province (22%), and 140 projects were located in Banamba province (21%). While, 36% of the IGAs were approved to women, of the total 16,249 IGA beneficiaries, 12,344 or 76% were female beneficiaries.



Phase 1 (2015/2016): A total of 251 IGAs were approved with 6,759 direct beneficiaries of which 5,466 were women (81%). Phase 2 (2016/2017): A total of 200 IGAs were approved with 5,988 direct beneficiaries including 4,381 women (73%). Phase 3 (2017/2018): A total 207 IGAs were approved with 3,502 direct beneficiaries including 2,497 women (71%).

The funded IGAs related to sheep and bovine fattening, market gardening, handicrafts, the manufacture of agricultural tools, fish farming, poultry farming, beekeeping, and arboriculture.

Component: Component 4: Coordination and monitoring & evaluation of project activities

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Safeguard instruments (ESMF, PMP, RPF and PF) are implemented in a satisfactory manner)	Yes/No	Y 18-Oct-2013	Y 31-Mar-2019	30-Sep-2019	Y 30-Sep-2019

Comments (achievements against targets):

This indicator was dropped because it is not directly linked to the PDO.



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Technical and financial management progress reports are prepared and timely submitted	Yes/No	Y 18-Oct-2013	Y 31-Mar-2019	30-Sep-2019	Y 30-Sep-2019
Comments (achievements against targets): This indicator was dropped because it is not directly linked to the PDO.					



B. KEY OUTPUTS BY COMPONENT

Outcome (i): Expand the adoption of sustainable land and water management practices in the target area in Mali	
Outcome Indicators	1. Land area under sustainable land and water management practices in targeted areas (ha) 2. Changes (increase) in vegetation cover in targeted areas, compared to baseline (diachronic mapping) (%) 3. Land users adopting sustainable land management practices as a result of the project (#) 4. Land area under sustainable landscape management practices (ha) 5. Households with access to alternative livelihood activities related to sustainable land and water management practices supported by the project (#) 6. Direct project beneficiaries (#) - Sub-Indicator: Female beneficiaries (%)
Intermediate Results Indicators	<i>Component 1: Knowledge Management, Governance and Communication</i> 1. Project Implementation Plan Messages on SLWM and adaptation to climate change disseminated through accessible media (#) 2. Number of Communes in which Development Plan (PDSEC) integrate SLWM and adaptation to CC issues (#) 3. Number of Local conventions or any other Agreements on SLWM and NRM approved, disseminated and implemented (#) 4. Number of sensitization sessions organized on climate hazards and adaptation options (#) 5. Number of dissemination sessions on SLWM, NRM and climate risks held with producer organizations (#) <i>Component 2: Scaling-up sustainable land management practices</i> 6. Total vegetative land areas created/rehabilitated by local communities (ha) 7. Effectiveness of biodiversity management in targeted areas (METT Score) 8. Government institutions provided with capacity building to improve management of forest (#) 9. Pastoral corridor management plans developed in participatory manner (#) <i>Component 3: Diversification of local livelihoods</i> 10. Alternative livelihood activities supported by the project satisfactorily completed, of which those benefitting female and other vulnerable groups (# and %)
Key Outputs by Component	Component 1: Knowledge management, governance, and communication Achievements by AEDD • 15 studies completed.



(linked to the achievement of the Objective/Outcome 1)

- 79 training sessions for beneficiaries and technicians implemented (total of 2,290 participants).
- A database at SNGIE was updated (www.sngie.ml).
- 32,118 broadcast messages on climate risks and adaptation options have been made in public across 9 local radio stations, and the training of technicians.
- 14 PDSECs revised and adopted by the municipal councils.
- Sketch on sustainable land management and climate change translated into three local languages (Soninke, Peul, and Bambara).
- 2 documentary films about the project activities were completed in three languages (French, English, and Portuguese) for the first documentary and four languages (French, Bambara, Soninke, and Peul) for the second.
- 6,000 communication material produced (flyers, t-shirt, notebook, diary, caps, and calendars).

Achievements by Mali's National Meteorological Service:

- Acquisition and programming of 300 mobile phones per 300 village focal points trained to use them in sharing and disseminating weather information
- 7 automatic weather stations acquired, installed and secured in 7 communes of the project for the collection and transmission of meteorological data
- Three Local Groups of Meteorological Support (GLAM) created and are functional
- 1,400 producers supplied with rain gauges and trained in how to use them
- 370 village focal points and 18 radio communicators trained to collect, analyze, use and distribute weather information
- 3 years of weather forecasts disseminated (2016, 2017, and 2018) with information and advisory support to beneficiaries in the project area

Component 2: Scaling-up sustainable land management practices

Techniques	Hectares	Percentage
Assisted natural regeneration	828	23
Reforestation/afforestation	820	22
Enrichment of forage seeds	790	21
Cultures	475	13
Use of organic manure	379	10
Stone barriers	147	4
Tillage	147	4



Zai ¹⁰	77	2
Defense	40	1
Fascine	18	0
Demi-Lune ¹¹	5	0
Filtrating diguette	4	0
Combined area	3,667	100

Achievements by DNEF

- Eight studies completed
- Three management plans and management developed, validated and adopted
 - Order No. 2017 2558 / MEADD-SG of August 3, 2017, for the forest of Gadiaba Kadiel
 - Order No. 2017 2559 / MEADD-SG of August 3, 2017, for the forest of Lorack Bane
 - Order No. 2017 0109 / GRKK-CAB of May 10, 2017, for the forest of Ouagadou
- 26 training sessions for 1,130 trained actors
- Dissemination of the Nubian vault technology through the construction of 28 buildings (community and private)
- 6 buildings with Nubian vault technology
- Forest areas (4) have been set up (Nioro and Nara) for a total of 140 (25 ha enrichment and 10 ha enclosure per site) with a water source (drilling and castle)
- 800 ha of assisted natural regeneration (200 per site) were carried out in the municipalities of Guétéma, Kadiaba Kadiel, Fallou, and Niamana
- 5 ha of reforestation/afforestation and 50 ha of RNA made in the communal forest Sebete
- Delimitation and mapping 4 communal forests (Kiban, Boron, Sebete, and Toubakoro)
- Recovery works - 200 ha of degraded land at Gadiaba-Kadiel and Guétéma
- Works development in the communal forest Sebete (5 ha of reforestation/afforestation with wire mesh fence, 50 ha of RNA in the mountains, and a nursery of 400 m² fenced mesh with a well)
- 15 developed natural resource management agreements
- 14 anti-firefighting brigades in place and operational.

