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**The World Bank**  
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Report No: ICR00004449

IMPLEMENTATION COMPLETION AND RESULTS REPORT

IDA-53180/TF15838/TF15868/TF15869

ON A CREDIT

FROM THE INTERNATIONAL DEVELOPMENT ASSOCIATION  
IN THE AMOUNT OF SDR 32.6 MILLION  
(US\$50 MILLION EQUIVALENT)

AND A GRANT

FROM THE GLOBAL ENVIRONMENT FACILITY TRUST FUND  
IN THE AMOUNT OF US\$8.33 MILLION

AND A GRANT

FROM THE LEAST DEVELOPED COUNTRIES TRUST FUND  
IN THE AMOUNT OF US\$4.62 MILLION

AND A GRANT

FROM THE ETHIOPIA SUSTAINABLE LAND MANAGEMENT PROJECT TRUST FUND  
(NORWAY)  
IN THE AMOUNT OF US\$ 42.65 MILLION

TO

THE FEDERAL REPUBLIC OF ETHIOPIA

FOR A

SUSTAINABLE LAND MANAGEMENT PROJECT

June 19, 2019

*[This ICRR replaces the version published on July 8, 2019. Changes to results attributable to Phase 2 of the Sustainable Land Management Project were made within this document.]*

Environment and Natural Resources Global Practice  
Africa Region

**CURRENCY EQUIVALENTS**  
(Exchange Rate Effective December 28, 2018)

Currency Unit =	Ethiopian Birr (ETB)
ETB 27.7 =	US\$1
US\$1.39=	SDR 1

FISCAL YEAR  
July 1 – June 30

**ABBREVIATIONS AND ACRONYMS**

BCR	Borrower Completion Report
BoA	Bureau of Agriculture
CALM	Climate Action through Landscape Management
CPI	Consumer Price Index
CRGE	Climate Resilient Green Economy
CSA	Climate-Smart Agriculture
CWT	Community Watershed Team
EFA	Economic and Financial Analysis
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
ESIF	Ethiopia Strategic Investment Framework
ESMF	Environmental and Social Management Framework
FIRR	Financial Internal Rate of Return
FNPV	Financial Net Present Value
GEF	Global Environment Facility
GDP	Gross Domestic Product
GEO	Global Environment Objective
GIZ	German Development Agency ( <i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> )
GoE	Government of Ethiopia
GRM	Grievance Redress Mechanism
GTP	Growth and Transformation Plan
ICR	Implementation Completion and Results Report
ISR	Implementation Status and Results Report
KfW	German Government Development Bank ( <i>Kreditanstalt für Wiederaufbau</i> )
KWT	Kebele Watershed Team
LDCF	Least Developed Countries Fund
LUC	Land Use/Land Cover
M&E	Monitoring and Evaluation
MoA	Ministry of Agriculture
MoFEC	Ministry of Finance and Economic Cooperation
MOU	Memorandum of Understanding
MTR	Midterm Review

NDVI	Normalized Difference Vegetation Index
NPCU	National Project Coordinating Unit
NPV	Net Present Value
NRM	Natural Resource Management
PAD	Project Appraisal Document
PD	Person-day
PDO	Project Development Objective
PIF	Policy and Investment Framework
PIM	Project Implementation Manual
PRT	Project Reporting Tool
PSU	Project Support Unit
RLLP	Resilient Landscapes and Livelihoods Project
RPF	Resettlement Policy Framework
SAWAP	Sahel and West Africa Program
SLM	Sustainable Land Management
SLMP-1	Sustainable Land Management Project Phase-1
SLMP-2	Sustainable Land Management Project Phase-2
SMART	Specific, Measurable, Attributable, Realistic, Timely
SNNPR	Southern Nations, Nationalities, and People's Region
SSI	Small-scale Irrigation
SWC	Soil and Water Conservation
TA	Technical Assistance
USLE	Universal Soil Loss Equation
WLRC	Water and Land Resource Centre
WoANR	Woreda Office of Agriculture and Natural Resources

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## DATA SHEET

### BASIC INFORMATION

#### Product Information

Project ID	Project Name
P133133	Sustainable Land Management Project
Country	Financing Instrument
Ethiopia	Investment Project Financing
Original EA Category	Revised EA Category
Partial Assessment (B)	Partial Assessment (B)

#### Related Projects

Relationship	Project	Approval	Product Line
Supplement	P133410-Sustainable Land Management Project	22-Nov-2013	Global Environment Project

#### Organizations

Borrower	Implementing Agency
Federal Ministry of Finance and Economic Cooperation, Federal Democratic Republic of Ethiopia	Ministry of Agriculture

#### Project Development Objective (PDO)

##### Original PDO

The Project's Development and Global Environment Objective is to reduce land degradation and improve land productivity in selected watersheds in targeted regions in Ethiopia.

**FINANCING**

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
<b>World Bank Financing</b>			
P133133 IDA-53180	50,000,000	50,000,000	45,847,030
P133133 TF-15838	40,000,000	38,519,084	38,448,341
P133410 TF-15869	4,629,000	4,629,000	4,629,000
P133410 TF-15868	8,333,000	8,333,000	8,333,000
<b>Total</b>	<b>102,962,000</b>	<b>101,481,084</b>	<b>97,257,371</b>
<b>Non-World Bank Financing</b>			
Borrower/Recipient	2,000,000	0	0
NORWAY: Ministry of Foreign Affairs	42,650,000	0	0
<b>Total</b>	<b>44,650,000</b>	<b>0</b>	<b>0</b>
<b>Total Project Cost</b>	<b>147,612,000</b>	<b>101,481,084</b>	<b>97,257,371</b>

**KEY DATES**

Project	Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
P133133	22-Nov-2013	07-Apr-2014	13-Dec-2016	07-Apr-2019	31-Dec-2018

**RESTRUCTURING AND/OR ADDITIONAL FINANCING**

Date(s)	Amount Disbursed (US\$M)	Key Revisions
09-Mar-2017	56.77	Change in Results Framework Change in Components and Cost Other Change(s)
03-Aug-2018	76.62	Change in Results Framework Change in Loan Closing Date(s)

**KEY RATINGS**

Outcome	Bank Performance	M&E Quality
Satisfactory	Satisfactory	Substantial

**RATINGS OF PROJECT PERFORMANCE IN ISRs**

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	16-Mar-2014	Satisfactory	Satisfactory	0
02	03-Dec-2014	Satisfactory	Moderately Satisfactory	8.92
03	04-Jun-2015	Moderately Satisfactory	Moderately Satisfactory	23.83
04	03-Dec-2015	Moderately Satisfactory	Moderately Satisfactory	34.62
05	23-May-2016	Moderately Satisfactory	Moderately Satisfactory	46.26
06	10-Nov-2016	Moderately Satisfactory	Moderately Satisfactory	56.36
07	15-Feb-2017	Moderately Satisfactory	Moderately Satisfactory	56.77
08	09-May-2017	Moderately Satisfactory	Moderately Satisfactory	60.32
09	04-Dec-2017	Moderately Satisfactory	Moderately Satisfactory	71.63
10	14-Jun-2018	Satisfactory	Satisfactory	76.62
11	27-Dec-2018	Satisfactory	Satisfactory	84.30

**SECTORS AND THEMES****Sectors**

Major Sector/Sector (%)

<b>Agriculture, Fishing and Forestry</b>	<b>100</b>
Irrigation and Drainage	32
Public Administration - Agriculture, Fishing & Forestry	10
Other Agriculture, Fishing and Forestry	58

**Themes**

Major Theme/ Theme (Level 2)/ Theme (Level 3) (%)



<b>Private Sector Development</b>	<b>100</b>
Jobs	100
<b>Urban and Rural Development</b>	<b>39</b>
Rural Development	39
Land Administration and Management	39
<b>Environment and Natural Resource Management</b>	<b>108</b>
Climate change	65
Mitigation	18
Adaptation	47
Environmental policies and institutions	3
Water Resource Management	40
Water Institutions, Policies and Reform	40

### ADM STAFF

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**Note:** The original financing amount of US\$147,612,000 shown in the Financial Table reflects the incorrect (system) double entry of funding from the Norwegian Trust Fund (both as Bank financing –TF15838-- and non-Bank financing). The correction of this error at restructuring does not imply any cancellation of Norwegian funding.





## I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

### A. CONTEXT AT APPRAISAL

#### Context

1. At appraisal, the Government of Ethiopia (GoE) was implementing its ambitious Growth and Transformation Plan (GTP) (2010/11--2014/15), which set a long-term goal of becoming a middle-income country by 2023, prioritizing key sectors such as industry and agriculture as drivers of sustained economic growth and job creation. At the time, agriculture was, and continues to be, one of the key drivers of the economy representing 48 percent of gross domestic product (GDP) and 85 percent of export earnings. The sector is mainly structured around small-scale farmers and micro-enterprises, which grow a variety of crops on 75 percent of cultivated areas. Their livelihoods are based on farming within severely degraded landscapes, which experience ever increasing land productivity and water supply limitations because of inadequate management of these essential elements for economic growth, food security, and rural wealth-generation resources. According to appraisal estimates, this unsustainable land management was responsible for 1–1.5 percent of national GDP loss per year. This vulnerable situation was further aggravated by climate change-related factors. Other identified challenges were poor cropland management practices, rapid depletion of vegetation cover, unsustainable livestock grazing practices, and land tenure insecurity.

2. To address these complex and diverse constraints to sustainable development in rural areas, the GoE implemented the Bank-financed SLMP-1 and joined the Sahel and West Africa Program (SAWAP), as well as introduced, in addition to the Growth and Transformation Plan (GTP) and the Climate Resilient Green Economy (CRGE) Strategy, a series of policies, strategies, investment plans, and institutional reforms, such as the multiyear (2009–2023) Ethiopia Strategic Investment Framework (ESIF) for Sustainable Land Management (SLM) and the Agricultural Sector Policy and Investment Framework (PIF).

#### Theory of Change (Results Chain)

3. The previous Sustainable Land Management Project Phase-1 (SLMP-1, P107139) supported by the World Bank was designed building on the proposals for actions of the ESIF and PIF policy instruments. Implemented between 2008 and 2013, SLMP-1 introduced SLM practices in selected areas of the country and achieved significant progress in rehabilitating previously uneconomical and unproductive degraded areas within 45 critical watersheds situated in six regions, providing benefits to an estimated 98,000 rural households.

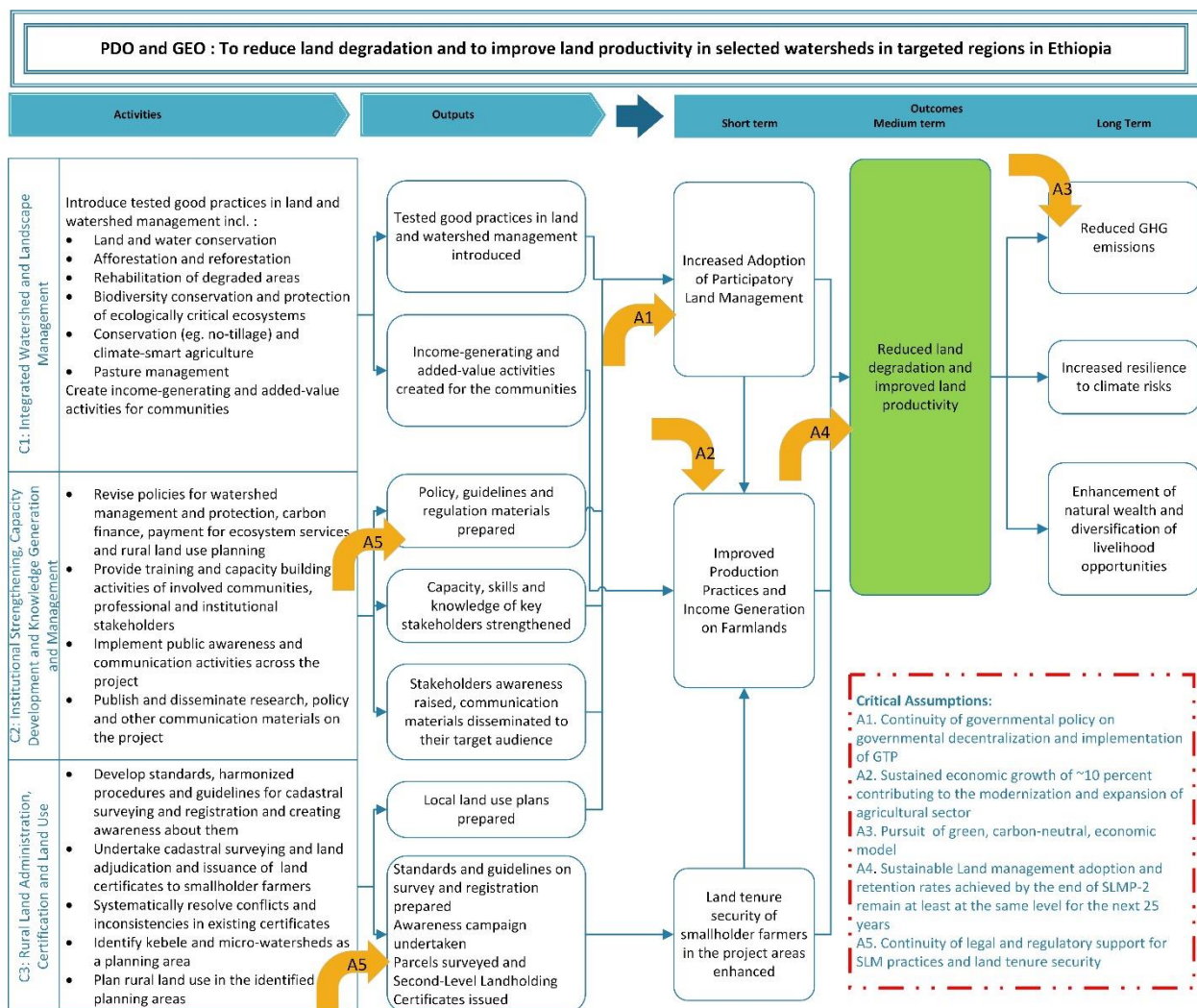
4. The SLMP-2 operation continued addressing poor cropland management practices, rapid depletion of vegetation cover, unsustainable livestock grazing practices and land tenure insecurity by leveraging successful outcomes of SLMP-1 and expanding its watershed restoration, SLM and systematic land adjudication activities; increasing the project geographical coverage to 135 watersheds; and integrating new activities targeting land productivity, deforestation, and reduction of greenhouse gas emissions.



5. To successfully achieve these outcomes, a continuity of state policy on governmental decentralization and implementation of GTP were necessary pre-requirements, in addition to sustained investment in modernization and expansion of the agricultural sector backed by sustained economic growth and the pursuit of a green, carbo-neutral economic model.

6. Complementing these core strategic activities aimed at reducing land degradation, the project supported the adoption of practices aimed at improved livelihoods through land productivity enhancement and increased incomes in stabilized landscapes, as well as securing land tenure by issuing formal tenure certificates to landholders located in the 135 targeted watersheds. Furthermore, a specific component of the project also focused on improving natural resource management (NRM)-related knowledge management for all relevant stakeholders, including national and regional policy makers and managers, field practitioners, and beneficiary communities.

**Figure 1. Theory of Change**





### Project Development Objectives (PDOs)

7. The Project Development Objective (PDO) and Global Environment Objective (GEO), as stated in the Project Appraisal Document (PAD) and Financing Agreement, were to reduce land degradation and improve land productivity in selected watersheds in targeted regions in Ethiopia.

### Key Expected Outcomes and Outcome Indicators

8. The two project outcomes were to (a) reduce land degradation in selected watersheds in targeted regions in Ethiopia and (b) improve land productivity in selected watersheds in targeted regions in Ethiopia. The indicators shown in table 1 were used.

**Table 1. List of Indicators**

Outcome Supported	Indicator Name
Reduce land degradation in selected watersheds in targeted regions in Ethiopia	Total incremental land area brought under sustainable and climate-smart/resilient land and water management practices (ha)
	Total area restored or reforested/afforested on both individual and communal land (ha)
Improve land productivity in selected watersheds in targeted regions in Ethiopia	Increase in the amount of biomass in the intervention areas (t/ha)

### Components

9. The goal was to increase natural and economic wealth and increase resilience to climate change on over 1.3 million ha of degraded communal and smallholder lands (almost 10 percent of the area identified in the GTP-II as requiring SLM interventions) through implementation of an integrated package of activities targeting 135 major watersheds by improving (a) management of natural resources (soil and water conservation [SWC] structures, agroforestry, participatory forest management, enclosures to reduce free grazing and allow assisted natural regeneration, small irrigation, water point development, climate-smart technologies on household farmland, and land use planning); (b) land rights through issuance of legal landholding certificates to 1 million people, including landless youth; and (c) support to livelihoods.

10. **Component 1: Integrated Watershed and Landscape Management (US\$73.98 million at appraisal/US\$61.8 million actual).** This component supported the participatory process of scaling up and adoption of sustainable land and water management technologies and practices by smallholder farmers and communities in the selected watersheds/woredas. It also supported activities to promote and adopt low-carbon, climate-smart technologies and practices. Subcomponent 1.a, sustainable natural resource management in public and communal lands, was implemented through a comprehensive package of demand-driven soil and water management practices at the level of the watersheds. Subcomponent 1.b consisted of homestead and farmland development, livelihood improvements, and climate-smart agriculture (CSA) activities implemented in the 135 watersheds supported by the project.