Achievements by DNPIA

¹⁰ Zai or Tassa is a farming technique to dig pits 20–30 cm long and deep and 90 cm apart in the soil during the pre-season to catch water and concentrate compost. The technique is traditionally used in western Sahel to restore degraded drylands and increase soil fertility.

¹¹ Cultivation in half-moons consists of arrangements using the same principle as zai but which are more suitable for steep slopes. These half-moons, 2 to 3 m wide, have a crescent shape.



- 5 studies completed
- 14 communal transhumance management plans covering 14 target communes
- 6 training sessions for 230 trained actors
- Materialization of 245 km transhumance tracks in the provinces of Banamba (Sebete: 12 km; Toubacoro: 13 km; Kiban: 25 km) and Nara (Dilly: 97 km; Fallou: 35 km; Ouagadou: 37 km; Niamana: 26 km)
- 1,510 ha enrichment at 12 grazing areas (grazing areas) by the RNA at 100 ha pastoral perimeter, 40 ha by seeding 60 ha reforestation
- 14 Pastoral Cooperative Societies (CPS) created
- 12 kits (materials) to support the enrichment of pastoral areas have been acquired
- 11 positive wells were drilled in Dilly (1), Koronga (1), Fallou (1), Dabo (1), Niamana (1), Boron (1), Kadiaba Kadiel (1), Yérééré (1), and Kiban (3) of which 3 were converted to grazing Kiban well
- Two ponds arranged in the common Kadiaba Kadiel.

Achievements by DNA

- 1 study completed
- 14 training sessions for 1,400 trained actors
- 1,332.3 ha of crops realized that 642.25 a of certified seed, 49 ha basic seed and 641.05 ha in other technologies SLWM (compost, Zai, half moon, stony cordon labor in ridges, RNA)
- 3 ha of market garden perimeters in a wall system put in place in Nioro (2) and Banamba (1) provinces
- 1,400 selected producers formed on 6 technologies Sustainable Management of Land (NAS, composting, ridge tillage, cords, stony, zai and half-moon) (see DNA brochures)
- 1,400 producers supported by improved seeds and agricultural equipment (donkey carts and so on)
- 4 fields schools implemented in the provinces of Nioro (1), Nara (1), and Banamba (2)

Component 3: Diversification of local livelihoods

Achievements by AEDD

- 2 studies completed
- 658 subprojects funded (Banamba: 140, Nara 371, and Nioro: 147)
- 16,249 beneficiaries including 12,344 women, or 76% women beneficiaries
- 12 simplified accounting training sessions for 766 trained beneficiaries.

Type of Project	Nioro	Banamba	Nara		Total
	Zone 1	Zone 2	Zone 3	Zone 4	



Sheep fattening	82	38	135	113	368
Market gardens	29	41	4	23	97
Bovine fattening	11	5	36	1	53
Arts and crafts	5	11	12	14	42
Arboriculture	8	13	4	6	31
Aviculture	5	15	6	2	28
Catching fish	0	6	2	4	12
Production plants	4	0	5	0	9
Mowing grass	2	0	5	0	7
Apiculture	0	6	0	0	6
Sesame processing	0	5	0	0	5
Milk processing	1	0	0	0	1
Total	147	140	209	162	658

	Number of Projects Approved			Amount	Type of projects
Zone	Phase I	Phase II	Phase III	(CFAF)	
Zones 1	54	52	41	589,037,010	Arts and crafts. Fattening, agroforestry and production of fruit crops. gardening, poultry farming
Zones 2	63	42	35	694,624,925	Arts and crafts, processing of agricultural products, fattening, beekeeping, agroforestry and production of fruit crops, gardening, catching fish, sesame production, poultry farming
Zones 3	78	55	76	772,935,920	The processing of agricultural products, fattening, agroforestry and production of fruit crops, gardening, pottery, poultry
Zones 4	56	52	55	578,479,285	Arts and crafts, fattening, agroforestry and production of fruit crops, gardening, pottery, fish
Total	251	200	207	2,635,077,140	



Component 4: Project coordination, monitoring and evaluation

Achievements by AEDD

- 8 studies
- 35 training sessions for 589 trained actors
- 5 sessions of the Committees of Orientation, Coordination and Follow-up of Development Actions at local and regional level facilitated on the project
- 8 sessions of the Steering Committee were held
- 6 work plans and annual budget consolidated and harmonized (2014, 2015, 2016, 2017, 2018, and 2019)



Table 1.1. List of Studies Completed During Project Implementation, by Component

Sl. No.	Name of Study (in English)	Name of Study (in French)
Component 1: Knowledge management, governance, and communication		
1	Evaluation of the existing national environmental information management initiatives (SI-SLM, ILWAC, SNGIE, and so on)	<i>Evaluation des initiatives nationales de gestion de l'information environnementale existantes (SI-GDT, ILWAC, SNGIE, etc.)</i>
2	Institutional support to SNGIE for the collection and analysis of environmental data and metadata	<i>Appui institutionnel au SNGIE pour la collecte et l'analyse des données et métadonnées environnementales</i>
3	The report on the state of the environment in Mali 2015–2017	<i>Le Rapport sur l'état de l'environnement au Mali 2015–2017</i>
4	Development of the framework document SNGIE	<i>Elaboration du document cadre du SNGIE</i>
5	Collections biophysical data in environmental monitoring observatories Sikasso and Baoule	<i>Collectes données biophysiques dans les observatoires de surveillance environnementale de Sikasso et du Baoulé</i>
6	Collections socioeconomic data in environmental monitoring observatories Sikasso and Baoule	<i>Collectes données socio-économiques dans les observatoires de surveillance environnementale de Sikasso et du Baoulé</i>
7	Study to identify sustainable funding mechanism for SNGIE	<i>Etude en vue d'identifier un mécanisme de financement durable pour le SNGIE</i>
8	Technical evaluation to map carbon sources in the project intervention area	<i>Evaluation technique afin d'établir la cartographie des sources de carbone dans la zone d'intervention du projet</i>
9	Establishing the mapping of land cover change in the project area	<i>Etablissement de la cartographie de l'évolution du couvert végétal dans la zone du projet</i>
10	Consolidation of the best climate risk management practices in NRM systems and farming production	<i>Consolidation des meilleures pratiques de gestion des risques climatiques dans les systèmes de gestion des ressources naturelles et de production agropastorale</i>
11	Participatory identification of shared open access natural resources (grazing areas, watersheds, transhumance corridors, and so on), the competitive use is a source of conflict	<i>Identification participative des ressources naturelles partagées à accès libre (zones de pastoralisme, bassins hydrographiques, corridors de transhumance, etc.) dont l'utilisation concurrentielle constitue une source de conflits</i>
12	Development of intercommunity or plans for the use of natural resources	<i>Elaboration de plans communautaires ou intercommunautaires pour l'utilisation des ressources naturelles</i>
13	Revision / development of 14 PDSEC documents	<i>Révision/élaboration des 14 documents du PDSEC</i>
14	Feasibility study of pilot activities in revised PDSEC	<i>Étude de faisabilité des activités pilotes des PDSEC révisés</i>
15	Analysis of existing local platforms or 'dialogue spaces' and their adequacy	<i>Analyse des plateformes locales existantes ou des « espaces de dialogue » et de leur adéquation</i>
Component 2: Scaling-up sustainable land management practices		
1	Studies (research, inventories and inventory, characterization, and so on) on biodiversity (flora, fauna, and vegetation) in the target area to	<i>Etudes (recherche, inventaires et recensement, caractérisation, etc.) sur la biodiversité (flore, faune, végétation) dans la zone cible afin de</i>



Sl. No.	Name of Study (in English)	Name of Study (in French)
	contribute to the CBA and the preparation of inter-resource management plans landscape/land use	<i>contribuer à l'analyse coûts-avantages et à la préparation des plans de gestion des ressources intercommunales du paysage/utilisation des terres</i>
2	CBA of local biodiversity and ecosystem conservation for the benefit assessment regarding changes related to forest biodiversity and wildlife	<i>Analyse coûts-avantages de la biodiversité locale et de la conservation des écosystèmes pour l'évaluation des avantages concernant les changements liés à la biodiversité de la forêt et de la faune</i>
3	Study ecotourism potential target areas around protected areas	<i>Étude du potentiel écotouristique des zones cibles, à savoir autour des aires protégées</i>
4	Market opportunities identification study to increase the production of goods respectful of biodiversity (including non-timber forest products, the aesthetic value/ecotourism, wild foods, the active molecules for medicine, genetic resources, fibers, and so on)	<i>Étude d'identification des opportunités de marchés afin d'accroître la production des biens respectueux de la biodiversité (notamment les produits forestiers non ligneux, la valeur esthétique/écotourisme, les aliments sauvages, les molécules actives pour la médecine, les ressources génétiques, les fibres, etc.)</i>
5	Inventory of local best practices Mode of sustainable production and consumption (MCPD) in the project areas	<i>Inventaire des meilleures pratiques locales du Mode de production et de consommation durable (MPCD) dans les zones du projet</i>
6	Diagnostic studies of the three forests of the project intervention area	<i>Études diagnostiques des trois massifs forestiers de la zone d'intervention du projet</i>
7	Development of 3 development plans and participatory management were developed for forest Kadiaba Kadiel (Forest Nioro), Lorack Bane, and Ouagadou	<i>Elaboration des 3 plans d'aménagement et de gestion participative ont été élaborés pour les forêts de Gadiaba Kadiel (Forêt de Nioro), Lorack Bane et Ouagadou</i>
8	Delimitation and mapping 4 communal forests (Kiban, Boron, Sebete, and Toubakoro)	<i>Délimitation et la cartographie de 4 forêts communales (Kiban, Boron, Sébété, Toubacoro)</i>
9	Preparation of suitable agroforestry packages ecologically (such as improved fallows legumes, shrubs, and trees in versatile fields of millet and sorghum, the combination of jatropa/crops, and so on	<i>Préparation de paquets d'agroforesterie adaptés sur le plan écologique (tels que les jachères de légumineuses améliorées, les arbres et arbustes à usages multiples dans les champs de petit mil et de sorgho, la combinaison de jatropa/cultures, etc</i>
10	A development study of the plain of Yérééré	<i>Une étude d'aménagement de la plaine de Yérééré</i>
11	Study 245 km demarcation of transhumance routes in two of the project interventions provinces (Nara and Banamba)	<i>Etude de délimitation de 245 km de pistes de transhumance dans deux des trois cercles d'intervention du projet (Nara et Banamba)</i>
12	Study on enrichment courses	<i>Etude sur l'enrichissement des parcours ;</i>
13	Study identification and delineation of pastoral areas with populations	<i>Etude d'identification et de délimitation des périmètres pastoraux avec les populations</i>
14	Geophysical Study of water points at 3 sites perimeter for 11 towns selected for the realization of pastoral areas	<i>Etude géophysique des points d'eau à raison de 3 sites par périmètre pour les 11 communes</i>