11. **Component 2: Institutional Strengthening, Capacity Development and Knowledge Generation, and Management (US\$16.54 million at appraisal/US\$16.54 million actual).** This component was designed to complement the SWC activities under Component 1 by strengthening the



institutions/stakeholders involved in the sustainable management of natural resources, including national and regional governmental institutions, academia, the private sector, community leaders, and smallholder farmers. Policy revision, capacity building and training, and value chain development composed the scope of this component.

12. **Component 3: Rural Land Administration, Certification, and Land Use (US\$11.9 million at appraisal/US\$7.6 million actual).** This component was aimed at enhancing the land tenure security of smallholder farmers in the project area and the local land use planning at watersheds and villages (*kebeles*) supported by the project. The activities financed within this component included surveys, adjudications, and public awareness campaigns, resulting in provision of second-level landholding certificates to the landholders in the watershed covered by the project. Another set of activities corresponded to the creation of participatory land use planning on the territories of kebeles comprising project watersheds.

13. **Component 4: Project Management (US\$4.45 million at appraisal/US\$13.4 actual).** This component supported project coordination and management at national and regional level, monitoring and evaluation, technical assistance (TA) for project implementation, and procurement of goods and equipment for the national and regional public agencies involved in project implementation.

## B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

### Revised PDOs and Outcome Targets

14. The PDO remained without modifications throughout the project implementation. However, the project underwent two restructurings, which introduced important changes to key elements of the project, including outcome indicators and targets, as well as financing.

### Revised PDO Indicators

Table 2. Level 2 Restructuring - March 6, 2017

Original PDO Level Results Indicator	Original Target	New/Revised PDO Level Results Indicator	New/Revised Target	Comments/Rationale for Change
1. Total incremental land area brought under sustainable and climate-smart/resilient land management practices	Baseline: 300,000 End target: 910,000	Revised: Land area with sustainable landscape management practices (ha)	No	Original indicator wording and the definition revised for clarity. End target maintained, and interim targets adjusted. Two sub-indicators added to clarify that individual and communal lands are distinct and often receive different land management treatments.
1.a	n.a.	New sub-indicator: Communal land	Baseline: 304,588.7 End	Sub-indicator introduced to provide specific measurement of project progress for communal land treated within the



Original PDO Level Results Indicator		Original Target	New/Revised PDO Level Results Indicator	New/Revised Target	Comments/Rationale for Change
			area treated for degradation (degraded hillsides, gullies, PFM, pastures) (ha)	target: 679,551	project
1.b	n.a.	n.a.	New sub-indicator: Individual farmland area treated for productivity improvements (ha)	Baseline: 0 End target: 230,449	Sub-indicator introduced to provide specific measurement of project progress for individual land treated within the project
2.	Total area of restored or reforested/afforested on both individual and communal land	Baseline and end target: TBD through baseline survey during first year of the project	Revised: Total land area of restored or reforested/afforested on both individual and communal land	Baseline: 36,194.9 End target: 112,238	Original indicator revised slightly to add the word "land" that was missing in the indicator wording, and to add the baseline and targets.
3.	Increase in the amount of biomass in the intervention areas	Baseline and End target: TBD through baseline survey during first year of the project	Revised: Incremental carbon dioxide equivalent accumulated in the project area (metric tons)	Baseline: 0 End target: 8,855,167	This indicator was moved up from intermediate level since it is an impact level indicator more appropriate for the PDO level. The indicator was also revised for clarity in wording and the definition and to accommodate a more appropriate methodology for the project. Lastly, baseline and targets are added.
3.a	n.a.	n.a.	(New sub-indicator moved from original 3) Biomass in the intervention areas (tons/ha)	Baseline: n.a. End target: 155.7	Sub-indicator a was originally a PDO indicator is now moved to be a sub-indicator under the CO <sub>2</sub> indicator (new indicator 3). Like its parent CO <sub>2</sub> indicator, this sub-indicator was also slightly revised for clarity of wording and definition. Baseline and targets are added.
4.	n.a.	n.a.	New: 'Land area in the targeted micro-watersheds with vegetation increase of at least	Baseline: 0 End target: 610,000	Indicator added to improve measurement of changes in land productivity and land degradation as per the PDO. The formulation of this indicator also provides a performance



Original PDO Level Results Indicator	Original Target	New/Revised PDO Level Results Indicator	New/Revised Target	Comments/Rationale for Change
		4% compared to baseline (ha)'		benchmark against which micro-watershed performance (the central unit of interest in the project) can be measured using remote sensing. Lastly, the remote sensing methodology provides an independent verification of the physical treatments reported in indicator. Together, the four PDO level indicators provide an appropriate set of metrics against which to track PDO progress.

Note: NDVI = Normalized Difference Vegetation Index.

15. The second Level 2 restructuring only adjusted the target values of the indicators, without any change in the description of indicators or the verification protocols.

**Table 3. Level 2 Restructuring - August 2, 2018**

PDO-level Indicators after Restructuring 1		Original Target	New/Revised Target	Comments/Rationale for Change
1	Revised: Land area under sustainable landscape management practices (ha)	Baseline: 300,000 End target: 910,000	Baseline: 304,589 End target: 874,281	Adjustment of end target values to reflect project implementation realities and budgetary constraints
1.a	Communal land area treated for degradation (degraded hillsides, gullies, PFM, pastures) (ha)	Baseline: 304,588.7 End target: 679,551	Baseline: 304,588.7 End target: 657,428	Adjustment of end target values to reflect more precisely project implementation realities and budgetary constraints
1.b	Individual farmland area treated for productivity improvements (ha)	Baseline: 0 End target: 230,449	Baseline: 0 End target: 216,853	Adjustment of end target values to reflect more precisely project implementation realities and budgetary constraints
2	Total land area of restored or reforested/ afforested on both individual and communal land	Baseline: 36,194.9 End target: 112,238	Baseline: 36,194.9 End target: 107,836	Adjustment of end target values to reflect more precisely project implementation realities and budgetary constraints
3	Incremental carbon dioxide equivalent accumulated in the project area (metric tons)	Baseline: 0 End target: 8,855,167	Baseline: 0 End target: 8,332,712	Adjustment of end target values to reflect more precisely project implementation realities and budgetary constraints
3.a	Biomass in the intervention areas (tons/ha)	Baseline: n.a. End target: 155.7	Baseline: n.a. End target: 155.7	Adjustment of end target values to reflect more precisely project implementation realities and budgetary constraints
4	Land area in the targeted micro-watersheds with vegetation increase of at	Baseline: 0 End target: 610,000	Baseline: 0 End target: 574,010	Adjustment of end target values to reflect more precisely project implementation realities and





PDO-level Indicators after Restructuring 1		Original Target	New/Revised Target	Comments/Rationale for Change
	least 4% compared to baseline (ha)			budgetary constraints

### Revised Components

16. The original components were not revised during project implementation.

### Other Changes

17. The first restructuring was agreed during the December 2016 midterm review (MTR) mission to proactively address the US\$14 million financing gap from foreign currency exchange rate fluctuations (both in the SDR and the Norwegian krone), combined with project disbursement and expenditure rates, requiring the reallocation of funds between components. This restructuring resulted in the reallocation of funds for reinforcing project management and the inclusion of one additional micro-watershed for CSA-related interventions. The restructuring was formally requested by the Ministry of Finance and Economic Cooperation (MoFEC) on February 10, 2017 and received the World Bank’s approval on March 9, 2017.

18. The second restructuring occurred following the request from MoFEC on March 27, 2018, proposing that the closing date be advanced, and the project targets to be scaled down accordingly. As a result, the closing date was brought forward from the original date of April 7, 2019 to December 31, 2018.

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

19. The rationale for the two restructurings is stated above, i.e. improved clarity of indicators and adjustments of targets because of financing gaps. The changes had no effect on the original ToC of the project as the structure and direction remained unchanged.

## II. OUTCOME

### A. RELEVANCE OF PDOs

#### Assessment of Relevance of PDOs and Rating

Rating: High

20. The PDO was well aligned with the priorities of the GoE, the World Bank, and the GEF at appraisal and completion. The project was expected to contribute to the achievement of the objectives under Pillar Two -Enhancing resilience and reducing vulnerabilities - of the World Bank Group’s Country Partnership Strategy (FY13–16) while leveraging gender and climate change-oriented cross-cutting aspects through dedicated interventions. It was also consistent with the World Bank’s twin goals; its regional strategy for Africa; and with the Biodiversity, Climate Change, and Land Degradation focal area



strategies of the Global Environment Facility (GEF). The PDO became even more relevant at completion, mainly because of its consistency with major GoE ongoing strategies.

21. At completion, the SLMP-2 objectives continued to be well aligned with the World Bank's Country Partnership Framework for FY17–21, specifically Focus Area 2: Building Resilience and Inclusiveness. This focus area includes the objective of enhancing the management of natural resources and climate risks through improved natural resources and forest management, scaling up the GoE's SLM Program, and addressing land tenure through the issuance of land use certificates. SLMP-2's relevance is demonstrated by the project's contribution to the targets related to climate, forest, water, energy, and land tenure defined by the GoE in the GTP-II, CRGE and the forthcoming GTP-III as well as to Ethiopia's commitment to the Bonn Challenge<sup>1</sup> and TerrAfrica.<sup>2</sup> SLMP-2 supported spatial-focused interventions to promote environmentally sustainable and socially inclusive growth and contributed to strengthening of environmental governance both in institutions and communities engaged in promoting improved and resilient livelihoods.

22. In addition, agriculture continued to have a significant role in employment generation, food security, and rural development in the country. Furthermore, the results and lessons learned from the project were instrumental to the design of the recently approved follow-on World Bank-supported operation, the Resilient Landscapes and Livelihoods Project (RLLP) (P163383) and the Climate Action through Landscape Management (CALM) Program for Results (P170384), which are expected to both consolidate and scale up the successes of SLMP-2 while complementing these achievements with a stronger focus on community livelihoods, through innovations aimed at further sustaining project benefits, and addressing systemic factors required for sustainable mainstreaming of SLM interventions in agricultural policies and practices.

## **B. ACHIEVEMENT OF PDOs (EFFICACY)**

23. Based on the successful results of SLMP-1, the GoE received credit and grant resources through the World Bank from different development partners, including the Royal Norwegian Government, GEF, and the Least Developed Countries Fund (LDCF) for the implementation of the second phase of Ethiopia's SLMP-2 (2014–2018). SLMP-2 was implemented in 1,820 micro-watersheds located in 135 watersheds in 142 woredas/districts (including the 45 watersheds supported under SLMP-1), in the six regional states comprising the Ethiopian Highlands (Amhara, Benishangul Gumuz, Gambela, Oromia, Southern Nations Nationalities and People's Region [SNNPR], and Tigray).

24. The coordinated implementation of the project's three components contributed to the achievement of the overall PDO and its contributing outcomes. Applying a highly decentralized implementation structure, comprising national, regional, and local government officials, the number and location of different SWC practices were determined through a participatory planning process, involving the beneficiary communities in each micro-watershed, and predominantly implemented using

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<sup>1</sup> The Bonn Challenge is a global effort to bring 150 million hectares of deforested and degraded land into restoration by 2020 and 350 million hectares by 2030. See <http://www.bonnchallenge.org/>.

<sup>2</sup> TerrAfrica is a NEPAD-led partnership (New Partnership for Africa's Development is an economic development program of the African Union) present in 30 countries on the African continent that supports innovative solutions to sustain landscapes, address land and water degradation and adapt to a changing climate. See <http://terrafrica.org/>.





remunerated labor from community members. Estimated total community contribution was an impressive 20.3 million person-days (PDs) with a cost of ETB 596 million (equivalent to US\$27 million). About 80 percent of this labor was required for SWC measures on farmland and communal land, while 11 percent was for homestead and livelihood development and 9 percent for community forest management.

25. Vegetation cover, carbon sequestration, and moisture availability were considered key parameters to determine improvements of ecological functions and agricultural productivity potential throughout the targeted watersheds/landscapes. In the total area of 556,776 ha receiving SLM interventions, the vegetation cover has increased by an average of 5.2 percent in the major watersheds treated and about 5.4 million tCO<sub>2</sub>e is estimated as accumulated, mainly resulting from land use change following the promotion of agroforestry.

26. In addition, the increase in overall moisture availability was verified through the significant number of naturally recharged springs throughout the project area, as well as the increased surface water flow measurements registered in 10 representative pilot sites, where the average discharge flow increased by 5.6 percent between 2017 and 2018.

27. In terms of beneficiaries, overall project interventions benefitted a total of 421,130 households, equivalent to 76.5% of total households in the project area. The Borrower Completion Report (BCR),<sup>3</sup> included a comprehensive survey on beneficiary perceptions conducted on a sample of 1,140 households (15 households in 76 different micro-watersheds) located in targeted watersheds across the six regions. Beneficiary responses have considerably enriched the assessment of project outcomes by incorporating the perception of beneficiaries. Specifically, regarding project contributions to land degradation and productivity, survey results showed that over 75 percent of respondents were fully satisfied with the introduction of SLM technologies both in farmland and communal areas, further confirming the overall technical assessment of project efficacy through results and coverage.

### **Assessment of Achievement of Each Objective/Outcome**

#### ***Reduce Land Degradation in Selected Watersheds in Targeted Regions in Ethiopia***

28. This outcome was substantially achieved throughout the project area. The core strategic goal of the project was to address the key factors of land degradation by supporting the scaling up and adoption of appropriate sustainable land and water management technologies and practices by smallholder farmers and communities in the selected highly degraded watersheds in six regional states of Ethiopia. The objective was expected to be achieved through the introduction of watershed management practices tested and validated under SLMP-1 such as SWC structures, hillside area closures, afforestation/reforestation, rehabilitation of degraded areas, and protection of ecologically critical ecosystems. Suitable physical and biological interventions in each watershed (micro-watersheds within a watershed) were identified based on the particular agroecological conditions (topography, rainfall patterns, existing degradation levels, and so on) and included in a multiyear Watershed Management Plan developed through a highly participatory process which provided opportunities for

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<sup>3</sup> SLMP-2 BCR - Centre for Development Research, December 2018.



the entire communities to contribute to the development of the plan and subsequently provide their labor for the implementation of the practices, using the procedures established in the existing Community-based Participatory Watershed Development Guidelines developed by the Ministry of Agriculture (MoA) and applied during the implementation of SLMP-1. The description of key outputs contributing to the achievement of this outcome is provided in the following paragraphs.

29. The overall achievement of this outcome is mainly reflected by the estimated 861,364 ha of cumulative total incremental land area (new area equivalent to 556,776 ha under this project) brought under sustainable and climate-smart/resilient land management practices in the 1,820 micro-watersheds within the targeted 135 critical watersheds targeted by the project. This achievement represented 97.7 percent of the overall restructured PDO target (874,281 ha) of the project. This area coverage resulted in an estimated 740,831 direct beneficiary households (including 201,987 female headed households, equivalent to 28 percent of total beneficiaries), of which 360,205 were further benefited by the issuance of land certificates. Beneficiary communities were fully engaged throughout the planning and implementation process and, coordinated by the Community Watershed Teams (CWT) continue to be actively involved in the management and maintenance of treated areas.

#### *Communal Land Natural Resource Management*

30. Using a combination of different proven SWC physical and biological structures appropriate to local agroecological conditions, a total of 665,503 ha of communal land (of which 360,914 ha were new areas and 304,589 ha were completed following partial interventions under SLMP-1) was treated by SLMP-2 in the 135 watersheds comprising the project area (representing full achievement over the projected target). This output strongly contributed not only to the project outcome of reducing land degradation but also to the objective of improving land productivity in the treated watersheds. Most relevant practices supported under this output include erosion control and water retention physical structures, generally combined with biological measures, degraded hillside rehabilitation through community-enforced area closures (ban on grazing of community livestock), forest enrichment, and communal pastureland improvement. As a result of the interventions supported, pilot measurements conducted in a sample of watersheds show that soil erosion and water runoff were considerably reduced, resulting in clear evidence of increased moisture retention and surface and groundwater availability.

**Table 4. Physical NRM Measures on Communal Land**

No.	Practice/Structure	Unit	Achievement	% of Target
1.	Hillside terrace construction	km	15,354.7	94.8
2.	Hillside terrace + trench construction	km	6,490.7	110.1
3.	Bench terrace construction	km	4,178.4	93.6
4.	Water collection trench construction	number	1,596,989.6	91.2
5.	Deep trench construction	km	7,677.0	54.6
6.	Micro-basin construction	number	1,470,951.0	79.9
7.	Eyebrow basin construction (EB)	number	494,265.0	83.0
8.	Percolation pit construction	number	25,390.0	67.6
9.	Percolation pond construction	number	2,963.0	81.3
10.	Stone paved waterway construction	m <sup>3</sup>	112,008.0	79.7



No.	Practice/Structure	Unit	Achievement	% of Target
11.	Grassed waterway construction	m <sup>3</sup>	154,936.8	72.7
12.	Cutoff drain construction	m <sup>3</sup>	379,865.0	85.7
13.	Terrace maintenance (free community labor)	km	13,149.0	29.7
14.	Pitting for seedling planting	number	66,659,346.0	115.1

Table 5 Biological NRM Measures on Communal Land

No.	Biological Practice	Unit	Achievement	% of Target
1.	Hillside/degraded area closure	ha	28,770.4	98.5
2.	Grass planting on terraces	km	34,129.0	92.1
3.	Forage tree seedling planting along terraces	km	11,029.3	41.8
4.	Forage sowing along terraces ( <i>Sesbania spp.</i> )	km	9,389.9	91.8
5.	Tree and shrub planting	number	79,267,352.0	115.1

### *Gully Rehabilitation*

31. In addition to reducing the risk of gully formation because of hillside SWC measures, the rehabilitation of existing gullies represented one of the most successful interventions supported by the project. Stabilization of gullies not only eliminated the considerable loss of crops and livestock due to water runoff during periods of heavy rains but also became a valuable source of forage, which was instrumental to support (a) the reduction of livestock grazing in degraded communal lands and (b) the option for beneficiary households to fatten their cattle as a significant additional source of income (see para 43). Through reshaping simple physical structures (check dams and water treatment trenches) and biological revegetation (assisted natural regeneration or planting of forage and fruit species), a total of 5,470.6 ha of gully areas were treated (101 percent of target), of which 2,981.7 ha (74 percent of target) were fully stabilized and transformed into productive land by the end of the project. In terms of beneficiaries of this output, a total of 43,637 households (of which 8,514 were female-headed households) directly benefited from using the restored gully areas for fodder and fruit production.