Sl. No.	Name of Study (in English)	Name of Study (in French)
		<i>retenues pour la réalisation des périmètres pastoraux</i>
15	Study of biomass estimation in pastoral areas	<i>Etude d'estimation de la biomasse au niveau des périmètres pastoraux</i>
Component 3: Diversification of local livelihoods		
1	Economic viability of IGAs	<i>Viabilité économique des activités génératrices de revenus (AGR)</i>
2	Technical and financial audit AGR in 2017	<i>Audit technique et financier AGR en 2017</i>
Component 4: Project coordination, monitoring and evaluation		
1	Study of implementation of the monitoring and evaluation system	<i>Etude de mise en place du système de suivi-évaluation</i>
2	Study of establishment of project baseline	<i>Etude d'établissement de la situation de référence du projet</i>
3	Identification study monitoring tools and mechanisms of carbon sequestration	<i>Etude d'identification des outils et mécanismes de suivi de la séquestration carbone</i>
4	Study monitoring the carbon sequestration	<i>Etude de suivi de la séquestration carbone</i>
5	The environmental and social audit of the project	<i>L'audit environnemental et social du projet</i>
6	Capitalization of project achievements	<i>Capitalisation des acquis du projet</i>
7	Development of a new project to another phase of PGRNCC	<i>Elaboration d'un nouveau projet pour une autre phase du PGRNCC</i>
8	Development completion report	<i>Elaboration du rapport d'Achèvement</i>



ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Maman-Sani Issa	Task Team Leader(s)
Mahamadou Bambo Sissoko	Procurement Specialist(s)
Celestin Adjalous Niamien	Financial Management Specialist
Remi Kini	Team Member
Lucson Pierre-Charles	Team Member
Maman-Sani Issa	Social Specialist
Fatoumata Diourte Berthe	Team Member
Supervision/ICR	
Emeran Serge M. Menang Evouna	Task Team Leader(s)
Boubacar Diallo, Mamadou Sangare	Procurement Specialist(s)
Tahirou Kalam	Financial Management Specialist
Virginie A. Vaselopoulos	Team Member
Evelyn Huguette Madozein	Procurement Team
Rahmoune Essalhi	Team Member
Aoua Toure Sow	Procurement Team
Aissata Diop Diallo	Procurement Team
Fatoumata Diourte Berthe	Procurement Team
Mahamadou Bambo Sissoko	Procurement Team
Bougadare Kone	Environmental Specialist
Mahamadou Ahmadou Maiga	Social Specialist
Tolidji Blaise Donou	Environmental Specialist
Mirko Ivo Serkovic	ICR Team Lead
Sanne Agnete Tikjoe	ICR Lead Author
Lelia Croitoru	ICR Contributor



B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
Preparation		
FY14	0	354.33
Total	0.00	354.33
Supervision/ICR		
FY14	1.600	9,453.62
FY15	3.550	30,363.41
FY16	2.800	31,018.80
FY17	5.836	33,970.85
FY18	4.801	16,149.08
FY19	10.928	47,453.42
FY20	2.862	8,848.19
Total	32.38	177,257.37

**ANNEX 3. PROJECT COST BY COMPONENT**

Components	Amount at Approval (US\$, millions)	Amount at Restructuring June 2018 (US\$, millions)	Amount at Restructuring April 2019 (US\$, millions)	Actual at Project Closing (US\$, millions)	Percentage of Approval
Component 1: Knowledge management, governance, and communication	4.86	3.45	2.94	2.80	58
Component 2: Scaling-up sustainable land management practices	7.06	7.43	7.73	7.49	106
Component 3: Diversification of local livelihoods	6.69	5.44	6.69	6.15	92
Component 4: Project coordination, monitoring and evaluation	2.81	5.10	4.06	3.73	133
Total	21.42	21.42	21.42	20.16	94

Note: The actual amounts disbursed by component were obtained from Client Connection at the date of finalizing this document and from the Borrower for GOM's contribution (US\$ 1 million).

Table 3.1. IDA Grant

Components	Amount at Approval (US\$, millions)	Amount at Restructuring June 2018 (US\$, millions)	Amount at Restructuring April 2019 (US\$, millions)	Actual at Project Closing (US\$, millions)	Percentage of Approval
Component 1: Knowledge management, governance, and communication	2.90	1.90	1.61	1.45	50
Component 2: Scaling-up sustainable land management practices	2.00	2.09	2.34	2.10	105
Component 3: Diversification of local livelihoods	5.00	5.44	5.21	4.69	94
Component 4: Project coordination, monitoring and evaluation	2.10	2.57	2.84	2.71	129
Total	12.00	12.00	12.00	10.95	91

Note: The IDA grant was issued in Special Drawing Rights (XDR). Over the life of the project, the XDR appreciated 10 percent against the U.S. dollar.



Table 3.2. GEF Grant

Components	Amount at Approval (US\$, millions)	Amount at Restructuring June 2018 (US\$, millions)	Amount at Restructuring April 2019 (US\$, millions)	Actual at Project Closing (US\$, millions)	Percentage of Approval (US\$, millions)
Component 1: Knowledge management, governance, and communication	0.76	0.50	0.39	0.39	51
Component 2: Scaling-up sustainable land management practices	4.30	4.55	4.58	4.58	107
Component 3: Diversification of local livelihoods	1.19	1.20	1.05	1.05	88
Component 4: Project coordination, monitoring and evaluation	0.33	0.32	0.55	0.49	148
Total	6.57	6.57	6.57	6.51	99

Table 3.3.LDCF Grant

Components	Amount at Approval (US\$, millions)	Amount at Restructuring June 2018 (US\$, millions)	Amount at Restructuring April 2019 (US\$, millions)	Actual at Project Closing (US\$, millions)	Percentage of Approval (US\$, millions)
Component 1: Knowledge management, governance, and communication	0.50	0.33	0.26	0.26	52
Component 2: Scaling-up sustainable land management practices	0.76	0.81	0.81	0.81	107
Component 3: Diversification of local livelihoods	0.50	0.50	0.44	0.41	82
Component 4: Project coordination, monitoring and evaluation	0.09	0.27	0.34	0.22	244
Total	1.85	1.91	1.85	1.70	92



ANNEX 4. EFFICIENCY ANALYSIS

1. The efficiency analysis is based on two criteria: (a) economic analysis and (b) implementation efficiency. Based on these analyses, the efficiency is rated Modest.

Economic Analysis

2. At the end of the project, limited data availability on its impacts—due to security concerns, presence of a wide variety of interventions, and potential long-term time frame for some of them to show impacts¹²—makes it impossible to conduct a CBA for the whole project or even for single activities. The same constraints also applied to the economic analysis of the PAD: based uniquely on results of previous studies and operations, it indicated possible economic rates of returns of about 19 percent to 53 percent for different IGAs¹³ and of 34 percent for selected SLWM technologies. This section provides a description of project benefits, a CEA, and an incremental and adaptation cost analyses for the GEF/LDCF resources.

Project Benefits

3. The project generated several benefits:

- **Local benefits.** The project increased the production of vegetables, livestock, fish, crafts, and so on due to alternative IGAs and improved agricultural productivity on the land subject to SLWM practices. While most IGAs provided net benefits by 2016, it is not known either how many have been maintained by the end of the project or the extent to which they released pressure on the environment.
- **National benefits.** Improved ecosystem services due to the adoption of SLWM. Results of land cover maps conducted in 2014 and 2019 indicate an increase in vegetal cover by 2–4 percent of the area of five communes supported by the project. However, the extent to which the project contributed to this increase is not known. In addition, lack of data on changes in ecosystem services (for example, reduced erosion and sedimentation and improved fertility) make it hard to quantify the actual magnitude of these benefits.
- **Global benefits.** Through its interventions on adopting SLWM, the project also provided benefits with global significance: promoting reversal of current trends in land degradation (3,667 ha with SLWM), stimulating conservation and sustainable use of biodiversity (820 ha reforested), and supporting enhancement of carbon benefits from reforestation and reduced forest fires.

¹² For example, it takes about four years for eucalyptus and seven years for acacia plantations to produce tangible benefits (communications PIU), and even longer to show visible environmental benefits.

¹³ These include small-scale irrigation for vegetable production, processing of peanut butter, small ruminant fattening, and beekeeping.



CEA

4. Results of a CEA at the project and component levels are summarized in Section II.C Table 6. Overall, the project disbursed US\$20.2 million to about 18,300 direct beneficiaries of activities related to knowledge management, adoption of sustainable practices, and livelihoods diversification. This corresponds to a unit cost of US\$1,100 per beneficiary, which is considerably lower than that estimated at appraisal (US\$7,100 per beneficiary). However, this cost is higher than in other countries of the region, for example, Ghana¹⁴ (US\$130 per beneficiary), Ethiopia¹⁵ (US\$630) and Sudan¹⁶ (US\$155).

5. **Component 2.** Through this component, the project disbursed US\$7.2 million to adopt SLWM practices on 3,667 ha. This gives a unit cost of about US\$2,000 per ha, which is in the range found for other African countries (US\$200–US\$2,300, with a median of US\$670¹⁷). Physical quantification of the impact of these interventions is not available;¹⁸ however, available studies in other areas (Kelka forest, Mali) indicate that reforestation and agroforestry could be very attractive, with benefit-cost ratios of 2–5.¹⁹ These studies also point out that relatively high investment costs and open access resource remain challenges to their adoption.

6. **Component 3.** The project provided micro-grants for a total of US\$4.7 million to about 16,250 people.²⁰ This corresponds to an average grant of US\$290 per beneficiary, which is in the same range as that of other projects in Cameroon (US\$340), Ghana (US\$200), and Togo (US\$200)²¹ (Table 6). The grants were used to invest in activities such as sheep breeding, gardening, and aviculture. A CBA conducted in 2016 indicated that (a) most of the activities provided positive net benefits in 2015, with benefit-cost ratios of 1.4–5 and (b) if these activities were sustained for a period of 10 years, they would have internal rate of returns of about 13 percent.²²

7. In conclusion, the project cost effectiveness is relatively low, primarily due to the high cost for adopting SLWM practices on an area almost three times lower than that indicated at appraisal (3,667 ha versus 10,748 ha). Certain project activities are cost-effective (for example, some SLWM practices,

¹⁴ Based on a project cost of US\$62.8 million and about 100,000 beneficiaries (Ghana Landscape Restoration Project, P171933, PAD, under preparation).

¹⁵ Based on a project cost of US\$96.2 million and 740,831 beneficiaries (Ethiopia Sustainable Land Management Project, P133133, ICR, page 14).

¹⁶ Based on a project cost of US\$7.7 million and 50,000 beneficiaries (Sudan Sustainable Natural Resources Management, P129156, PAD, page 7).

¹⁷ Based on Giger et al. (2015) values adjusted to 2019 prices. The values represent establishment costs drawn from 167 case studies in Africa dealing with different types of SLWM measures (for example, improvement of soil cover; plantations and reseeding of trees, grasses, and perennial plants; change of land use types; and so on).

¹⁸ This is due to limited monitoring and also because some tangible benefits are expected to occur after project closure (for example, seven years after reforestation with acacia and eucalyptus).

¹⁹ Sidibe, Y., M. Myint and V. Westerberg. 2014. *An Economic Valuation of Agroforestry and Land Restoration in the Kelka Forest in Mali. Assessing the Socioeconomic and Environmental Dimensions of Land Degradation*. Report for the Economics of Land Degradation Initiative, by International Union for Conservation of Nature.

²⁰ Republique de Mali. 2019. *Raport de capitalization des acquis des AGRs finances par le Projet de Gestion des Ressources Naturelles et Changement Climatique (PGRNCC) dans les communes cibles de Nioro, de Banamba et de Nara*.

²¹ Cameroon Ngoyla Mintom Project (P118018), Togo Integrated Disaster and Land Management Project (P123922), Ghana Sustainable Land and Water Management Project (P098538).

²² Cisse, Y. *L'étude de la viabilité économique des activités génératrices de revenus (AGR) dans les communes d'intervention du projet de gestion des ressources naturelles et changements climatiques (PGRNCC) au Mali*.



providing IGAs); however, it is not known whether they were sustainable and beneficial by the end of the project. Finding effective ways to monitor the impacts of interventions under the country's uncertain conditions would be crucial to better understand and estimate the economic viability of future projects.