### *Community Forest and Pastureland Management*

32. Based on the communal land use plans developed in each micro-watershed, community forest and pastureland management activities were implemented, focusing on improving existing management practices, promoting improved forage production, afforestation, and reforestation activities, as well as forest degradation reduction measures. As a result, the total area delineated and demarcated for forest management was 15,968.4 ha, or 82.16 percent of the original target, benefiting about 71,580 households. About 22 percent of the households were female headed. In addition, 4,523.9 ha of pastureland (80 percent of total) were improved and 10,049.9 (57.0 percent) ha of land were planted with bamboo species.

### *Nursery Establishment/Strengthening and Planting Material Production*

33. The project supported the establishment and management of 1,515 nursery sites in all watersheds of the six regional states using centrally and community-managed facilities. In the nurseries established, about 288 million seedlings of different species were produced, which represents 108



percent of the target. Of these, more than 43.7 million tree seedlings were planted on individual woodlots to serve as a source of firewood, feed, and construction material to beneficiary households.

34. The full achievement of the outcome to Reduce Land Degradation in Selected Watersheds in Targeted Regions in Ethiopia was largely the result of the outputs achieved through the soil and water management activities implemented in each of the targeted watersheds under Component 1. However, such level of achievement was also largely supported by the major contribution made regarding improved policies and knowledge management under Component 2, as well as the improvements in land tenure security financed by Component 3, as described under the assessment of the second outcome.

### ***Improve Land Productivity in Selected Watersheds in Targeted Regions in Ethiopia***

35. This outcome was substantially achieved through the combined results of the key interventions described in the following paragraphs, including SLM practices on watershed farmland (195,861 ha), improved crop and livestock management practices, development of land use plans and provision of land certificates.

### ***Community Infrastructure Development***

36. The scope of community infrastructure development in SLMP-2 included water-related infrastructure for both small-scale irrigation (SSI) and water supply for household consumption community road improvement and maintenance.

37. Regarding improved access and use of water, different technologies were implemented depending on the types of water resource in the area and the level of moisture retention achieved. This included the recharging of 452 springs and the construction of 351 hand-dug wells, as well as 192 community ponds and 457 household ponds that were constructed for rainfall harvesting for human and livestock use. In terms of SSI, using different collection structures such as diversion of surface water or springs, mechanized lifting using pumps, and harvesting runoff water, a total of 803 different irrigation schemes were planned and implemented, benefiting about 4,600 ha (116 percent of target) of land within 20,726 farms (45,916 beneficiaries), as shown in table 6.

**Table 6. Summary of SSI Development Activities**

SSI Development	Unit	Planned	Achieved	Achieved %	Estimated Irrigable Area (ha)	Beneficiaries		
						Male	Female	Total
SSI feasibility studies	Number	83	60	72.3				
Diversion weir, diversion canal, spring for irrigation	Number	136	127	93.0	2,585.81	546	731	1,277
Hand-dug well, shallow well, rope washer construction for SSI	Number	1,358	957	70.5	560.53	11,902	1,744	13,646
Household pond, motor pump and treadle pump for irrigation	Number	1,104	970	88.0	1,453.18	19,474	11,359	30,833



SSI Development	Unit	Planned	Achieved	Achieved %	Estimated Irrigable Area (ha)	Beneficiaries		
						Male	Female	Total
Total Irrigable land	Ha	4,474	4,600	102.5	4,600.00	30,375	15,541	45,916

38. In addition, the project carried out improvement of feeder roads which provided improved access to communities in 603 micro-watersheds, achieving about 98 percent of the planned target. This required the improvement of 1,134 km of feeder roads (including the construction of 225 fords and 81 culverts), as well as the maintenance of 582 km of deteriorated roads.

*Farmland Soil and Water Conservation*

39. Depending on topography (i.e., slope), farmland treatment was part of the overall objective of reducing land degradation in the micro-watershed and would comprise a series of interventions aimed at improving farmland productivity, generally implemented once the overall landscape in the micro-watershed (mainly hillsides and upper catchments) was stabilized. During the project period, farmland treated using physical SWC measures totaled 137,155 ha, of which 83,655 ha also included biological SWC measures. The total number of beneficiaries from farmland treatment was 363,475 households, equivalent to 99 percent of the target, (of which 26 percent were female-headed households). These beneficiaries also account for 66 percent of the total households in the 135 watersheds treated by the project.

*Homestead and Livelihood Development*

40. Support to homestead and livelihood development included provision of productive inputs, as well as the promotion of CSA practices through a pilot initiative implemented in 70 selected micro-watersheds located in 30 watersheds where SLM interventions had covered a minimum of 70 percent of the degraded area. Using a comprehensive CSA field manual, developed with procurement-related delays that reduced the expected coverage, inputs and training were provided for soil fertility improvement and higher-value crop production, including improved tillage, moisture and soil management, farmer selection of indigenous varieties (supported by Bioversity International), as well as forage/livestock management. An estimated 37,225 ha of farmland received technical and financial assistance to adopt conservation agriculture practices, benefitting a total of 150,579 households, of which 21 percent were female-headed households.

41. The CSA field manual included specific information related to the main technologies to be promoted. CSA practices were clustered under five activity packages:

- Conservation agriculture (minimum tillage with mulch, intercropping and crop rotation)
- Agroforestry (around and within farmland and introduction of fruit trees)
- Cover crop and residue management
- Composting
- Improved forage management



42. In addition to those benefiting from conservation agriculture practices, the CSA pilot provided training to over 15,000 farmers and incorporated about 9,517 ha of land adopting CSA practices such as green manuring/cover crops, while 56,622 ha were treated with compost and 7,312 ha with agroforestry practices. Furthermore, 132 demonstration plots were established in farmer training centers and lead farmer fields. Despite the short period of implementation, the results obtained demonstrate that the level of overall watershed resilience to climate variability built through the SLM physical and biological interventions is further enhanced at the farm level by the implementation of CSA practices. This sequenced complementarity further contributed to the sustainable improvement of household livelihoods.

43. The CSA pilot provided valuable experiences for scaling up CSA practices in the recently approved RLLP. The new World Bank-financed operation will not only support implementation of CSA practices at the landscape level but will also play a broader role of promoting the systemic understanding and adoption of CSA practices by the extension system at a national level through the establishment of a series of knowledge management activities to be supported by a consortium of national and international research organizations, representing the community of CSA practitioners active in Ethiopia.

#### *Promotion of Backyard Livestock Farming (free grazing ban)*

44. As one of the prerequisites to promote the adoption and sustainability of SLM practices and for the selection of micro-watersheds for piloting the climate-smart agriculture subcomponent (discussed above), banning of free grazing was one of the major activities implemented by the project, with major focus on fodder/forage production, cattle fattening and breed improvement, as well as poultry promotion. Through this output, a total of 63,830 households enjoyed social and financial benefits from improved livestock management (achieving 84.7 percent of the originally planned target). Moreover, about 10 percent of the households in the project areas have reportedly started using cut-and-carry practices for backyard livestock management, while 55,123 households adopted the cut-and-carry feeding system using forage from either area closures or rehabilitated gullies. In addition, 18,088 households benefited from breed improvement through access to bull services.

#### *Participatory Local Land Use Planning*

45. The absence of adequate land use planning policies in Ethiopia has contributed to poor management of natural resources, which in turn resulted in soil degradation, deforestation, and decreased land productivity, all of which increased the level of food insecurity.

46. To address these constraints and contribute to increasing the impact and sustainability of field interventions, the project supported the preparation of participatory local land use plans in 545 *kebeles* (an achievement of 100 percent of original target and 107 percent of revised target) within the target watersheds with the objective of encouraging local decision making on the best use of the land and its resources. To facilitate the process, public awareness and information dissemination on the benefits of local land use planning was conducted for the local community and for *kebele* land use planning committee members. In all *kebeles*, local land use plans were approved by community representatives and planning decisions are now documented. Field assessments conducted as part of the Borrower



Completion Report (BCR), prepared by a consultant retained by the borrower, determined that in all kebeles where land use planning has been fully implemented, rapid improvements have been reported, including rehabilitation of degraded lands, as well as increases in forest cover and water sources.

#### *Apiculture Promotion*

47. Apiculture was promoted both as a source of income for improved livelihoods as well as an instrument to improve the environmentally sustainable utilization of rehabilitated communal lands. This output benefitted a total of 10,836 households, of which 20 percent were female headed. Total production amounted to 209,712.5 kg of honey and 11,893.3 kg of wax.

#### *Land Certification*

48. Systematic land adjudication in project watersheds contributed significantly to the achievement of both PDO outcomes. With respect to land tenure, the number of beneficiary farmers with a sense of tenure security increased, as over 360,205 households in the project area received second-level certificates, of which 105,144 were women who received the certificates either individually or jointly with a man. Moreover, 9,661 landless youth (of which 27 percent were women) were issued second-level certificates or other legal documentation to use communal landholdings in exchange for restoring 2,737 ha of land.

49. Through interviews with beneficiaries, the BCR confirmed that land registration and certification has contributed to develop landholder confidence on the security of land tenure on their land, which is a basis of sustainable and productive use enabled by a greater willingness to invest into productive assets and infrastructure. Moreover, landholders also reported satisfaction with the transparency of adjudication procedures and the participatory approach used in every step of the adjudication process.

50. Additional positive effects reported by the BCR are:

- Decrease of number of land disputes, especially for boundaries-related cases witnessed by 74 percent of interviewed *woreda* court;
- Increase in confidence to make land rentals expressed by 53 percent of beneficiaries; and
- Increase in land tax recovery rate confirmed by 57 percent of *woreda* revenue offices, without additional land tax rate per hectare following land adjudication activities. For example, the Raya Azebo *woreda* revenue office in Tigray reported that land tax collection has almost doubled from ETB 300,000 to ETB 589,000 after certification.

51. However, it was noted that the administrative capacity to diligently and efficiently expedite its duties for land administration business area needs to be improved as most of investments went into land adjudication and public awareness activities and only marginally to improve systemic shortcomings of land offices at different levels such as information technology infrastructure, security of premises, improvement of service delivery, and accountability and digitization of the records.





### *GEF Contribution to the Achievement of Project Outcomes*

52. The GEF funding was fully mainstreamed into project implementation, as the GEO and PDO were identical. As such, SLMP-2 was consistent with the GEF's biodiversity, climate change, and land degradation focal area strategies. However, specific contributions from the GEF's include the support to sustainable forest management and adaptation strategies through (a) reforestation of over 80,000 ha of degraded land; (b) distribution of efficient cookstoves to minimize forest degradation from collection of fuelwood; (c) adoption of participatory forest management avoiding deforestation and forest degradation in over 30,000 ha of natural vegetation areas which were closed as community conservation areas for assisted natural regeneration and ecosystem service improvement; and (d) about 16,000 ha of forest improved through enrichment planting with indigenous species, with 9,500 ha of woodlots established for fuelwood production, aimed at decreasing pressure on natural forests.

### **Justification of Overall Efficacy Rating**

53. **Rating. The project almost fully achieved its objectives.** Based on the quantitative and qualitative assessment of project outcomes and outputs, the efficacy rating for SLMP-2 is Substantial.

54. The efficacy rating is justified by many factors, including the satisfactory coverage and scope of interventions at the field level and the strategy applied to sustainably sequence landscape stabilization techniques with livelihood improvement practices.

55.

## **C. EFFICIENCY**

### **Assessment of Efficiency and Rating**

56. **Rating.** Based on a quantitative analysis, the efficiency rating for SLMP-2 is Substantial.

57. The analysis conducted at appraisal on a sample of 28 percent of watersheds and 56 percent of project costs showed that the proposed interventions were economically and financially feasible. The estimated benefits of the SLM component had a net present value (NPV) equivalent to US\$1.67 million (ETB 31.6 million) at a discount rate of 12 percent and a potential economic rate of return (ERR) of 24 percent over a 25-year period. Using the methodology used at appraisal, the scope of the analysis was limited to quantifying incremental net benefits on cultivated land but expanded to 91 percent of the watersheds and 100 percent of project costs. The impact on other types of land and beneficiaries are acknowledged in the qualitative analysis. Details of the analysis are included in annex 4.

58. The quantifiable benefit streams were estimated using project-based data, and as presented in the subsequent sections, the benefits outweighed the costs. The main limitation to this analysis was that there were several activities in each component whose benefit streams could not be quantified ex ante; hence, non-quantifiable benefits of these components are also discussed.

59. Project efficiency is assessed using a 25-year cost-benefit model with a financial discount rate of 12 percent and economic discount rate of 10 percent. The estimated financial and economic rates of





return resulting from the ex post analysis is 21 percent and 23 percent, respectively, indicating that SLMP-2 is a viable project investment. The economic net present value (ENPV) is US\$150 million or US\$6 million per year. With a 5 percent discount rate, this increases to US\$355 million or US\$14 million per year. Most of the costs accrue from the investment (50 percent) and land lost to SWC structures (32 percent) with the remainder attributed to annual maintenance costs and variable costs for improved fodder production on bunds and through intercropping. Most of the benefits accrue from increased productivity (60 percent) and avoided soil loss (31 percent) with the remainder attributed to improved fodder production on bunds and through intercropping.

60. The estimated rates of returns are comparable to the SLMP-2 PAD and BCR—all in the 19–26 percent range. While the current analysis includes 91 percent of the targeted watersheds and 100 percent of the costs, the PAD analysis included 28 percent of the watersheds and 55 percent of the costs. The BCR estimated financial returns on a representative farm.

61. A sensitivity analysis highlights that the results are quite robust as only more extreme assumptions lead to a nonviable investment. The 2.1 ETB per ton value of soil affects many of the cost and benefit flows in the analysis and a 1.0 percent decrease in soil value can lead to a 1.3 percent decrease in ENPV. Even with the conservative estimate from the PAD (ETB 0.79 per ton), the project remains viable with an economic internal rate of return (EIRR) of 14 percent. If the estimated soil loss in the ‘without project’ situation is 5 percent lower, the ENPV can fall by 3 percent but still with an EIRR of 23 percent. A 1.0 percent reduction in productivity increase can lead to a 1.1 percent reduction in ENPV. In a more extreme case where beneficiaries are unable to achieve any of the assumed 10 percent productivity gains, the project would no longer be financially viable, with an EIRR of 7 percent.

62. The captured net benefits are dependent on adequate future maintenance of the SWC structures and capacity building for farmers to achieve the expected productivity gains. Benefits from non-quantified project achievements include: (i) Rehabilitation of degraded communal lands; (ii) Using local labor during implementation; (iii) Development of irrigation and road infrastructure; (iv) Supporting improved food and income diversification; (v) Promoting cut-and-carry livestock feeding system; (vi) Strengthening local institutions and beneficiary groups; (vii) Strengthening tenure security that motivates adoption of improved management practices; and (viii) Providing a net carbon sink due to land use changes.

63. **Implementation efficiency.** The project design and implementation displayed a series of elements that led to an overall high implementation efficiency. This is primarily reflected in the financial absorption rate, which showed uniform disbursement rates throughout the life of the project, and the fact that project funds were fully used. Project restructuring contributed to ensure financial efficiency, as the original funds allocated by Norway were adjusted to reflect the devaluation of the Norwegian krone during the life of the project while implementation targets were adjusted accordingly. On the other hand, project implementation displayed a series of features which contributed to overall efficiency by reducing overall costs, such as the predominant use of beneficiary labor for the construction of physical SLM measures and community infrastructure, and the massive engagement of government officials at the national, regional, and local levels to perform most technical support functions. In addition to the intensive training provided by the project to government officials, this efficient implementation mechanism was also possible because of the partnership of the German Development Agency (*Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ*) with MoA in support of the SLM



platform, which was instrumental to provide technical backstopping in key activities such as the preparation of Watershed Management Plans and the contribution to the elaboration and operation of the M&E system. Actual project management costs appear to be relatively high, representing 13.5 percent of total costs, although this was the result of the decision to centralize procurement of vehicles, goods and services for all regions, including the higher costs of implementing the revised M&E system. In addition, the project experienced some procurement-related inefficiencies, including the difficulties faced in the preparation of the CSA field manual, which was a key factor in the delayed initiation and consequent limited coverage of CSA interventions.

#### D. JUSTIFICATION OF OVERALL OUTCOME RATING

Rating: Satisfactory

64. This overall outcome rating is based on the High rating allocated to the relevance of the PDO, the Substantial efficacy of reaching intended results, and the Substantial efficiency achieved by the project, which was within reasonable limits of error to the estimates made at appraisal. The relevance of the PDO is further demonstrated by the decision of the GoE to pursue the further expansion and upscaling of SLMP-2 interventions through the RLLP and CALM operations.

#### E. OTHER OUTCOMES AND IMPACTS

##### Gender

65. Women's participation and equitable benefit sharing was prioritized as one of the key elements of the project's sustainable development. Based on this, efforts were made to promote the participation of women in different decision-making bodies responsible for the planning and implementation of the project. Data summarized in table 7 show that, on average (across all project regions), women represented 17.6 percent of members of *Woreda* Technical Committees (WTCs), 26.0 percent of members of *Kebele* Watershed Teams (KWTs), and 32.3 percent of members of Community Watershed Teams (CWTs).

**Table 7. Proportion of Female Members in WTCs, KWTs, and CWTs**

Region	WTC				KWT				CWT			
	Male	Female	Total	Female Proportion	Male	Female	Total	Female Proportion	Male	Female	Total	Female Proportion
Tigray	265	78	343	23	1,110	709	1,819	39	3,122	2,369	5,491	43
Benishangul /Gumuz	110	10	120	8	625	180	805	22	981	646	1,627	40
SNNPR	470	89	559	16	2,725	680	3,405	21	1,476	825	2,301	36
Oromia	295	85	380	22	920	400	1,320	30	3,412	888	4,300	21
Gambela	61	34	95	36	474	124	598	21	514	252	766	33
Amhara	384	42	426	10	1,018	345	1,363	25	2,952	982	3,934	25



Region	WTC				KWT				CWT			
	Male	Female	Total	Female Proportion	Male	Female	Total	Female Proportion	Male	Female	Total	Female Proportion
Total	1,585	338	1,923	17.6	6,872	2,438	9,310	26.0	12,457	5,962	18,419	32.3

66. In addition, the project supported numerous activities which improved overall living conditions of beneficiary households, in particular by reducing women’s workload. Improved fuel-saving cookstoves were provided to 63,128 households which benefited from reduced firewood collection required for cooking, the time and energy needed for food preparation, and diminished indoor air pollution. Because of the combination of moisture-retention practices and complementary infrastructure, water availability in the watersheds increased and also resulted in significant benefits for women. This included 452 recharged springs and 350 hand-dug wells, as well as 192 community ponds and 457 household ponds. Project reports also showed that improvement of feeder roads simplified ambulance and public transportation access to the villages as well as women’s travel to markets and health and social services.

### Institutional Strengthening

67. The project provided a comprehensive package of capacity-building resources that strengthened the technical and administrative capacity of institutions at all levels of the implementation structure. This included equipment and training to public officials at the national, regional, and local (woreda and kebele) levels, as well as training and TA to community members in all project watersheds. At the local level, this was further achieved by the support provided for the establishment of 2,876 formal community-based institutions and 81 fully equipped woreda information centers.

68. The SLMP-2 achievements were highly dependent on training to public officials through the different SLM platforms. The training model was based on cascading knowledge and information from the Project Support Units (PSU) or the regional Bureaus of Agriculture (BoAs) down to the zonal level, to the woreda, the kebele, and finally to the community or micro-watershed level. Technical experts at the BoAs and the woredas were the recipients of training that was generally provided by GIZ as its contribution to the overall SLM Program. The annual training plan included a wide range of training programs on technical soil and water management and agriculture-related topics as well as general methodology training. The training plan would be approved each year by the regional BoAs, while the trainers were selected from among GIZ experts at the regional and zonal levels, university experts, and independent consultants.

69. National and regional institutions were also strengthened by the project’s participation in GEF-supported regional initiatives such as the Sahel and West Africa Program (SAWAP) and the TerrAfrica partnership. Specifically, as a child project of the SAWAP, SLMP-2 benefitted both in visibility as part of greening the Great Green Wall Initiative and through learning and regional exchanges with 12 countries and projects participating in the SAWAP. The project also received support from the World Bank-GEF-TerrAfrica partnership, through valuable communication and knowledge products shared



between 23 African countries, which emphasized the growing challenges of land degradation and focused attention on landscape management through the adoption of SLM practices.

70. In addition, the project contributed to improving policies and institutional strengthening of the NRM structure of Ethiopia through the development of 16 important strategic, technical, and operational knowledge management products (listed in annex 1.B), of which the following are worth highlighting because of their relevance and potential contribution to Ethiopia's strategic approach to future SLM interventions.

- **Exit Strategy Performance and Sustainability Assessment for Watershed Management.** The project supported the development of a sustainability framework and management information system, a joint initiative by experts from the Water and Land Resource Centre (WLRC), Addis Ababa University, the German Cooperation/GIZ-SLM and MoA. The database is focused on using predefined attributes of a sustainable watershed management and tracking success toward implementation of those attributes over time (that is, a comprehensive performance assessment checklist in the SLMP-2 regions). An extensive user manual has been developed. However, before it can be fully operational, resolution of issues on Shapefiles in terms of missing micro-watersheds and incorrect attribute information need to be finalized. The system is open source and locally developed, does not require licensing, is enabled for offline and online use, and is results oriented. This database is expected to make an important contribution to Ethiopia's SLM platform management in general and for the implementation of RLLP, as it would allow result-based tracking of watershed management.
- **The Water and Land Resources Information System** is a web-based resource information management system developed by the WLRC that integrates both spatial and non-spatial data of water and land resources in Ethiopia particularly from the highlands, with a trans-boundary view on the entire Eastern Nile basin. The objective of the database is to facilitate the compilation, archiving, and exchange of data relevant for watershed management (climate, catchment, land, surface water, soil type, rivers, boundary data, and so on) for policy makers; the research community; and all stakeholders who require data for sustainable management of land and water resources to influence informed actions and decision making.

### **Mobilizing Private Sector Financing**

71. Although not included in the project design, the SLMP-2's implementation supported an innovative pilot initiative aimed at engaging the private sector in the co-financing of SLM interventions at the watershed level. Specifically, the initiative involved the Raya Brewery, a private enterprise established in Enda-Mokoni Woreda, Tigray. While the brewery was operating social responsibility initiatives benefiting the local community, the decision to partner with SLMP-2 was based on the common interest of ensuring the availability of water for the brewing process, originating from a spring in the May-Muk microwatershed within the Upper Burka-Abagabir watershed. The efforts of the BoA representatives in Tigray, PSU management, and World Bank team members generated a series of meetings with the brewery's senior management and field visits, which, during the last year of the project, resulted in the development of a draft Memorandum of Understanding (MOU) between MoA,



Raya Brewery, Mekelle University, and the local kebele administration. The MOU outlined the roles and responsibilities of individual partners in watershed rehabilitation, as well as the areas of cooperation and co-financing during the period of implementation of the follow-on RLLP. This partnership is considered a significant contribution of SLMP-2, representing a model for replication which would allow the GoE to mobilize private sector financing to support spatially targeted social and environmental services within relevant watersheds.

### Poverty Reduction and Shared Prosperity

72. The participatory approach for project implementation in targeted rural areas, combined with the introduction of SLM practices, contributed to sustainably reduce the vulnerability and degradation of watersheds and provided beneficiary communities with opportunities to improve their livelihoods through crop and livestock productivity gains and expanding income-generating alternatives. In addition, financial retribution to community labor for establishment of physical and biological interventions contributed to social cohesion and access to significant sources of income. Empirical evidence from relevant consultancies,<sup>4</sup> case studies,<sup>5</sup> and the surveys conducted as part of the BCR suggest significant improvements in the overall quality of life of beneficiaries, primarily reflected in the enhancement of housing conditions and increased attendance of children to education.

## III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

### A. KEY FACTORS DURING PREPARATION

73. The SLMP-2 preparation was considerably facilitated by the operational experience and lessons learned for the predecessor project (SLMP-1). Because of this, project objectives were realistic, while beneficiaries, stakeholders, and implementation structures were adequately identified. In addition, appropriate mitigation measures to perceived risks were identified, such as the recruitment of fiduciary staff at the regional level, and implementation readiness was not a limiting factor.

74. However, as described in other sections of this report, the overall implementation outcomes were affected by distinct factors associated with preparation, including (a) the limited information on the actual degree of coverage achieved in individual SLMP-1 watersheds, which influenced the 'graduation' assumption (reduced support allocated by SLMP-2 to SLMP-1-supported watersheds) which guided the implementation strategy of SLMP-2, and (b) the limitations of the Results Framework designed, which featured a number of non-SMART<sup>6</sup> indicators, absence of baseline and target values for key PDO indicators, and, equally important, a functional disconnect with the M&E system adopted by the implementing entities. All these issues were highlighted as lessons learned in the Implementation Completion and Results Report (ICR) of SLMP-1.

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<sup>4</sup> Berhane, Gebreyohannes. 2017. *Assessment of Livestock Impact on NRM Interventions of SLMP-2 and Recommendations for the Design of the Resilient Landscape and Livelihood Project.*

<sup>5</sup> World Bank and TerrAfrica. 2015. "Restoring the Landscapes of Ethiopia's Highlands. Creating Natural Wealth for Improved Livelihoods."

<sup>6</sup> Specific, Measurable, Attributable, Realistic, and Timely.



## B. KEY FACTORS DURING IMPLEMENTATION

75. For the same reasons described earlier, essential factors such as coordination, engagement, commitment, and leadership of the GoE and the implementing entities were adequately established during SLMP-1 and continued to be commendable features during the implementation of SLMP-2. Similarly, the existing legal and regulatory framework as well as the governance structures at both national and regional levels were adequate to support the project's technical and operational strategies. Equally commendable is the fact that the implementation structure largely comprised public employees at all levels. The project is furthermore considered innovative as it emphasized a multisectoral landscape approach that allows the GoE to effectively coordinate efforts on land use, land management, and land administration.

76. The project outputs comprised a balanced combination of public and private goods which effectively contributed to the transformational achievement of project outcomes at the community level. Capacity building, small-scale private infrastructure, development and adoption of valuable knowledge-related public instruments, and highly decentralized support to communities allowed to transform the benefits of adopting innovative SWC practices at the micro-watershed level into tangible and sustainable improvements of livelihoods of both the beneficiary communities and individual households. These interventions have not only contributed to improving the role of government agencies and local communities in the management effectiveness and sustainable use of natural resources but also revenue generation of local communities.

77. The World Bank supervision was adequate, timely, and proactive. It was also instrumental in addressing the M&E shortcomings described earlier and in section IV.A, conducting a constructive and informative MTR process, collaborating with MoA in identifying the need and content of the restructurings, and managing the delivery of valuable TA to the project through a Trust Fund provided by Norway.

78. One distinct factor which affected implementation was the limitation in logistical and human resources throughout the operational structure of the project, mainly at the regional and local levels. As discussed in the efficiency section, government officials were mostly responsible for the delivery of project interventions. The limited engagement of private sector service providers resulted in significant gains in terms of project efficiency (by reducing the cost of providing essential support services at the field level) and strengthening of public institutions but at the same time resulted in performance inefficiencies caused by frequent staff turnovers, inadequate working conditions, and insufficient capacity to support project interventions. These limiting factors were partially mitigated through an intense schedule of staff training and the decision to recruit additional human resources for key project-related functions (accountants, safeguard specialists, and community facilitators). In addition, logistical limitations caused by security-related restrictions in certain regions within the project area not only precluded the World Bank missions to conduct field visits but also affected the performance of local and regional project staff, as well as technical advisors from GIZ. The limited coordination between the NPCU and the NRM Directorate could have become a factor affecting project implementation, but was effectively compensated by the active engagement of the State Minister for NRM in all aspects related to project governance and dialogue with the Bank



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

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

#### M&E Design

79. The M&E system of SLMP-2 was designed mainly using the format that was used by SLMP-1. However, the lessons learned in this regard and the significant increase in project scope and complexity were not fully taken into consideration. The project M&E faced the problem that the Results Framework in the PAD did not include a baseline value for two of the three PDO indicators. The PAD stated that the missing baseline data would be supplied by a survey carried out in a baseline study in Year 1 of project implementation. However, because of procurement-related delays, this consultancy was only contracted in Year 3 of the project, so the baseline values were only incorporated in the Results Framework as part of the post-MTR restructuring.

80. Furthermore, according to the assessment conducted post-MTR by a team of M&E specialists<sup>7</sup>, one of the main constraints faced by the project's M&E was that more than half of the original indicators (14 out of 21) did not meet one or more of the World Bank's SMART criteria.

#### M&E Implementation

81. Recognizing the complexity and shortcomings of the M&E system in place, several efforts were jointly made during implementation to address the difficulties encountered in the process of generating data appropriate to measure progress on the Results Framework indicators. These efforts resulted in (a) the development of the Planning and Reporting Tool (PRT), (b) the agreement with other SLM partners to develop a 'Harmonized Results Framework', (c) the agreement to recruit an M&E specialist in each of the six regions, (d) the preparation of a 'below woreda' operational manual for data collection and reporting, and (e) a full assessment of the project's M&E system commissioned by the World Bank.

82. Under the direction of GIZ-SLM, in 2015 the PSU developed the Manual for Results Based Monitoring and Evaluation for SLM. This web-based system, the Planning and Reporting Tool (PRT), was aimed at improving the management of information at all levels (community, woreda, regional, and federal). It was also used to track progress and evaluate project activities and document results. The PRT was expected to simplify and standardize the planning and reporting system at different levels. However, although the PRT proved to be adequate as a budgeting tool despite being difficult to use in the field and prone to network problems and system failures, it was not suitable for measuring results given that it recorded inputs and outputs (cash, person-hours, materials, and physical works completed) but not results in the broader context. The PRT did not contain data on crop yields, biomass, certification, technology adoption rates, and carbon sequestration, all of which were required for the Results Framework.

83. In response to the unsatisfactory performance of the PRT, subsequent efforts were made to update the Results Framework, indicator definitions and data collection tools. These changes were not

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<sup>7</sup> McCoy, K. Lynn, and Alex Rotich Rutto. 2018. *SLMP-2 M&E Assessment, Final Report*.





captured in an updated M&E plan, but were distributed as separate documents (for example, a Harmonized Results Framework, a World Bank SLMP-2-focused Results Framework/Indicator Matrix with improved indicator definitions, and updated baselines and targets) and updated data collection instructions and forms (The Below Woreda Reporting Guidelines). This lack of uniform documentation as well as a lack of a central organized online storehouse (server location) for M&E materials and data resulted in a lack of clarity for stakeholders on the operationalization of the SLMP-2 M&E system.

84. Following the efforts to improve project monitoring (2016 and 2017), the SLMP-2 Results Framework was revised to align the indicators with a revised results matrix of the broader SLM government program. The MTR and subsequent restructuring helped clarify the parameters to be measured, although responsibilities and methodologies for data collection and how measurement and evaluation efforts would link up to support an understanding of results remained somewhat unclear for partners. The May 2017 Implementation Status and Results Report (ISR) noted that while “significant progress has been made in improving the overall M&E system, more work is needed to ensure consistent and satisfactory implementation.”

85. The revision of the Results Framework, conducted as part of the first restructuring, aligned the indicators with the revised results matrix of the broader SLM program developed after SLMP-2 approval, which also helped improve harmonization across donor-financed projects, and also added the missing baseline and target values. The main revisions included (a) addition of water resources availability and irrigated area indicators to measure changes in water security and watershed performance; (b) revision and addition of landholding certification indicators, including for empowered landless youth and women; (c) revision of other indicators, or dropping/replacing some indicators, to address issues with clarity of wording and/or definitions and data collection and aggregation; and (d) adjusting targets and baseline values for three indicators.

### **M&E Utilization**

86. M&E faced the difficulty of having to track both progress of the indicators set out in the Results Framework and monitoring ministry-established annual targets, resulting from the budgetary allocations made by MoA to each region and watershed. Such budget allocations and targets were included in the project’s annual workplan and budget, submitted annually by the Project Coordination Unit (NPCU) to the World Bank for ‘no objection’. Considering that planning, budgeting, and reporting data had to be generated from more than 1,800 individual micro-watersheds and consolidated for the purposes of the annual workplan and budget, M&E data can be assessed as efficiently used for managerial decision-making, regional performance assessments and overall reporting.

### **Justification of Overall Rating of Quality of M&E**

Rating: Substantial

87. As designed, the M&E system of the project presented weaknesses that limited the capacity of the system to generate quality data for monitoring of project results and outcomes. However, despite its limitations and logistical functional challenges, the system provided an effective platform for the project to plan, budget, and monitor project implementation at all levels. Acknowledgement of the challenges that were faced and the proactive efforts made—primarily by the World Bank’s task team leader—during implementation were instrumental to mobilize resources, make adjustments, and eventually





revert the situation. As such, the information provided by the M&E system at project closing allowed for a reliable and satisfactory assessment of project outputs and results.

## **B. ENVIRONMENTAL SAFEGUARD, SOCIAL SAFEGUARD, AND FIDUCIARY COMPLIANCE**

88. As a category B project requiring partial assessment, SLMP-2 triggered the following safeguards policies:

- Environmental Assessment (OP/BP 4.01)
- Natural Habitats (OP/BP 4.04)
- Forests (OP/BP 4.36)
- Pest Management (OP/BP 4.09)
- Indigenous Peoples (OP/BP 4.10)
- Physical Cultural Resources (OP/BP 4.11)
- Involuntary Resettlement (OP) (BP 4.12)
- Safety of Dams (OP/BP 4.37)

89. The Indigenous Peoples Plan was prepared and disclosed on August 18, 2013, as screening in five regions in Ethiopia found that a majority of the population met the criteria detailed in the OP/BP 4.10.