Incremental and Additional Cost Analyses

8. At appraisal, an incremental cost analysis for GEF funds and an additional cost analysis for LDCF funds were conducted. The analyses assumed a baseline scenario with a cost of US\$13 million²³ and a GEF/LDCF alternative of US\$8.5 million, consisting of GEF support of US\$6.6 million, contributing to the focal areas land degradation (LD3), biodiversity (BD2), sustainable forest management (SFM1), and climate change mitigation (CCM5) and LDCF support of US\$1.9 million, contributing to climate change adaptation (CCA2) (Table 4.1.).

Table 4.1. GEF/LDCF and Co-financing by Source of Funding (US\$, millions)

Funding Source	Original Amount (expected at appraisal)	Actual Amount (disbursed at completion)
GEF/LDCF		
• Land degradation	1.9	1.9
• Biodiversity	1.4	1.4
• Climate change mitigation	1.9	1.8
• Sustainable forest management	1.4	1.4
• LDCF	1.9	1.8
Total GEF/LDCF	8.4	8.3
Direct co-financing		
• IDA	12.0	11.0
• GoM	1.0	1.0
Total direct co-financing	13.0	12.0
Ratio (direct co-financing: GEF/LDCF)	1.5	1.4
Parallel financing		
• Terrafrica	0.0	0.1
• DRMCCA ²⁴	1.3	0.0
• OISDCSL ²⁵	0.9	0.0
• FAPP ²⁶	5.8	0.0
Total parallel financing	8.0	0.1

Source: PAD for the original amounts, GoM for the actual amounts.

9. The analysis suggested that without the GEF support, the trend in biodiversity and natural ecosystems depletion will continue, accelerating the loss of ecosystem services, with midterm adverse impacts: degradation of three forests ecosystems (Lorack Bane, Gadjiaba Khadiel, and Ouagadou); degradation of productive resources (crop lands, pastoralism lands, agrobiodiversity, and so on);

²³ See PAD, table 3, page 85. These funds included IDA (US\$12 million) and GoM (US\$1 million).

²⁴ DRMCCA: "Disaster Risk Management and Climate Change Adaptation" in Mali (financed by GFDRR).

²⁵ OISDCSL: Operational Information System for DRM, Climate change and SLWM in Mali (financed by the Integrated Land and Water Management for Adaptation to Climate Variability and Change -ILWAC- Trust Fund).

²⁶ FAPP: Fostering Agricultural Productivity Project (multi-donor trust fund).



increased conflict over the use of natural resources; and limited capacity of protecting the forest. Without the LDCF's support, there would be limited decision making and management capacity for adaptation and building resilience to climate change. Moreover, the lives and livelihoods of beneficiaries, especially in the most vulnerable communes, would continue to be under threat given the context of Mali's climate vulnerabilities.²⁷ The GEF/LDCF alternative was expected to blend the IDA resources to support scaling up of improved NRM and development of community-based livelihoods.

10. **Incremental cost analysis.** At the end of the project, the disbursed GEF grants amount to US\$6.5 million, corresponding to 99 percent of the estimated GEF cost at appraisal (Table 4.1.). These funds leveraged direct co-financing of about US\$12 million, from IDA and GoM. The ratio direct co-financing/GEF-LDCF funds (1.4: 1) is in the same range as that expected at appraisal (1.5: 1). In addition, through its focus on scaling up SLWM practices, the project contributed to the focal areas of land degradation, sustainable forest management, biodiversity, and climate change mitigation, through the following achievements and global environment benefits:

- **Land degradation.** The project has made a step forward in sharing knowledge regarding SLWM practices (for example, using organic manure, adopting stone walls, and zoning), providing the equipment (for example, improved seeds), and implementing necessary investments (for example, creating 16 water points in water-scarce areas) for improving agricultural and rangeland productivity. These actions improved farmers' knowledge and capacity about concrete techniques to reverse land degradation and increase on-site benefits in the longer run. At the end of the project, more than 1,600 farmers have adopted SLWM practices on 3,667 ha. However, while this represents an important project outcome, the original project target remained largely underachieved (10,748 ha).
- **Sustainable forest management.** The project provided technical assistance to support good management practices of forests, for example, conducting a forest valuation study,²⁸ promoting woodless construction techniques to fight against wood cutting,²⁹ organizing events to share knowledge on opportunities to market forest products while protecting ecosystem services and developing participatory management plans for Gadiaba Kadiel, Lorack Bane, and Ouagadou forests. In addition, it provided training on fighting bushfires, which helped reduce the area of burnt forest (for example, from 600 ha to 36 ha per year in Sébété, Banamba province) and reforest an area of 820 ha.
- **Biodiversity.** The project has supported the conservation of biodiversity in several ways. It provided technical assistance in understanding the importance of biodiversity conservation (for example, conducting a biodiversity inventory in the target areas and disseminating knowledge on marketing forest products while conserving biodiversity). In addition, as a multisectoral project, it implemented concrete actions for conserving the biodiversity related to several ecosystems: forests, through reforestation and reduced forest fires on the

²⁷ Specifically, there would be gaps in knowledge related to hydrological and meteorological forecast techniques and practices that reduce pressure on natural resources and skills and capacities to implement adaptation needs.

²⁸ République du Mali. 2017. *Rapport de l'analyse des coûts et des avantages de la biodiversité locale et de la conservation des écosystèmes pour l'évaluation des avantages concernant les changements liés à la biodiversité de la forêt et de la faune.*

²⁹ For example, the establishment of an agreement with the Nubian Vault Association to disseminate the woodless construction technique, as a way to fight against wood cutting in the context of climate change.



areas mentioned earlier; rangelands, through zoning (40 ha) and pasture enrichment (790 ha); and agriculture, by providing technical assistance, water gauges, water points, and improved seeds, which helped improve crop productivity (475 ha).

- **Climate change mitigation.** The project made progress in transitioning to a low-carbon development path from improved land management. Through a study conducted for the identification of carbon sources in the intervention areas (2017) and the promotion of woodless techniques for construction, the project raised awareness of the importance of climate change mitigation. In addition, it contributed to climate change mitigation from the reforestation of 820 ha and from reduced forest fires (for example, from 600 ha to 36 ha per year in Sébété, Banamba province).
- **Support to the GGW Initiative.** In addition, by adopting appropriate SLWM techniques, sustainable forest management practices and other IGAs within a context of integrated landscape approach, the project contributed directly to the larger GGW Initiative toward combatting the effects of desertification and climate change.