90. An Environmental and Social Management Framework (ESMF) including integrated pest management approaches was prepared and disclosed on September 4, 2013. According to the annual safeguard reports produced by MoA, a total of 5,143 subprojects were reviewed for eligibility at the kebele level and subjected to a screening process to identify potential social and environmental impacts. The types of subprojects subjected to screening were gully treatment, community access road construction, cut-off drain construction, bench terraces, SSI, water-harvesting structures, afforestation/reforestation, and biological SWC measures.

91. About 1,634 subprojects were assessed as having no potential environmental and social impacts and received direct approval at the kebele level without further screening or environmental impact studies. An Environmental and Social Management Plan (ESMP) was produced for 2,754 subprojects which were categorized as having some potential environmental or social impacts. However, no other safeguards were required and applied for any SLMP-2 subprojects that passed through the screening process. The screening documents, together with the proposed mitigation measures, were reviewed by the Woreda Environmental Protection and Land Administration Unit for final approval and/or granting of the environmental certificate for the approved subproject.

92. The Resettlement Policy Framework (RPF) was prepared and disclosed on August 28, 2013, as OP/BP 4.12 was triggered for SLMP-2 based on lessons learned during the implementation of SLMP-1 regarding the acquisition of land for the activities of 'Integrated Watershed and Landscape Management' component. The dispositions of the RPF aimed to mitigate any potential social impacts resulting from eventual involuntarily restrictions of access to natural resources (for example, community lands and protected areas), small-range irrigation subprojects, land acquisition, or creation of a disturbance affecting livelihoods of the communities of the watersheds participating in SLMP-2.



93. The provisions of the RPF were applied in some well-documented cases where farmers in all six regions voluntarily donated land mainly for the construction of canals, hand-dug wells, access roads, spring utilization, and community ponds. In total, 805 households voluntarily donated small parcels of land ranging from 0.001 ha to 0.126 ha (in all cases less than 10 percent of the specific landholding) in exchange for desired community benefits and community-devised mitigation measures.

94. SLMP-2 established a functional grievance redress mechanism (GRM) to solve unforeseen issues during project implementation at levels ranging from federal to watershed with established grievance redress guidelines. During the life of the project, a total of 637 cases were satisfactorily resolved. Common causes of grievances include targeting for SWCs, income-generating activities, and incentives. The most important outcome of this mechanism is that communities are now aware that they can freely voice their own opinions on the project. This was not possible before in remote areas. Throughout the life of the project, no major complaint was registered.

95. The agreed safeguards requirements such as ESMF, RPF, GRM, and Social Assessment were given due emphasis through community consultation and participation to ensure sustainability of investments. In total, 36,738 community members (among them 33 percent of women) were consulted and actively participated during the SLMP-2 implementation. Community consultation has been the main instrument to enhance the awareness of community members.

96. The client's capacity for management of safeguard aspects at the local level was improved significantly through ad hoc training and capacity building. Specifically, a total of 9,477 capacity development and training sessions were organized for 1,824 regional, *woreda*, and zonal experts and 7,653 *kebele*-based development agents. In addition, 108 participants from different administrative levels were provided train the trainer sessions on the income-generating activities implementation manual.

97. The comprehensive gender analysis of the project was conducted, and appropriate mainstreaming guidelines were prepared. Gender awareness trainings and capacity-building activities were implemented at different levels and involved 919 participants from *woredas* offices (among them 39 percent of women), 1,926 development agents (among them 27 percent of women), and 13,546 community members (among them 41 percent of women). Train-the-trainer sessions were organized for 44 *woreda* experts (among them 32 percent of women) from technical committees, women affairs offices, and focal persons.

Compliance with safeguards policies was rated by the Bank as Satisfactory or Moderately Satisfactory throughout the project. The safeguards rating is Satisfactory. Despite the overall satisfactory implementation of environmental and social safeguards, areas identified by the World Bank and the BCR as subject to further improvement were the delays in submission of reports and quality of reporting, the limited capacity in identifying types of impacts, and the lack of commitment of the responsible sector offices in implementing timely mitigation measures. In retrospect, OP 7.50 on International Waterways should have been triggered as most of the country's waterways are international and the project financed some small-scale irrigation activities. However, it should be noted that there were no issues related to OP 7.50 during implementation and no complaints from riparian countries were received.

#### **Procurement and Contract Management**



98. Procurement management is rated by examining the alignment of the procurement management function of the project with the procedures set out in the Project Financing Agreement, PAD, other legal documents, project structure, Project Implementation Manuals (PIMs), Procurement Regulations, procurement process, contract management practices, disbursements, MOUs, and audit and project reports.

#### **Procurement Organization, Staffing, and Decision Making**

99. The World Bank supported and monitored the borrower's implementation of the project's procurement activities, as indicated in the Legal Agreements and PIM. All parties involved in the project implementation, at all levels, discharged their duties and responsibilities according to the lines of accountability defined in the PAD and Operational Manual. The procurement decision function of the borrower was decentralized under four levels—federal, regional, woreda, and kebele. Such decentralization minimized administrative and transport costs and avoided delays in distribution.

100. The federal and regional PSUs included reasonably qualified procurement specialists to implement project procurement. At the woreda level, the woreda finance and economic offices were used to carry out the project procurements. The pooled procurement of SLMP-2 such as vehicles, motorcycles, information technology, and office equipment were handled by the procurement unit of the Federal Project Unit. This helped standardize the items to be procured and enhance economies of scale.

#### **Procurement Planning and Implementation**

101. Procurement planning was carried out at the woreda, regional, and federal levels and implementation of the plan was carried out at all levels after consolidation was made at the federal level. The project Procurement Plan was approved by the World Bank and was agreed to be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity, and it has been done accordingly. To guide implementation, a step-by-step PIM necessary for the day-to-day procurement management of the project was prepared in line with the Financing Agreement. Country systems were used for national bidding and other procurement methods, except for international competitive bidding.

#### **Procurement Processing and Contracting**

102. The procurement processing and contracting activities were in line with the agreed procedures. Most of the contracts under the project were successfully completed except for some deviations that were identified during supervision missions and independent procurement audits for which mitigation measures and implementation plan were agreed with the borrower.

#### **Procurement Oversight and Monitoring**

103. There were adequate procurement complaint-handling procedures that were put in place following the Federal Public Procurement Proclamation and Directives. However, the implementing agencies' internal and external procurement audit capacity still require improvements.

#### **Procurement Performance Monitoring and Measurement**



104. There was a regular procurement reporting to monitor progress. Agreed actions and activities were designed and carried out to ensure value for money and fairness objectives of the procurement and contract management function. However, there were no established key performance indicators to measure value for money and fairness of performances systematically.

105. **Financial management.** The financial management framework of SLMP-2 followed the government structure. It operated on the already established systems developed under SLMP-1. The Ethiopian mechanism for the flow of funds (Channel II) was used to transfer funds from the World Bank to the project.

106. The project's overall financial management has shown improvement over the project life, which enabled reasonable assurance that reports produced by the systems could be relied upon to monitor financial performance and use of funds. This was evidenced by the annual external audit reports of the project which were consistently clean (unqualified opinion) except for the July 7, 2018, report, which contained observations that were satisfactorily addressed. Based on experience from SLMP-1, financial management-related improvements were implemented. 'Mobile accountants' were recruited in regions where significant number of project watersheds exist, contributing to regularly support woredas and improve financial reporting at decentralized levels. In addition, a dedicated project internal auditor appointed at the federal level was instrumental in strengthening the internal audit function of the project and improving/addressing internal control weaknesses.

107. However, financial management weaknesses noted during project implementation included (a) delays in preparation and dissemination of approved budgets, (b) the manual accounting system applied at the woreda level, (c) weak internal controls over project fixed assets, (d) limited involvement of internal auditors, and (e) timeliness and quality of financial reporting.

## C. BANK PERFORMANCE

### Quality at Entry

108. Project preparation followed an ambitious and consistent scaling up approach supported by the proven methodologies and successful results of SLMP-1. Despite being sustained by positive outcomes in selected micro-watersheds, assumptions in terms of the SLMP-1 coverage and degree of actual intervention in individual watersheds were not fully validated. This led to the development of a graduation approach which did not adequately incorporate the need to achieve full stabilization of degraded areas and the importance of engaging systemic elements of the country's public support system (mainly extension) to ensure continuity and sustainability of project interventions.

109. In addition to increasing the project area from 45 to 135 watersheds, the project design expanded the project's scope considerably by incorporating a challenging subcomponent supporting the adoption of CSA. Conceptually this addition (partly supported by Norway) was fully justified as a means to maximize the productivity of rehabilitated lands and consequently improve the livelihoods of project beneficiaries.

110. All fiduciary- and safeguard-related elements of project preparation were adequately addressed, as well as the development of important partnerships with other local and international partners such as



Norway and Germany. As described previously, the design of the M&E system did not adequately incorporate the project's expanded scope and failed to establish appropriate links between the borrower's planning and budgeting requirements and the information required to monitor progress of the indicators included in the Results Framework.

### Quality of Supervision

111. Formal joint implementation support missions (11 in total) were regularly organized on a semiannual basis. As a result, comprehensive and informative Aide Memoires and ISRs were produced on time. In addition, technical field missions were conducted by World Bank staff from the country office to supervise specific project activities or locations. The composition of the supervision team reflected the technical and fiduciary requirements of the project, with locally based specialists from financial management, procurement, and safeguards participating in all missions.

112. The two task team leaders responsible for leading supervision efforts were based in the country office throughout the life of the project. This facilitated regular contact with the Project Implementation Unit, other agencies, and beneficiaries. Each implementation support mission included field visits and a workshop with all national and regional entities responsible for project implementation. Effective collaboration between the World Bank team and the Project Implementation Unit, the dialogue arising from these missions, and the close monitoring of the World Bank's recommendations were all factors that benefitted project performance. The World Bank's support to the project was further enhanced by the recruitment and management of a team of specialists, financed by Norway through a Bank-executed Trust Fund, to provide TA to the client.

113. Beyond regular supervision tasks, overall World Bank oversight of project progress was instrumental in addressing some of the shortcomings of project design. Through proactive engagement and dialogue with MoA authorities and stakeholders, the World Bank led the process for improving the M&E system of the project, including the recruitment of a specialized consultancy and the preparation and processing of a comprehensive restructuring of the Results Framework. However, the high number of ongoing operations within the environment portfolio in Ethiopia and the preparation of the follow-on RLLP occasionally affected the availability and dedication of key World Bank resources to supervision tasks.

### Justification of Overall Rating of Bank Performance

Rating: Satisfactory

114. Overall, the World Bank's performance is rated Satisfactory. Shortcomings identified in quality at entry (project scope, M&E design, and procurement capacity assessment) were adequately mitigated with the World Bank's support during implementation. All technical and fiduciary requirements were fully achieved in a proactive manner, contributing to both supporting project implementation and enhancing the World Bank's dialogue with sectoral counterparts and stakeholders.

### D. RISK TO DEVELOPMENT OUTCOME

115. The design of SLMP-2 identified several risk factors to project success and outcome and possible mitigation measures. Although the project did not conduct systematic and regular assessments of risks,



relevant mitigation measures for these pre-identified risks were adequately taken into consideration, while emerging risks such as the security situation in certain project areas were appropriately reflected in revisions to project implementation plans.

116. Project implementation has highlighted a number of features which influence the overall risk of not sustaining project outcomes. These include the level of adoption of SLM practices by beneficiaries, and the fact that most of the interventions to reduce land degradation were implemented by beneficiary communities represents a clear indication that watershed rehabilitation practices can be maintained and expanded with limited public funding, provided that the local support structures developed by SLMP-2 are not discontinued. In addition, decisions made by communities to enact bylaws to enforce certain practices such as area closures and grazing bans are evidence of the acceptance and adoption of key conservation practices by watershed members. Most importantly, the support provided by the project to enhance utilization of natural resources and increase farm productivity in stabilized areas has resulted in tangible livelihood improvements, which provide the most compelling incentive for beneficiary communities to sustain their commitment to a holistic approach to watershed management. However, this expected outcome cannot be solely supported by community commitments. Public policies and interventions at the national and regional levels must provide the necessary assistance to address systemic issues which could challenge project outcomes, including the alignment/mainstreaming of extension services with conservation-based production systems; promotion of SLM-oriented governance structures, such as Watershed User Associations; development of incentives to establish livestock production systems that incorporate SLMP-2 practices (area closures, cut-and-carry, forage production in gullies and CSA rotations, and so on); and reduction of overgrazing in fragile communal areas.

117. The World Bank's decision to support the GoE's efforts to further consolidate and expand the SLMP-2's success through the implementation of the RLLP and CALM operations should also be instrumental in addressing the abovementioned risks and ensuring the long-term impact and sustainability of project outcomes.

## V. LESSONS AND RECOMMENDATIONS

118. A strategic lesson from SLMP-1 and 2 reflected in the design of RLLP is the need to provide reasonable time to achieve the stabilization of degraded areas, as well as a mechanism and supporting elements to allow watersheds to graduate from project-based assistance and continue sustainable management of restored landscapes through normal government programs. In this respect, the creation of Watershed User Associations could be capable of sustaining participatory watershed management when project-based support ends. Intervened watersheds need to be prepared for graduation through (a) building local government capacity to design and manage SLM plans and interventions, (b) strengthening community incentives for investment in, and maintenance of, SLM through land certification, and (c) improving returns to sustainable productive activities by promoting CSA and forging connections to value chains.

119. Highly decentralized SLM projects require a well-designed M&E system. Careful thought must be given to presenting M&E Results Framework, theory of change, and key learning questions to be addressed—ensuring that this system will be focused on results-based measurements instead of



activity-based M&E. In addition to identifying indicators to be measured, detailed indicator protocols need to be developed that provide specific procedures and frequency for indicator data collection. The M&E plan needs to include clearly defined plans for baseline data collection efforts and evaluation and learning efforts.

120. Important technical lessons are the following: (a) area closures to limit free grazing for erosion control should be complemented by fodder production to better support enclosed livestock management practices (as discussed under outputs regarding gully rehabilitation and backyard livestock farming); (b) SLM initiatives need to take into consideration the livestock population in the microwatershed in relation to the carrying capacity of the area; (c) to achieve the effective exit strategy of a treated microwatershed, systemic issues such as the overall capacity building of the extension systems should be addressed; and (d) by improving livelihoods in treated areas, support for CSA and links to value chains reinforce incentives for the maintenance of SLM investments.

121. The fiduciary lessons regarding SLM Program implementation include the importance of (a) aligning project budgeting systems with the GoE budget calendar; (b) including the costs of environmental mitigation measures in subproject designs; and (c) providing adequate resources to upgrade planning, budgeting, and monitoring of inputs and outputs that are essential for decentralized operations. As such, the appointment of regional accountants as 'mobile accountants' in regions where significant number of project watersheds exist can improve financial reporting at decentralized levels, while assigning a project internal auditor at the federal level can help improve/address internal control weaknesses.



## ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

For the results indicators with non-zero baseline values the achievement rates were calculated as a ratio of baseline-excluded actually achieved value over baseline-excluded formally revised target.

### A. RESULTS INDICATORS

#### A.1 PDO Indicators

**Objective/Outcome:** PDO: To reduce land degradation and improve land productivity in selected watersheds in targeted regions in Ethiopia  
**GEO:** idem as above

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
1. Land area with sustainable landscape management practices	Hectare(Ha)	304589.00	910000.00	874281.00	861364.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
1. a. Communal land area treated for degradation (degraded hillsides, gullies, PFM, pastures)	Hectare(Ha)	304589.00	0.00	657428.00	665503.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
1. b. Individual farmland area treated for productivity improvements	Hectare(Ha)	0.00	0.00	216853.00	195861.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018





**Comments (achievements against targets):** Substantially achieved by 97.7%. The area of communal land under SLMP increased twofold compared to the initial baseline. The area with implemented sustainable landscape management practices was composed of 65% of communal lands and 35 % of individual farmlands.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
The GEO indicators are the same as the PDO indicators	Amount(USD)	300000.00	910000.00	874281.00	861364.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** Substantially achieved by 97.7% very close to the project initial design target and restructurings' adjustments.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
2. Total land area restored or reforested/afforested on both individual and communal land	Hectare(Ha)	36195.00	0.00	107836.00	98682.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** Substantially achieved by 87.2% in line with projections. Afforestation and reforestation activities cover 11.2% of the area with sustainable landscape management practices.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
3. Incremental carbon dioxide	Metric ton	0.00	0.00	8332712.00	5369151.00



equivalent accumulated in the project area		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
3. a. Biomass in the intervention areas	Metric ton	151.00	0.00	155.00	159.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** Achievement by 200%

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
4. Land area of the targeted micro watersheds with vegetation increase of at least 4 percent compared to baseline	Hectare(Ha)	0.00	0.00	574010.00	315631.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** Partially achieved by 55%. This indicator was introduced during the first restructuring. It compares Normalized Difference Vegetation Index (NDVI) at project end with the baseline value. Due to a discontinuation of the satellite imagery used at this indicator's inception at restructuring, a revised routine using available imagery was adopted. Retroactively computing this value resulted in similar values to those reported in previous periods and as such the decline from earlier reported value is unlikely due to a change in method or source data. While the current analysis does not allow for a determination as the underlying cause of the decline, climatic conditions relative to previous reporting years (i.e. less favorable temperatures or rainfall in the project area) is a likely cause for the decline.