11. **Additional adaptation cost analysis.** At the end of the project, US\$1.6 million of LDCF funds have been disbursed, or 86 percent of the approved LDCF funds. These resources contributed significantly to the following:

- Raise awareness about climate change risks and adaptation options, by disseminating agrometeorological messages through accessible media (17,435 at completion versus 10,000 at appraisal); conducting sensitization sessions on climate hazards and adaptation options (9,976 at completion versus 3,640 at appraisal); integrating issues related to climate change adaptation in development plans (14 communes, both at appraisal and completion); and providing equipment for better adaptation to climate change (for example, 1,400 vulnerable farmers equipped with rain gauges and trained in their use, which allowed them to better identify the sowing period for certain crops).
- Expand the existing area under climate resilient practices (for example, use of improved seeds, zoning, and pasture enrichment). This area was incorporated within the broader indicator 'land area under sustainable and water management practices in targeted areas', which target (10,748 ha) was underachieved at completion (3,667 ha).
- Promote alternative IGAs (for example, craft making, cattle breeding, fishing, and milk processing), which diversified the income sources of vulnerable communities as a way to adapt to climate change. The project promoted 658 microprojects (achieved target), with high women participation (76 percent at completion versus 36 percent at appraisal). As mentioned earlier, the extent to which these activities were sustained till the end of the project is not known.



ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

The ICR was shared with the borrower on March 9, 2020. While the borrower did not provide written comments, the team received valuable verbal feedback to key sections, most notably related to the impact of IGAs on natural resources and household resilience, which was incorporated into the ICR.



ANNEX 6. SUPPORTING DOCUMENTS

World Bank Project and Financing Documents

- Project Agreement - December 23, 2013. Available at: <http://documents.worldbank.org/curated/en/808851468048873540/Official-Documents-Project-Agreement-Grant-H890-ML-and-TF016288-TF016307-Closing-Package>
- IDA Financing Agreement - December 23, 2013 (Grant Number H890-ML). Available at: <http://documents.worldbank.org/curated/en/742691468049178020/Official-Documents-Financing-Agreement-Grant-H890-ML-Closing-Package>
- GEF Grant Agreement - December 23, 2013 (Grant Number TF016288). Available at: <http://documents.worldbank.org/curated/en/177951468279937044/Official-Documents-GEF-Grant-Agreement-TF016288-Closing-Package>
- LDCF Grant Agreement - December 23, 2013 (Grant Number TF016307). Available at: <http://documents.worldbank.org/curated/en/379811468048873815/Official-Documents-LDCF-Grant-Agreement-TF016307-Closing-Package>
- Amendment Letter to the IDA Financing Agreement dated August 1, 2018. Available at: <http://documents.worldbank.org/curated/en/468181534796497361/pdf/ITK425962-201807201619.pdf>
- Project Appraisal Document - November 8, 2013 (Report No: 74820-ML). Available at: <http://documents.worldbank.org/curated/en/660051468299651254/Mali-Natural-Resources-Management-in-a-Changing-Climate-Project>
- Aide Memoires for Project Supervision Missions
- Project Implementation Status and Results Reports Sequence # 1–10
- Midterm Review of February 1–10, 2017
- Restructuring Paper dated June 21, 2018 (Report No.: RES31290). Available at: <http://documents.worldbank.org/curated/en/862221555569811026/Mali-Natural-Resources-Management-in-a-Changing-Climate-in-Mali-Project-Restructuring>
- Restructuring Paper dated April 25, 2019 (Report No.: RES36180). Available at: <http://documents.worldbank.org/curated/en/626101556220677358/Disclosable-Restructuring-Paper-NATURAL-RESOURCES-MANAGEMENT-IN-A-CHANGING-CLIMATE-IN-MALI-P145799>



World Bank Group Engagement Strategy Documents

- Interim Strategy Note FY14–FY15
- Country Partnership Framework FY16–FY19 (Report No. 94005-ML)

Other Documents

- Final Borrower ICR, September 2019.
- Final Report on Income-Generating Activities (Original title in French: *Rapport de Capitalisation des Acquis des AGRs Finances par le Projet de Gestion des Ressources Naturelles et Changement Climatique (PGRNCC) - Dans les Communes Cibles de Nioro, de Banamba et de Nara*), January 2019.
- Cartographic Evolution of Vegetation Cover in the Project Intervention Area (Classified forest of Gadiaba Kadiel, Classified forest of Lorack Bane and Massif of Ouagadou) (Original title in French: *Cartographie de l'Evolution du Couvert Vegetal dans la Zone d'Intervention du PGRNCC (Forêt classée de Gadiaba Kadiel, Forêt classée de Lorack Bane et Massif de Ouagadou)*, October 2017.
- Final Audit Report on Environmental and Social Safeguards (*Audit Environnemental et Social des Activités du Projet de Gestion des Ressources Naturelles et Changements Climatiques PGRNCC*), August 2019.