## A.2 Intermediate Results Indicators

<b>Component:</b> Component 1 : Integrated Watershed and Landscape Management					
Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at



	Measure			Target	Completion
1. Households in project area using at least three technology packages supported by the project on individual lands	Number	0.00	382071.00	382071.00	421130.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
1. a. Female-headed households in project area using at least three technology packages supported by the project on individual lands	Number	0.00	60233.00	60223.00	119435.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** Achieved by 110.2% due to a higher demand and a consistently growing adoption level. Female-headed households represent 28.3% of adopters. This confirms relevance of the technologies proposed and efficiency of the awareness campaign considering gender aspects. Technology packages” refer to a range of locally appropriate physical activities such as soil and water conservation (SWC) (64%), agroforestry (15.5%), and/or climate-smart agriculture (CSA) (20%) that were supported by SLMP-2 via extension support or financing. These packages are described in the Community-based Participatory Watershed Management Guidelines, the CSA Field Manual, and the Project Implementation Manual. The number of female-led households in the participating watersheds was underestimated at appraisal, hence and overachievement of the indicator by 198%. Women-led households show similar patterns of preference for adoption of technologies.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
2. Targeted micro watersheds with management and use plan approved	Percentage	40.60	87.00	87.00	57.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Oct-2017



**Comments (achievements against targets):** Partially achieved by 34.4%. Main issues in the indicator achievement were related to the plan adoption process. Nevertheless, the PDO-level indicators have been substantially achieved as in many cases a delay in the formal approval process of the plan did not prevent an implementation progress.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
3. Targeted critical watersheds with Multi-Year Plan approved	Number	45.00	130.00	130.00	135.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** Achieved by 105.8% in line with projections. All project watersheds had Multi-Year Plans approved by project closing.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
4. Households using cut-and-carry practices for backyard livestock management	Percentage	0.00	14.00	14.00	13.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** The target was substantially achieved by 92.8%, showing a significant adoption rate of a critical practice for overall sustainability of project interventions. A valuable feature to this achievement is that the process was community driven through the issuance of by-laws banning direct grazing of livestock on degraded areas.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
5. Formal community-based	Number	3021.00	4508.00	4420.00	5897.00



institutions, self-help groups and associations established and functional		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018
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**Comments (achievements against targets):** This target was achieved by 205.5% compared to the target set up during the restructuring and by 193.4% compared to the initial baseline. The establishment of institutions and associations, helping to share the information on good practices and benefit from the project activities created a lot of enthusiasm and traction among the rural communities. Functionality was measured thanks to the kebele and woredas reports established by the MoA staff observing and participating in the the communities' activities on daily basis. The reported data have been confirmed by the sample survey during the preparation of the BCR.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
14. People participating in income-generating activities supported by the project	Number	130000.00	0.00	144115.00	431354.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018
14. a. People participating in income-generating activities supported by the project of which female	Number	39000.00	0.00	43235.00	163894.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** Achievement far outpaced the targets (2134.9%). Change in measurement - farmers participating in homestead practices (backyard activities, seedlings, etc.) also included. The significant overachievement of the indicator could be due to overly conservative estimates at appraisal combined with possible double counting (persons participating in CSA, homestead activities such as high-value crops or livestock, farmland-based income generation outside of the homestead). The survey of over 1000 households conducted as part of the BCR confirmed the results

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at
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	Measure			Target	Completion
15. Change in dry season base flow of sampled micro watersheds	Percentage	0.00	0.00	5.00	5.60
		28-Feb-2017	31-Dec-2018	31-Dec-2018	31-Dec-2018
<p><b>Comments (achievements against targets):</b> This indicator was achieved by 112% which shows very consistent and positive effect of project interventions on overall moisture retention in treated micro-watersheds, primarily reflected in springs regeneration. This is a water security and climate resilience metric. The application of SLM technologies and approaches in targeted micro-watersheds resulted in less runoff during the rainy season, in turn leading to an increase in groundwater, which increases water available during the dry season, finally resulting in more flow in rivers and streams. This indicator measures the percent change in the rate of flow, quantified in liters per second (Lt/sec) in a sample of rivers and streams drawn from 10-15 micro-watersheds supported by the project. Baseline rate of flow is estimated using field measurements of Lt/sec taken during the dry season ending February 2017.</p>					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
16. Irrigated area	Hectare(Ha)	3139.00	0.00	3949.00	7739.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018
<p><b>Comments (achievements against targets):</b> The indicator was achieved by 567.9%. The NPCU experienced difficulties reporting on this indicator and was required to provide additional information and justification. The revision downward of the target during the restructuring reflected the NPCU's review of the efforts in addressing data management and reporting issues in updating achievement to date for this indicator. All SLMP-2 supported irrigation schemes were small-scale and community-managed. This indicator considers the irrigated area resulting from construction of diversion weirs, community and household ponds, springs, hand dug wells, pumps and other water lifting structures. The cumulative achievement of targeted Irrigated area is composed of (i) Ground water extracting (560.5 Ha), (ii) Surface water harvesting (1453.2 Ha) and (iii) River diversion canal and Spring development (2585.8 Ha).</p>					



**Component:** Component 2: Capacity Development, Knowledge Generation and Management

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
5. Formal community-based institutions, self-help groups and associations established and functional	Number	3021.00	4508.00	4420.00	5897.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** This target was achieved by 205.5% compared to the target set up during the restructuring. The establishment of institutions and associations, helping to share the information on good practices and benefit from the project activities created a lot of enthusiasm and traction among the rural communities. Functionality was measured thanks to the kebele and woredas reports established by the MoA staff observing and participating in the communities' activities on daily basis. The reported data have been confirmed by the sample survey during the preparation of the BCR.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
6. Woredas equipped with information centers on sustainable land management practices as a result of the project	Number	0.00	135.00	127.00	81.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** Partially achieved by 63.8%. Updated criteria for measuring against this indicator (based on newly prepared guideline) led to a significant reduction in what had previously been reported. Under current guidelines, only those that are completed and sufficiently equipped (previously the reported figures included information centers that were approved and in progress).



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
7. SLM related strategies developed or improved	Number	0.00	6.00	8.00	16.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
<p><b>Comments (achievements against targets):</b> This indicator was achieved by 200%. The documents have been prepared by MoA supported by a team of consultants and in consultation with different stakeholders.</p>					
<p><b>Component:</b> Component 3: Rural Land Administration, Certification and Use</p>					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
8. Second level certificates issued for communal land holdings	Number	0.00	3800.00	19996.00	21277.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
<p><b>Comments (achievements against targets):</b> The indicator was achieved by 106.4% which is slightly higher than the adjusted restructuring target. The number of communal lands in the watersheds of the project was initially underestimated.</p>					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
9. Parcels of land surveyed and mapped for certification	Number	200000.00	2000000.00	1917325.00	1695636.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
9. a. Individual parcels for	Number	200000.00	2000000.00	1893800.00	1656468.00





households		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
9. b. Communal parcels	Number	0.00	0.00	23525.00	39168.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** The indicator was substantially achieved by 87.1%. The data was collected from kebele and woredas levels and then reported at regional level. The sub-indicator on individual parcels was substantially achieved by 85.9% and on communal parcels it was overachieved by 166.4%, which can be explained by an underestimation of a percentage of communal lands in the watersheds under the project. A substantial yet not a complete achievement of the sub-indicator on individual parcels derives from a miscalculation due to manual counting, which happened too close to the project closing.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
10. Households who have received second level land holding certificates	Number	50000.00	500000.00	473450.00	410205.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
10. a. Women who have received second level land holding certificates individually or jointly with a man	Number	182000.00	0.00	340088.00	287144.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018

**Comments (achievements against targets):** This indicator was substantially achieved by 85%. The sub-indicator 10.a was achieved by 66.5%. About 70% of certificates include women as principal or joint tenant. Significant positive results achieved during the project can be attributed to an efficient public awareness and communication campaign undertaken during the project, as currently there is no regulatory obligation to include married women into the certificate during adjudication of state land.



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
11. Landless youth who have been issued a second level certificate or other legal documentation to use communal land holdings in exchange for restoring land	Number	1598.00	0.00	9504.00	11259.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018
11. a. Landless youth who have been issued a second level certificate or other legal documentation to use communal land holdings in exchange for restoring land of which female	Number	649.00	0.00	1544.00	3264.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018
<p><b>Comments (achievements against targets):</b> This indicator was achieved by 122%. The share of females reached (27%), was considerably higher than what was targeted (9.2%). The overachievement seems entirely due to female landless youth. More significant distribution of communal land to landless women ensures more gender-equitable access to land resources and improvement of livelihoods.</p>					
<b>Unlinked Indicators</b>					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
12. Area of degraded communal land restored by landless youth who have been	Hectare(Ha)	829.00	0.00	1837.00	2737.00
		31-Dec-2016	31-Dec-2018	31-Dec-2018	31-Dec-2018



issued a second level certificate or other legal documentation					
<b>Comments (achievements against targets):</b> ) The indicator was achieved by 189.3%. Whereas it was not planned in the initial design, these interventions created a significant positive effect on the ground mobilizing underutilized local human resources providing significant benefits in a form of sustainable livelihood opportunities.					
Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
13. Local level participatory land use plans prepared at kebele level within the project intervention areas	Number	0.00	540.00	508.00	545.00
		31-Dec-2013	31-Dec-2018	31-Dec-2018	31-Dec-2018
<b>Comments (achievements against targets):</b> Achieved by 107%. The planning process was met with high interest and participative engagement from concerned communities.					



**B. KEY OUTPUTS BY COMPONENT**

<b>Objective/Outcome 1: To reduce land degradation in selected watersheds in targeted regions in Ethiopia</b>	
Outcome Indicators	<ol style="list-style-type: none"> <li>1. Land area with sustainable landscape management practices disaggregated by communal and individual land</li> <li>2. Total land area of restored or reforested/ afforested on both individual and communal land</li> </ol>
Intermediate Results Indicators	<ol style="list-style-type: none"> <li>1. Households in project area using at least three technology packages supported by the project on individual lands disaggregated by gender</li> <li>2. Targeted micro-watersheds with Management and Use Plan (MUP) approved</li> <li>3. Targeted critical watersheds with Multi-Year Plan</li> <li>4. Households using cut-and-carry practices for backyard livestock management</li> <li>5. Formal community-based institutions, self-help groups, and associations established and functional</li> <li>6. Woredas equipped with information centers on SLM practices as a result of the project</li> <li>7. SLM-related strategies developed or improved</li> </ol>
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	<ol style="list-style-type: none"> <li>1. SLM practices covered 556,776 ha (of which 65 percent of communal land and 35 percent of individual land). Outputs on communal lands: <ul style="list-style-type: none"> <li>• Degraded hillside area covered by physical SWC technological structure was 95,458 ha.</li> <li>• Farmland area covered by physical SWC technological measures was 137,155 ha.</li> <li>• Communal pasture land area treated by physical and biological measures was 4,524 ha.</li> <li>• Communal land area treated through area closure approach was 30,905 ha.</li> <li>• Total gully area treated with physical and biological gully stabilization activities was 5,471 ha.</li> <li>• Total area covered by forest enrichment activities (in demarcated areas) was 15,968 ha.</li> <li>• Total area covered by afforestation/reforestation was 6,589 ha.</li> </ul> </li> </ol>



- Total area covered by wood lot establishment was 9,473 ha.
  - The area of farmland covered by CSA and soil fertility management was 189,543 ha.
  - Total area treated through backyard forage management was 6.318 ha.
2. Total area of restored or reforested/afforested on both individual and communal land on 62,488 ha, including the following:
- Total gully area physically treated = 5,470.7 ha
  - Total degraded area treated by area closure approach = 30,904.6 ha
  - Area covered by afforestation/reforestation = 6,589.2 ha
  - Woodlot establishment = 9,472.8 ha
  - Total area covered by Bamboo as a result of a project = 10,049.8 ha
3. Households in project area using at least three technology packages supported by the project on individual lands, for example, 270,670 farmers applied SWC, 65,536 farmers applied high-value crops interventions, 84,924 farmers applied CSA practices on their farmland, of which 28.3 percent were FHHH.
4. 57 percent of targeted micro-watersheds had MUP approved.
5. 13 percent of HHs use cut and-carry practices as a result of project.
6. 2,876 Formal community-based institutions, self-help groups and associations established and functional, including the following:
- CWTs established = 1,820
  - Watersheds User Associations established = 349
  - Self-help Groups established = 707
7. 81 woredas equipped with information centers on SLM practices
8. A total of 16 SLM-related strategies were developed (200 percent). The lists of documents prepared were
- CSA field manual and info-techs;



	<ul style="list-style-type: none"> <li>• Income-generating activities guidelines;</li> <li>• Watersheds performance assessment and exit strategy guidelines;</li> <li>• SLM best practice identification guidelines;</li> <li>• ESMF and social assessment guideline (translated into three local languages (Amharic, Oromiffa, and Tigrigna);</li> <li>• RPF;</li> <li>• Harmonized Result Based M&amp;E Manual;</li> <li>• Below Woreda data collection and reporting guideline;</li> <li>• Bamboo Marketing (value chain) Development Strategy;</li> <li>• Local level participatory land use planning manual;</li> <li>• Implementation Strategy for Land Administration, Certification and Land Use;</li> <li>• Rural cadaster operational manual;</li> <li>• Guideline for production and management of planting materials for watershed development;</li> <li>• Rehabilitated land management and use plan guideline;</li> <li>• SLMP Gender mainstreaming Strategy; and</li> <li>• SLMP Communication Strategy.</li> </ul> <p>9. 43.7 million tree seedlings were planted on individual woodlots to serve as a source of firewood, feed, and construction material to beneficiary households.</p>
<p><b>Objective/Outcome 2: To improve land productivity in selected watersheds in targeted regions in Ethiopia</b></p>	
<p>Outcome Indicators</p>	<ol style="list-style-type: none"> <li>1. Incremental carbon dioxide equivalent accumulated in the project area with a sub-indicator on biomass increase in the intervention areas</li> <li>2. Land area in the targeted micro-watersheds with vegetation increase of at least 4 percent compared</li> </ol>



	to baseline
Intermediate Results Indicators	<ol style="list-style-type: none"> <li>1. Second-level certificates issued for communal landholdings</li> <li>2. Parcels of land surveyed and mapped for certification disaggregated by individual and communal land parcels mapped</li> <li>3. Households in the intervention areas issued with georeferenced map-base certificates, with a disaggregated sub-indicator indicating numbers on women-individual or joint landholders</li> <li>4. Landless youth who have been issued a second level certificate or other legal documentation to use communal landholdings in exchange for restoring land, disaggregated by gender</li> <li>5. Area of degraded communal land restored by landless youth who have been issued a second level certificate or other legal documentation</li> <li>6. Local-level participatory land use plans prepared at kebele level within the project intervention areas</li> <li>7. People participating in income-generating activities supported by the project with a gender-disaggregated sub-indicator</li> <li>8. Change in dry season base flow of sampled micro-watersheds</li> <li>9. Irrigated area</li> </ol>
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	<ol style="list-style-type: none"> <li>1. Incremental carbon dioxide equivalent accumulated in the project area was 5,369,151 tCO<sub>2</sub>eq.</li> <li>2. Biomass increment in the project intervention areas was 8 ton/ha.</li> <li>3. Land area of the targeted micro-watersheds with vegetation increase of at least 4% compared to baseline was 315,631 ha.</li> <li>3. 21,277 second level land certificates issued for communal landholdings.</li> <li>4. 1,495,636 land parcels surveyed and mapped for certification, among them 97.4% of individual parcels and 2.6% of communal parcels.</li> <li>5. 360,205 households received second level land holding certificates, including 70% of women (FHHH or joint tenants).</li> <li>6. 9,661 landless youth were issued a second-level certificate or other legal documentation to use communal landholdings in exchange for restoring land (of which 33% of women).</li> <li>7. 1,908 ha of degraded communal land restored by landless youth who were issued a second level certificate or other legal documentation.</li> <li>8. 545 participatory land use plans were prepared.</li> <li>9. 301,354 beneficiaries participated in income-generating activities supported by the project (of which</li> </ol>



41% were women).

10. 5.6% change in dry season base flow within sampled micro-watersheds.

11. 4,600 ha of irrigated areas developed via SSI schemes, including the following:

- 560.5 ha through ground water pumping (HDW, CW, SHW, DW, Rpw)
- 1,453.2 ha through surface water harvesting (Dam, Check dam, HHP, CP, MP, NS)
- 2,585.8 ha through river diversion canals and spring development

12. Apiculture activities benefitted a total of 10,836 households, of which 20 percent were female headed. Total production amounted to 209,712.5 kg of honey and 11,893.3 kg of wax.



## ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

### A. TASK TEAM MEMBERS

<b>Name</b>	<b>Responsibility/Specialization</b>
<b>Lending</b>	
Edward Felix Dwumfour	Task Team Leader
Dinesh Aryal	Co-Task Team Leader
Stephen Danyo	Senior Natural Resources Management Specialist
Victor Bundi Mosoti	Legal Council
Mohammad Nadeem	Legal Analyst
Marcus P. Goldstein	Practice Leader/ Gender
Niklas Buehren	Gender Consultant
Madjiguene Seck	Communications and Gender
Nneka okereke	Communications Associate
Nicholas Meitaki Soikan	Consultant
Kennan W. Rapp	Senior Social Development Specialist
Mika-Petteri Torhonen	Senior Land Policy Specialist
Andrew Osei Asibey	Monitoring and Evaluation Specialist
Begashaw Wukaw Woldu	Technical Specialist for Public works
Asmita Tiwari	Senior Disaster Risk Management Specialist
Tesfaye Ayele	Senior Procurement Specialist
Jose Janeiro	Senior Finance Officer
Abiy Demissie Belay	Financial Management Specialist
Klaus W. Deininger	Lead Economist/ Land Administration
Million Alemayehu Gizaw	Natural Resources Management Specialist
Andre Rodrigues de Aquino	Carbon Finance Specialist
Teklu Tesfaye Toli	Senior Agricultural Specialist
Ademola Braimoh	Team Member
Chukwudi H. Okafor	Senior Social Development Specialist
Asferachew Abate Abebe	Environmental Management and Safeguards
Mistre Hailemariam Mekuria	Team Assistant
Aurore Simbananiye	Program Assistant
Yesmeana N. Butler	Program Assistant
<b>Supervision / ICR</b>	
Paul Jonathan Martin	Task Team Leader
Stephen Danyo	Task Team Leader
Dinesh Aryal	Co-Task Team Leader
Banu Setlur	Co-Task Team Leader

Ayalew Kebede Belew	Procurement Specialist
Tesfaye Ayele	Procurement Specialist
Kejela Fufa	Procurement Specialist
Mekdim Hailu Yemane	Financial Management Specialist
Abiy Demissie Belay	Financial Management Specialist
Stephen Diero Amayo	Financial Management Specialist
Meron Tadesse	Financial Management Specialist
Fikremariam Adal	Financial Management Consultant
Yacob Wondimkun Endaylalu	Social Specialist/Environmental Specialist
Asferachew Abate Abebe	Social Specialist
Samuel Lule Demsash	Social Specialist
Agezew Hidaru	Social Development Specialist
Michael G. Carroll	NRM and Rural Development Specialist/ ICR Main Author
Andre Rodrigues de Aquino	Carbon Finance Specialist
Hailu Tefera Ayeke	Sr Forest Carbon Specialist
Tomothy Brown	Senior Forest Specialist
Mei Xie	Senior Climate Change and Learning Specialist
Million Alemayehu Gizaw	Senior Natural Resources Management Specialist
Shimeles Sima	Senior Forest Landscapes Specialist
Ademola Braimoh	Team Member
Dereje Agonafir Habtewold	Environmental Safeguards Specialist
Grazia Atanasio	Communications Specialist
Zena Afework Demissie	Communications Specialist
Anna Corsi	Senior Land Administration Specialist
Nadege Orlova	Senior Land Administration Specialist /ICR Contributor
Marguerite Duponchel	Economist
Shewakena Aytenfisu Abab	Land Tenure Specialist
Yasmina Oodally	Operations and Soils Specialist
Sandra Maria Romboli	M&E Specialist and Economist
Daniel C. Monchuk	M&E Specialist
Hild Rygnestad	ICR contributor / Economic Efficiency Analysis
Mistre Hailemariam Mekuria	Program Assistant
Netsanet Ayalew Belete	Program Assistant
Ejigayehu Teka Habte	Team Member
Mahlet Gima	Program Assistant
Mediha Mohammed Ahmed	Team Assistant
Addis Bekele Simie	Team Member
Ahmed Alkadir Mohammed	Operations Officer/ Consultant
Chukwudi H. Okafor	Social Specialist
Anna Elisabeth Wikman	Team Member

Sisay Nune Hailemariam	NRM Specialist
Tewodros Gebreegizabher	Climate Smart Agriculture Specialist
Madjiguene Seck	Communications and gender
Gelila Woodeneh	Communications officer
Yesuf Abdella (FAOCP/WBG)	Senior Rural Engineer
Heywot Kedan Mariam	Environmental Specialist
Tamru Temam	Environmental Specialist

## B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
<b>Preparation</b>		
FY13	26.337	171,995.83
FY14	18.888	296,655.11
FY15	1.225	1,828.69
<b>Total</b>	<b>46.45</b>	<b>470,479.63</b>
<b>Supervision/ICR</b>		
FY14	11.488	262,757.25
FY15	31.747	358,219.78
FY16	57.133	467,519.51
FY17	111.587	853,061.57
FY18	57.945	765,444.03
FY19	98.890	810,117.89
<b>Total</b>	<b>368.79</b>	<b>3,517,120.03</b>



### ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US\$M)	Actual at Project Closing (US\$M)	Percentage of Approval
Component 1: Integrated Watershed and Landscape Management	71.15	60	84.33%
Component 2: Institutional Strengthening, Capacity Development and Knowledge Generation and Management	16.54	15.2	91.89%
Component 3: Rural Land Administration, Certification and Land Use	11.90	7.6	63.86%
Component 4: Project Management	3.37	13.4	397%
<b>Total</b>	<b>102.69</b>	<b>96.2</b>	<b>93.68%</b>

Note: This amount does not include US\$2.94 million of co-financing provided by the Government of Ethiopia, which was allocated to the Component 1. The foreign exchange losses from the SDR and the Multi-Donor Trust Fund were reflected in the second restructuring and reduced the available funding by US\$5.34 million. The resulting actual amount at closing after the reconciliation of a few outstanding disbursements is US\$96.2 million taking into account US\$0.096 million still to be returned to the World Bank by the Client at the time of this report finalization.



## ANNEX 4. EFFICIENCY ANALYSIS

1. As noted in the World Bank Guidance on Implementation and Results Report (ICR), “efficiency is a measure of how economic resources and inputs are converted to results” (World Bank, Sep 2018). In this Annex, efficiency is analyzed by: comparing planned and actual investment costs; performing a benefit cost analysis; and discussing non-quantifiable benefits and implementation issues.
2. Where applicable, the results of this ex-post efficiency analysis are compared back to the ex-ante economic and financial analysis (EFA) in the PAD (World Bank, October 2013). Detailed assumptions are available in project files.

### Scope

3. The PDO and GEO is to reduce land degradation and improve land productivity in selected watersheds in targeted regions in Ethiopia. As stated in the PAD, the incremental benefits from this project accrue from the productivity and environmental gains achieved through improved land management. To continue the methodology used at appraisal, the scope of the analysis is limited to quantifying incremental net benefits on cultivated land. The impact on other types of land and beneficiaries are acknowledged in the qualitative analysis.
4. It is important to note that due to data availability, the ex-ante analysis in the PAD covered 38 percent or 28 percent of the 135 planned watersheds and 56 percent of the original budget. In this ex post analysis 123 or 91 percent of the 135 watersheds and all the investment costs are included. To evaluate ex post efficiency, it is important to include all costs even if not all benefits can be quantified. Results are then easier to interpret in that they present the most conservative estimate of return on investment. Any additional net benefits that can be quantified will lead to higher returns without the need to also consider increased costs.
5. The components and subcomponents of this project are not separable and are therefore all required to capture planned benefits. While the quantitative analysis is focused on net benefits captured on cultivated land in 123 watersheds across the project area, this requires more than just costs invested in Subcomponent 1.b (homestead and farmland development, livelihood improvements, and CSA). As noted in the PAD, for beneficiaries to adopt improved climate smart farming practices and diversify/intensify their current production systems on private land, it is necessary to also reduce degradation-related risks on communal lands in Subcomponent 1.a. The success of the project interventions relies on sustaining benefits into the future by supporting institutional development and by building capacity among beneficiaries in Component 2.



Similarly, component 3 is needed to facilitate tenure-security that can positively influence farm-level investments. This component also ensures local participation in land use planning to sustain benefits after the project has ended.

### **Planned Versus Actual Investment Costs**

6. The investments costs considered for this analysis come from the October 10, 2018, Financial Report. Total spending as of October 2018 has been US\$90.66 million (ETB 2,001 million). Some additional costs have accrued in the final quarter of 2018. The project has been restructured twice due to foreign exchange losses and the original closing date was changed from April 7, 2019, to December 31, 2018, due to early disbursement of funds. During restructuring in July 2017, funds were reallocated to Component 4 from the other components. This was also done to allow for higher than expected costs particularly for M&E. At restructuring, overall project design remained unchanged but outcome targets were reduced in several subcomponents (SLMP-2 restructuring documents, June 2017 and July 2018). The comparison of the planned and achieved targets (efficacy) is discussed in the specific section of the ICR.

7. Project management costs constitute 13.4 percent of total cost and are four times higher than the initial budget, which was allocated for this activity. The increased cost is partially due to a low initial estimate of 4.2 percent of total costs, which was adjusted during restructuring in 2017. Other projects of this type often allocate about 10 percent of costs to project management (SLMP-1 and RLLP). While project management has been rated as good since the start of the project, the additional costs allocated during the 2017 restructuring helped improving the M&E system.

8. Data for actual unit costs for different project activities are not available. Total community contribution was 20.3 million person-days (PDs) with a cost of ETB 596 million (US\$27 million). 47 percent of this labor was for SWC measures on farmland, 27 percent for SWC measures on communal land, 11 percent was for homestead and livelihood development, and 9 percent for community forest management. For project costs beneficiaries had to provide 20 percent of labor free for communal land activities as well as on very steep farmland (slope >30 percent) and 70 percent of labor free for farmland activities. Beneficiaries were paid local rates for the remaining labor provided. The assumed unit norms at project appraisal match the official work norms issued by MoA (2004) as follows for number of PDs for construction labor and maintenance labor, respectively:

- (a) Bench terrace: 500 PD/km; 16 PD/km
- (b) Hillside terrace: 250 PD/km; 16 PD/km
- (c) Stone bunds: 250 PD/km; 16 PD/km
- (d) Fanyaa Juu: 200 PD/km; 16 PD/km
- (e) Soil bunds: 150 PD/km; 16 PD/km
- (f) Grass strip: 30 PD/km; 0 PD/km



## Economic and Financial Analysis

9. To match the methodology in the PAD, the economic and financial returns of the project investment are estimated using a 25-year cost benefit model with a financial discount rate of 12 percent and economic discount rate of 10 percent.

10. **Benefit streams.** Detailed assumptions about benefits and costs are provided in Appendix 1. One of the main benefit streams quantified on cropland in the project area is avoided soil erosion achieved by SWC measures. Physical structures include soil bunds, terraces, *fanyaa juus*, and stone bunds. Biological measures include establishing grass strips and planting fodder on bunds. With adoption of improved farming practices and continuous and proper maintenance of SWC structures the project interventions are expected to increase productivity over time. Net benefits are also expected from farmers adopting intercropping with fodder crops. Appendix 3 lists the 135 watersheds with a note on which 123 watersheds are included in the analysis with: cropland area, estimated soil erosion, km of physical and biological SWC measures, and ha of treated farmland. Against these benefit flows the analysis considers: loss of cropland to SWC structures, variable costs of fodder production on bunds and as intercropping, as well as investment and maintenance costs.

11. **Financial investment costs.** Investment costs included in the analysis are based on actual spending as of October 2018 amounting to ETB 2,001 million (US\$90.66 million) across six years from 2013 to 2018. As explained in appendix 1, estimated in-kind contributions are added to this to the amount of ETB 761 million (US\$34 million). When converted to 2013 amounts total investment costs correspond to ETB 2,278 million (US\$104 million) in financial values. Future maintenance costs are assumed ETB 46 million (US\$2.1 million) per year in labor, materials, and supervision.

12. **Economic investment costs.** Taxes and duties are excluded from the investment costs in the economic analysis equal to ETB 28 million (US\$1.3 million) based on assumptions in the PAD. After adding the economic value of the in-kind contributions and converting to 2013 amounts, the economic analysis includes ETB 1,648 million in investment costs (US\$75.3 million) with annual recurring costs of ETB 33 million (US\$1.5 million).

**As shown in table 4.2, the overall project is a financially viable investment with a 21 percent financial internal rate of return (FIRR) and a financial net present value (FNPV) of ETB 2.191 million (US\$99 million). In economic terms, it is also a viable investment with a 23 percent EIRR and an ENPV of ETB 3,308 million (US\$150 million).** Annually this is an average of ETB 132 million or US\$6 million. The annual benefit and cost flows are shown in appendix 2 in economic values. Further analysis shows that 60 percent of the benefits come from increased productivity, 31 percent from avoided soil loss, 5 percent from livestock production on bunds, and 4 percent from fodder intercropping. On the other hand, 50 percent of the costs are investment costs, 32 percent are from lost land, 7 percent from variable costs in fodder production on bunds, 5 percent from variable costs in fodder intercropping, and 6 percent is from annual maintenance costs after project implementation.



Table 4.1. Financial and Economic Analysis – PAD and ICR

Indicator	ETB millions		US\$, millions	
	PAD	ICR	PAD	ICR
FIRR, %	19	21	19	21
FNPV	1,603	2,191	57	99
EIRR, %	26	23	26	23
ENPV	3,098	3,308	111	150
<b>Analysis scope</b>				
Investment costs included (including tax, excluding in-kind contributions)	1,609	2,001	57	91
Original (PAD) and restructured (ICR) budget	2,939	2,001	105	91
Share of budget (%)	55	100	55	100
Watersheds included, #	38	123	38	123
Share of 135 watersheds (%)	28	91	28	91

Notes: Using 25-year horizons the financial and economic discount rates are 12 percent and 10 percent, respectively for both PAD and ICR. PAD exchange rate = ETB 28/US\$. ICR exchange rate = ETB 22.07/US\$. The NPVs reported in the PAD were slightly higher (FIRR = 19 percent; FNPV = 1,771; EIRR = 24 percent; ENPV = 3,145). During ICR analysis, some calculation errors were corrected in the original PAD model. The restated results are shown in this table.

13. **Comparison to the PAD.** In the original PAD the estimated FIRR was 19 percent and the EIRR was 26 percent. The rates of return are similar even if the current analysis is based on 91 percent of the watersheds and 100 percent of the costs, while the original PAD estimate was based on 28 percent of the watersheds and 55 percent of the costs. As documented in Appendix 1 and discussed later in the sensitivity analysis, some key assumptions in the current analysis differ from those in the PAD including: investment costs spread out over 6 years rather than 1, higher gross margins, lower estimated soil loss, and smaller share of land lost to SWC structures.

14. **Comparison to BCR.** These results are similar to a financial analysis undertaken in the BCR (MoA 2018). The 20-year analysis included initial yield loss followed by yield increases on a representative farm with SWC practices. It also assumed a future yield loss in the absence of project implementation. With initial farm-level investment costs and annual maintenance costs in subsequent years, the resulting FIRR was 24 percent with an FNPV of ETB 10,950 using a 12.5 percent discount rate. It was concluded that the SWC measures are financially viable and they





enable farmers to improve their productivity. The household survey also indicated that 79 percent of respondents believed that SWC are profitable. MoA (2018) estimates a 24 percent EIRR over a 25-year analysis, which also corresponds to the current analysis.<sup>8</sup>

Table 4.2.Sensitivity Analysis, Financial and Economic Values

Case	FIRR, %	FNPV, ETB, millions	FNPV, US\$, millions	Change in NPV (%)
1. ICR EFA Base Case, Financial Analysis	21	2,191	99	0
3. Higher financial discount rate, 12.5% rather than 12%	21	1,974	89	-10
2. ICR EFA base case, economic analysis	23	3,308	150	0
4. Lower economic discount rate, 5% rather than 10%	23	7,827	355	137
5. 5% lower avoided annual soil loss	23	3,221	146	-3
6. Crop gross margins as in SLMP-2 gross margin study	16	959	43	-71
7. Crop gross margins as in PAD	14	537	24	-84
8. Achieve 5% rather than 10% productivity increase	17	1,412	64	-57
9. Achieve no productivity increase	7	-488	-22	-115
10. 5% lower avoided annual soil loss, medium gross margins from gross margin study, only 5% productivity increase	10	25	1	-99
11. Revert to without project situation after 15 years	21	1,950	88	-41
12. Revert to without project situation after 8 years	9	-56	-3	-102
13. 11% rather than 6% land lost to SWC structures	21	2,783	126	-16
14. More intercropping (10% of cropland)	29	6,176	280	87

15. **Sensitivity to discount rates.** Table 4.3 presents several cases to discuss the sensitivity of estimated project returns. Firstly, the BCR suggested an opportunity cost of capital of 12.5 percent. In the current analysis, FNPV decreases by 10 percent if the discount rate is increased from 12 percent to 12.5 percent. Conversely, current World Bank guidelines suggest using a 5 percent economic discount rate (World Bank 2015). Applying this rather than the 10 percent adopted from the original PAD, ENV would increase ENPV by 137 percent.

<sup>8</sup> It was not possible to compare the results from the current analysis with the economic analysis conducted in the BCR due to lack of documentation in that document (MoA 2018).