ANNEX 7. MAP AND PROJECT AREA

Table 7.1. Original Project Intervention Area

No.	Region	Province	Commune	Area (km ²)	Population	Households	Forests/Protected Areas
1	Kayes	Nioro (10,576 km ²)	Gadjiaba Khadiel	175	9,926	1,906	Gadjaba Khadiel Forest
2			Yerere	419	13,487	2,305	Lorack Bane Gazetted Forest
3			Guétéma	231	9,332	1,475	
			<i>Subtotal</i>	<i>825</i>	<i>32,745</i>	<i>5,686</i>	
4	Koulikoro	Banamba	Boron	2,011	38,106	5,683	
5			Sebete	919	4,060	607	
6			Toubakoro	1,360	14,374	2,105	
7			Kiban	237	12,389	2,120	
			<i>Subtotal</i>	<i>4,527</i>	<i>68,929</i>	<i>10,515</i>	
8		Nara (30,859 km ²)	Dilly	5,350	38,449	7,102	
9			Koronga	1,274	11,011	1,320	
10			Dabo	1,386	11,624	1,759	
11			Guire	7,160	19,875	3,338	
12			Fallou	3,100	30,035	4,360	
13			Niamana	4,640	28,080	4,237	
14			Ouagadou	1,050	18,230	2,962	Ouagadou Forest
			<i>Subtotal</i>	<i>23,960</i>	<i>157,304</i>	<i>25,078</i>	
Total	2	3	14	29,312^a	258,978^b	41,279	3

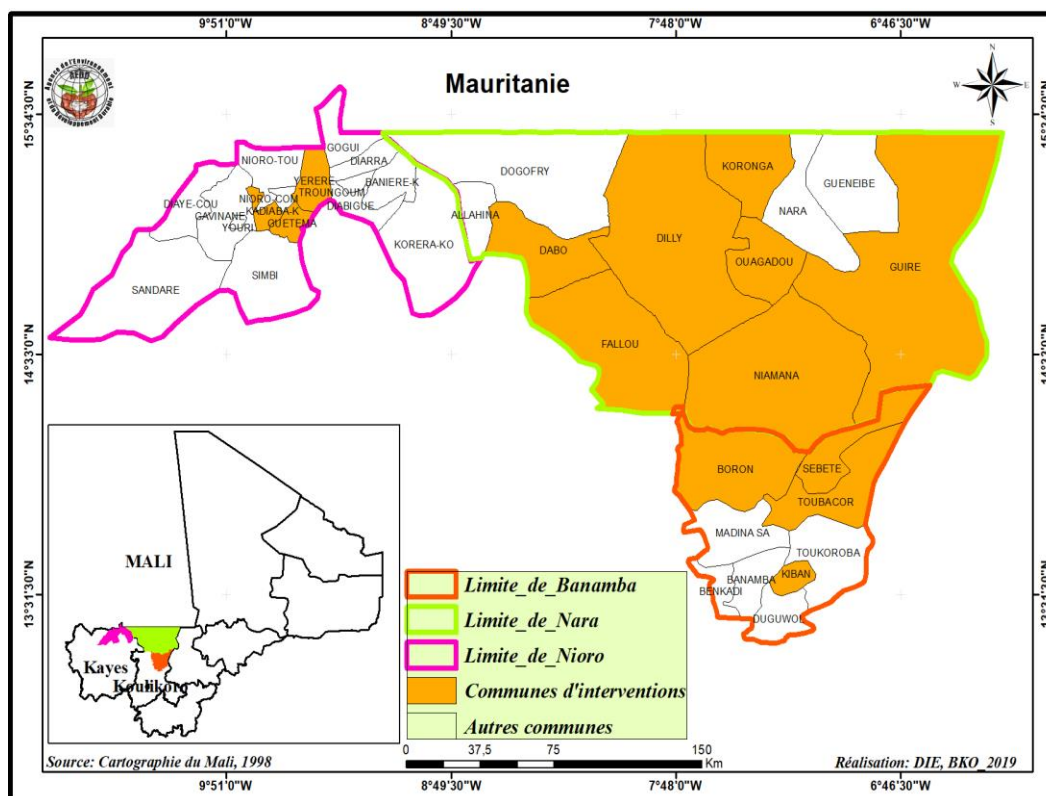
Note: a. 29,312 km² is equal to 2,931,200 ha.

b. Source: Census of 2009 (130,992 females).

Project communes in Nioro province added in the June 2018 restructuring: Baniéré Koré, Diabigué, Diarra, Diaye Coura, Gavinané, Gogui, Guétéma, Kadiaba Kadiel, Koréra Koré, Nioro, Nioro du Sahel, Nioro Tougoumé Rangabé, Sandaré, Simbi, Troungoumbé, Yérééré, and Youri

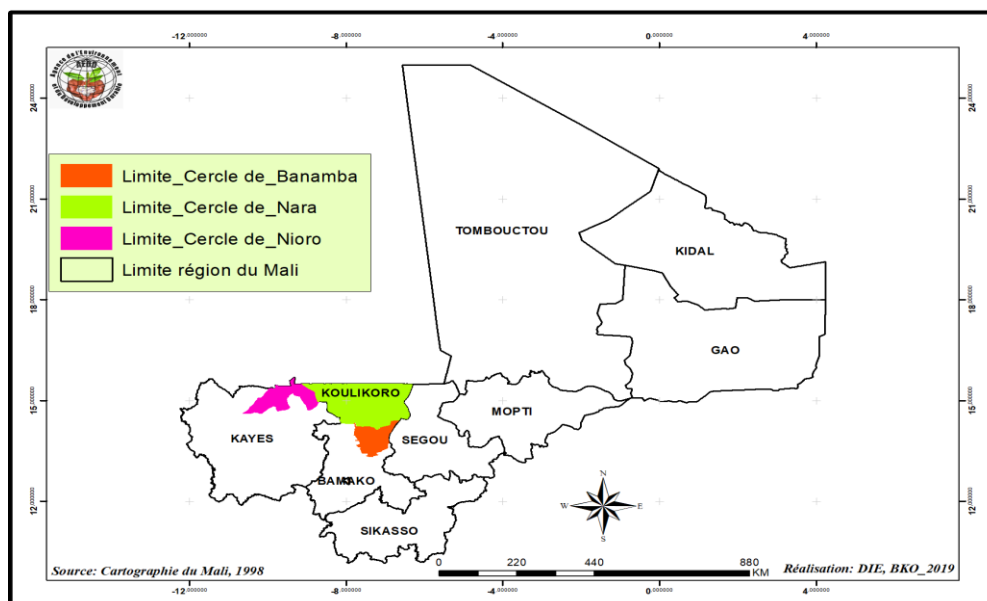


Figure 7.1. Location of the 14 Communes in the Three Project Provinces



Source: Final Borrower ICR, September 2019.

Figure 7.2. Location of the Three Target Provinces in Mali



Source: Final Borrower ICR, September 2019.