16. **Sensitivity to estimated avoided soil loss.** In the base case avoided annual soil losses range between zero and 63 tons/ha/year with an average of 20 tons/ha/year. Compared to other sources these estimates are conservative, however if the estimated soil loss in the without project situation is 5 percent lower than the Base Case, the ENPV can fall by 3 percent but still provide an EIRR of 23 percent.
17. **Sensitivity to value of soil.** The crop gross margin used to value soil in the PAD was lower than what was found in the SLMP-2 gross margin study (Große-Rüschkamp 2015) and in the BCR (MoA 2018). Since crop gross margin is used to value soil in several benefit streams, the estimated EIRR would fall from 23 percent to 16 percent when using the gross margin study, whereas the EIRR would fall to 14 percent if using the PAD estimate. Using elasticity analysis, a 1 percent increase in the gross margin (and therefore the value of soil) is estimated to lead to a 1.3 percent increase in ENPV. Compared to the opportunity cost of capital, the overall investment remains viable regardless of which gross margin is used, however this quantifies the importance of reducing erosion and improving farm management on land with higher productivity—as well as the costs experienced when losing land with higher productivity.
18. **Sensitivity to reduced productivity increases.** Project returns are sensitive to the assumption about how improved management practices can increase productivity in the future. If farmers are unable to adopt new practices and if SWC structures are not maintained, productivity may only increase by 5 percent rather than 10 percent over time. This would lead to a 57 percent reduction in NPV and a drop from 23 percent to 17 percent EIRR. Using elasticity analysis, a 1 percent reduction in this productivity increase can lead to a 1.1 percent reduction in ENPV. At the extreme, if no productivity increases are achieved in future years, the project is no longer financially or economically viable.
19. **Reverting to without project situation.** If lack of sustainability in the future is such that SWC structures are not maintained and farmers revert to the original farm management practices, the annual benefits and costs could revert to the without-project situation. If, for example, this happens after 15 years, the estimated ENPV could fall by 41 percent. If the area reverts to the without-project situation after only 8 years, the investment is no longer viable as ENPV falls below 10 percent. This is also reflected in the estimated payback period of 8.5 years. It is important to continue maintaining SWC structures in the future and ensure that capacity building among beneficiaries enables them to maintain the improved management practices.
20. **Sensitivity to loss of land to SWC structures.** In the original PAD, it was assumed that 12.3 percent of farmland would be lost to SWC structures (7.5 percent for grass strips). The assumption in the current analysis is a 6 percent land loss in line with the BCR. If the loss is increased to an average of 11 percent, estimated ENPV falls by 16 percent and the EIRR falls from 23 percent to 21 percent. Note that in the current analysis, it is assumed that some bunds are planted with improved fodder crops—thereby capturing net benefits on the land lost from other cropping activities.
21. **Sensitivity to adoption of fodder intercropping.** It has been acknowledged that the initial target for intercropping has not been met. At a national level, 35 percent or 2,434 ha of the 6,944 target, has been achieved. For the 123 watersheds included in this analysis, intercropping



has been adopted on 1,982 ha (0.3 percent of cropland area). In the PAD the original assumption was that 10 percent of cropland could be converted to intercropping. If this was achieved in these 123 watersheds it could constitute an 87 percent increase in ENPV with an EIRR of 29 percent. Building capacity and supporting farmers to adopt CSA such as intercropping can increase project economic returns significantly.

### Qualitative Benefits and Implementation Issues

22. **Rehabilitation of communal lands.** The non-quantified benefits in SLMP-2 are linked to activities and outputs that are captured in the quantified analysis. For example, physical and biological SWC measures and gully rehabilitation on communal lands provide direct benefits to adjacent farmland by stabilizing hillsides. In addition, this increases ecological services and productivity for income-generating activities on communal lands. Benefits have also been achieved by demarcating community forests and managing these for reduced degradation with afforestation and reforestation measures.

23. **Use of local labor and alternative livelihoods.** Project implementation has included a substantial amount of local labor when completing both physical and biological SWC measures. While some of the work has been provided in-kind by beneficiaries, some has also been paid labor. Total community contribution was 20.3 million PDs with a cost of ETB 596 million (US\$27 million). 47 percent of this labor was for SWC measures on farmland, 27 percent for SWC measures on communal land, 11 percent was for homestead and livelihood development, and 9 percent for community forest management. By using local labor, this enables local beneficiaries to take charge of maintaining structures in the future. The project also supported the establishment of bamboo seedling production and of over 1515 local nurseries that are able to continue operating after project implementation. Their capacity was developed while providing planting materials for the project.

24. **Community infrastructure.** In the current analysis, the potential for farmers to achieve increased productivity on cropland relies on more than the SWC measures. In some watersheds this benefit relies on the development of community infrastructure for SSI, water-harvesting technologies, and construction of feeder roads. In addition, these infrastructures generate many benefits other than those captured on cropland by providing households with improved access to water for domestic and livestock use. Improved roads also provide access to markets, schools, and medical and social services.

25. **CSA and high-value crops.** The only part of the SLMP-2 initiatives toward CSA that has been quantified directly relates to fodder intercropping. The assumed avoided soil loss and increased soil productivity quantified on cropland may also rely on several other activities such as composting, crop residue management, agroforestry, reduced or zero tillage, and use of cover crops. In support of this, the project has also promoted improved and high-value crops to farmers such as planting of fruit trees, root and tuber crops, coffee, spices, vegetable, potatoes, and high-value cereals and pulses. Together with improved market accessibility this improves both food and income diversification.



26. **Cut-and carry livestock feeding system.** Over 55,000 households have adopted a cut-and-carry feeding system. By encouraging households to switch to rearing livestock without allowing them to graze freely in communal areas, the project is helping reduce the pressure on degraded areas while also improving livestock production. More crop residues are left to improve agricultural soils and the quality of livestock feed improves. It would be very useful to evaluate the costs and benefits of this feeding system in terms of increased yield of the livestock, costs of fencing/tethering or rotational grazing, labor costs for collecting fodder, costs of purchasing additional feed, as well as the value of reduced pressure on degraded lands. Increased adoption of this feeding system may also have an impact on the local value of fodder crops that may or may not be met by increased supply through fodder production on bunds and intercropping.
27. **Promoting income-generating activities.** It has already been noted that project beneficiaries have been able to adopt alternative livelihoods through newly established plant nurseries. In addition, households will benefit from the promotion of and support to establish other income-generating activities such as backyard poultry production, shoat fattening, and apiculture. While these benefits have not been captured in the analysis, beneficiary households can improve both food and income diversification.
28. **Improved capacity of community institutions and beneficiary groups.** All the quantified and non-quantified benefits rely on successful capacity development set out by the project. Working through local institutions and using local labor reduces project costs and improves sustainability if costs can be funded in the future. Institutions have been strengthened so that the captured benefit streams can continue into the future. The sustainability of the project interventions will rely on the capacity of and future support for the established Woreda Steering Committees, CWTs, and KWTs. They will be responsible for implementing local land use plans and supporting local beneficiary households with the necessary knowledge they need to achieve the improvements offered by the project. This can be done by continuing with technology demonstrations and farmer training visits and field-days. Beneficiaries can work together in newly established watershed user associations and self-help groups for income-generating activities.
29. **Cadastral surveys and land certificates.** Through the land administration and certification component, the project area and its households have benefited from cadastral surveys, parcel-mapping and issuing of land certificates. This strengthens tenure security for smallholders in the area that provides motivation to adopt improved management practices from which benefits accrue gradually over time.
30. **M&E system.** The project has put particular emphasis on developing an M&E system around the large amount of data collected. As noted in the November 2018 Aide Memoire, more work is required to reconcile different data sources and setting up an integrated database for project activities. This work will benefit M&E for the current project as well as for planning future related projects.
31. **Improved carbon balance.** The incremental CO<sub>2</sub>eq accumulated in the project area as per November 2018 has been estimated as 5.4 million tCO<sub>2</sub>eq across 855,378 ha (6.3 tCO<sub>2</sub>eq/ha). This is 64 percent of the original sequestration target of 8.3 million tons. The impact is derived from land use changes including: Afforestation/reforestation, area closure, bamboo and gully stabilization; communal and farmland SWC



measures; and agroforestry promotion. It also includes improved CSA; conservation tillage; tropical and temperate fruit seedling planting; and annual crop systems converted to perennial systems. Finally, carbon balance improvements have been achieved through backyard forage systems and pastureland, as well as forest enrichment in demarcated areas.

## Conclusions

32. **The suggested efficiency rating for SLMP-2 based on this quantitative analysis is Substantial. If more of the benefits discussed qualitatively could be quantified the rating may possibly increase to High.** The estimated financial and economic rates of return of 21 percent and 23 percent, respectively, indicate that SLMP-2 is a viable project investment. The quantitative analysis only includes net benefits captured on cropland in 91 percent of the watersheds with implementation of SWC measures and improved farm management. Because all project costs are included in this analysis, all other non-quantified benefits are expected to increase the estimated rates of return.

33. The captured net benefits are dependent on sufficient future maintenance of the SWC structures as well as capacity building for farmers to achieve the expected productivity gains. Substantial additional gains can be captured with increased adoption of farming practices such as fodder intercropping. Benefits from many non-quantified project achievements include

- (a) Rehabilitating degraded communal lands;
- (b) Using local labor during implementation;
- (c) Establishing irrigation and road infrastructure;
- (d) Supporting improved food and income diversification and new livelihoods;
- (e) Implementation of Climate-Smart agriculture practices
- (f) Promoting cut-and-carry livestock feeding system;
- (g) Strengthening local institutions and beneficiary groups, which can improve sustainability if their costs can be funded in the future;
- (h) Strengthening tenure security that motivates adoption of improved management practices that provide benefits gradually over time;
- (i) Developing an M&E system to benefit this as well as future projects; and
- (j) Providing a net carbon sink due to land use changes.

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

### Comments from the National Project Coordinating Unit of the Ministry of Agriculture

No	Issues from the NPCU	Comments and Suggestion
1	We acknowledge lead consultant of ICR and SLMP2 TTL for compiling and analyzing project results and output. Looking into the content of the report we would like to request skill transfer to regional and national staff on financial and economic cost benefit analysis. Considering its implication for efficient RLLP implementation	World Bank to organize one to two days interactive training for skill transfer and the report analysis result verification for project coordinators and M&E team.
2	Updated data as per the resent documents sent the ICR consultants <ul style="list-style-type: none"> <li>Mismatch of figures used for report writing: Text paragraphs and annex table 1 of Results Framework Indicators and Key Outputs</li> <li>Un-updated cumulative financial utilization generated from the system and its implication on analysis of the report.</li> </ul>	<ol style="list-style-type: none"> <li>Cumulative financial utilization according to IFR 21 submitted to Bank and copy document forwarded to ICR Consultants through e-mail on March 15, 2019.</li> <li>Final version BCR shared to the team on March 5, 2019</li> </ol>
3	Under annex 4, Appendix of Detailed Assumptions, the report indicated incremental net benefits are quantified for 123 watersheds, while the project invested in 135 watersheds. It is indicated that naming of the project was a limitation. What is the bench mark of naming comparison for the data NPCU submitted?	The PCU submitted basic data of all watersheds including names a year before. The analysis should consider the remaining 12 watersheds. We need clarity.
4	Component 4 budget share at completion: Additional justification for percentage increment beyond revised budget.	<ul style="list-style-type: none"> <li>Incremental cost to improve weakness and address growing demand for M&amp;E framework improvement.</li> <li>Additional cost for follow on project (RLLP) design mission due to unforeseen restructuring</li> <li>Inflation of cost for items procured for project management component especially maintenance and fuel cost for the project implementation.</li> </ul>



No	Issues from the NPCU	Comments and Suggestion
5	Detail comments	<ul style="list-style-type: none"> <li>Detail comments are shown in the main document to be considered</li> </ul>
6	In para 79: The limited coordination between the NPCU and the NRM Directorate could have become a factor affecting project implementation, but was effectively compensated by the active engagement of the State Minister for NRM in all aspects related to project governance and dialogue with the Bank	NPCU considers this statement is not relevant to the ICR

**Comments from Embassy of Norway, Addis Ababa**

**General feedback:**

The report is comprehensive providing clear understanding on the project planning and implementation processes; changes made during the project implementation and project achievements/results. Project achievements under each project component have gender information in most cases.

It is very interesting to read throughout the report the interconnectedness of the project components and its contributions/synergies to the PDO. It is also encouraging to see how the project addressed the various environmental, economic and societal problems in integrated manner. The project efficiency assessment is also well presented.

The report however covers minimal information on how the project addressed or managed risk factors outlined in the project document (PAD).

**Detailed feedback:**

Financing (Page 2): it is unclear why Norway’s disbursement to the WB is indicated as 0.

**Project Context and Development Objectives**

- Theory of change (Figure 1) is well presented. However, the diagram is presented twice on page 7 & 8.
- Paragraph 12: the institutional strengthening support provided at community level was more at institution level such as community-based organizations and different committees rather than individual level (farmers and community leaders).
- Paragraph 18: it is unclear whether high or low expenditure rate of the project contributed for the need for the 2016 restructuring.
- Paragraph 20: the reduction of targets during the second restructuring is because of not only devaluation in Norwegian Kroner, but also devaluation in SDR mentioned under paragraph 18.



- Paragraph 39 & 40: the report contains good information on CSA sub component. However, it would have been more useful/ informative if some concrete results for example on household yields, incomes, labor etc. are included in the report, similar to the results on land certification presented under paragraph 49. This is especially useful since the project result framework does not have indicators on CSA.
- Paragraph 66 & 67 – Gender: Inclusion of information on the benefit of CSA practices for women/female headed households for example in terms of reducing labor demand would provide good insights on the benefit of CSA as well.
- Paragraph 72: it would be interesting to refer the private sector engagement in the context of Private Public Partnership and corporate social responsibility in the natural resources management sector. The linkages between SLMP and researches through higher educational/research institution such as Mekelle University at watershed level is another value addition to the project. This kind of synergy ensures project resource efficiency since the collaboration with Mekelle University is related to the Norway support on research and technology development to the University.
- Paragraph 88: the limitations of the SLMP M&E system is discussed in the report, highlighting the need for further work in order to make the system relevant and be able to provide information in line with the project indicators at different levels. It also lacks information on how the M&E system verified the data gathered from the fields. It is therefore unclear how the quality of M&E system is rated Substantial.
- Paragraph 89: it would be useful if the report discusses how the project (WB & PCU) addressed safeguard issues.
- Paragraph 97: the sentence on beneficiaries from various capacity development interventions needs revision. 9,477 is the total recipient number, not the number of capacity development sessions provided to end users.
- Paragraph 108: One of the weaknesses of the project financial management was inability to settle advance payments by woreda offices (audit report of the project on 2017 audits).
- Paragraph 109: Graduation approach in SLMP also needs to be understood/explained in a context as one of the mechanisms developed in order to phase out SLMP I watersheds by transferring the watersheds to the government SLMP programme, ensuring the sustainability of SLMP I&II interventions and results.
- Paragraph 116 & 117: the report covers only few risk factors outlined in the SLMP II PAD. Information on how the project managed to address other risk factors mentioned in the project PAD is also important.
- Annex I - Results framework: insertion of percentage on plan vs achievement would be more useful.





- Annex IV – Efficiency Analysis – paragraph 32: it seems proper if the report includes CSA in the list of non-quantified project achievement, since very limited quantified analysis is provided on the CSA subcomponent of the project.

## ANNEX 6. SUPPORTING DOCUMENTS

Centre for Development Research. *SLMP-2 Borrower Completion Report*. December 2018. Addis Ababa

Berhane, Gebreyohannes. 2017. *Assessment of Livestock Impact on NRM Interventions of SLMP-2 and Recommendations for the Design of the Resilient Landscapes and Livelihoods Project (RLLP)*.

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Ministry of Agriculture. 2016. *Climate Smart Agriculture – A Field Manual for SLM Practitioners*, December 2016. Addis Ababa

World Bank and TerrAfrica. 2015. “Restoring the Landscapes of Ethiopia’s Highlands. Creating Natural Wealth for Improved Livelihoods.” Washington, D.C.

Große-Rüschkamp, A. 2015. *Productivity and Income Contribution of Family Farm Enterprises: A Gross Margin Study on the Sustainable Land Management Program (SLMP) – Summary Report*. Addis Ababa: *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH*.

Haregeweyn, Nigussie, Atsushi Tsunekawa, Jan Nyssen, Jean Poesen, Mitsuru Tsubo, Derege Tsegaye Meshesha, Brigitta Schütt, Enyew Adgo, and Firew Tegegne. 2015. “Soil Erosion and Conservation in Ethiopia: A Review. Progress in Physical Geography.” *Progress in Physical Geography* 39: (6) 750–774.

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World Bank. 2015. *Technical Note on Discounting Costs and Benefits in Economic Analysis of World Bank Projects*. Washington, DC.



World Bank. 2018. *Ethiopia Resilient Landscapes and Livelihoods Project. Project Appraisal Document.* Report No: PAD2484.

**Data Sources (Economic Analysis)**

**Investment costs:** Sustainable Land Management Project Phase II. Interim Unaudited Financial Reports from July 7, 2014, to October 10, 2018. Ministry of Agriculture. Addis Ababa.

**Project achievement and output:**

- Sustainable Land Management Project II. 2007 to 2010 E.C Cumulative Report. Results Framework Indicators including Excel files by watershed, woreda, region, and nationally. NPCU. Ministry of Agriculture and Natural Resources. November 4, 2018.
- Additional Excel files from NPCU summarizing achievements and outputs for the last half of 2018 by region and nationally. February 4, 2019.

**Project multiyear plans.** Sustainable Land Management Project II. Excel files with multiyear plans by watershed, woreda, region, and nationally. NPCU.

**Watershed land use and erosion.** List of 135 watersheds with annual erosion, land use, and land cover estimated from satellite data. SLMP-2 project team.

**Inflation.** World Development Indicators database, data series FP.CPI.TOTL. Accessed November 14, 2018.

**ANNEX 7. MAP OF PROJECT AREAS**

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