Republic of Sudan

Livestock Marketing and Resilience Programme

Community led Natural Resource Management and Enhanced Adaptive Capacities

GEF Terminal Evaluation Report

December 2022

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Annexes

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List of Abbreviations

ABSUMI	Agricultural Bank of Sudan Microfinance Initiative
AMAT	Adaptation Monitoring and Assessment Tool
ASAP	Adaptation for Smallholder Agriculture Programme
AWPB	Annual Work Plan and Budget
BIRDP	Butana Integrated Rural Development Programme
CAP	Community Adaptation Plan
CBD	International Convention on Biological Diversity
CBOs	Community Based Organizations
CBS	Central Bank of Sudan
CC	Climate Change
CCU	Central Coordination Unit (GoS – IFAD)
CEAP	Community Environmental Action Plan
CEO	Chief Executive Officer
CORE-UNHCR	United Nations High Commissioner for Refugees
CR-CVP	Climate Resilient Community Village Plan
CSOs	Civil Society Organisations
DMPERS	Drought Monitoring Preparedness and Early Response System
DSS	Decision Support System
ECCA	Environment and Climate Change Assessment
EIA	Environmental Impact Assessment
ELS	End Line Survey
ESIA	Environmental Social Impact Assessment
ESMP	Environmental and Social Management Plan
EWS	Early Warning System
FAO	Food and Agriculture Organization of the United Nations
FC	Financial Controller
FEWSNET	Famine Early Warning Systems Network
FNC	Forest National Corporation
FSTS	Food Security Technical Secretariat
GALS	Gender Action Learning System
GCF	Global climate Fund
GEF	Global Environmental Facility
GIS	Geographic Information System
GoS	Government of Sudan
GPS	Global Positioning System
Ha	Hectare

HAC	Humanitarian Aid Commission
HCENR	Higher Council for Environment and Natural Resources
HH	Household
IAMDP	Integration Agriculture Marketing Development Project
ICO	IFAD Country Office
IGA	Income Generating Activity
IGAD	Inter-Governmental Authority for Drought
ILPMP	Improving Livestock Production and Marketing Project
KM	Knowledge Management
KM	Kilometer
LDCF	Least Developed Countries Fund
LMRP	Livestock Marketing Resilient Programme
LPG	Liquid Petroleum Gas
LSCG	Livestock Saving and Credit Group
M&E	Monitoring and Evaluation
MIS	Management Information System
MoAF	Ministry of Agriculture and Forestry (federal level)
MoAR	Ministry of Animal Resources
MoFEP	Ministry of Finance and Economic Planning
MoPER	Ministry of Production and Economic Resources
MoU	Memorandum of Understanding
MTR	Mid Term Review
NAP	National Adaptation Plan
NEN	Near East & North Africa Division (IFAD)
NGOs	Non-Governmental Organizations
NOTUS	No Objection Tracking Utility System
NR	Natural Resources
NRAS	Natural Resources & Adaptation Specialist
NRM	Natural Resources Management
NSAS/LS	National Sectoral Adaptation Strategy for the Livestock Sector
OAS	Outcome Assessment Survey
OCHA	United Nations Office for Coordination of Humanitarian Affairs
PCR	Programme Completion Report
PFS	Pastoralist Field School
PIR	Project Implementation Report
PLA	Participatory Learning and Action
PMU	Programme Management Unit
PPP	Public Private Partnership

PSC	Programme Steering Committee (Federal level)
QBS	Quality Based Selection
RPGD	Range and Pasture General Directorate
RSSA	Remote Sensing and Seismology Authority
SCCF	Special Climate Change Fund
SCGs	Saving and Credit Groups
SDAT	State Development Advisory Team
SDG	Sudanese Pound
SECAP	Social, Environmental and Climate Assessment Procedures
SIU	State Implementation Unit
SNRLP	Sustainable Natural Resources and Livelihood Project
SMA	Sudanese Meteorological Authority
SPVM	Supervision Mission
SSC	State Steering Committee
STDM	Social Tenure Domain Model
SWC	State Water Committee
ToR	Terms of Reference
UKCC	University of Khartoum Consultancy Corporation
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VC	Value Chain
VDC	Village Development Committee
WFP	World Food Programme
WMC	Water Management Committee
WSRMP	Western Sudan Resources Management Project

Table 1: Project Identification:

Project ID	**5651**
Project Name	**Livestock Marketing and Resilience Programme** **GEF Project (Livestock and Rangelands Resilience Programme)**
Location	**Sudan**
Region	**NEN**
Start Date	**31 March 2015**
End Date	**31 October 2022**
Mid Term Evaluation date	**1 – 20 December 2019**
Executing and Implementing Agency	**LMRP PMU, Ministry of Animal Resources**
Co-Financing	**IFAD ASAP, GoS**
GEF Financing (LDCF)	**US$ 8,526,000**

Executive Summary

The Livestock and Rangeland Resilience Programme was embedded within the IFAD-funded Livestock Marketing and Resilience Program (LMRP), a joint effort between IFAD and the Government of Sudan/Ministry of Animal Resources (MoAR) to revive the livestock industry and optimize the use of a seriously impacted natural resource base under threat of climate change. The overall goal of LMRP was "Increased food security, incomes and climate resilience for poor households in pastoralist communities". The development objective was "Increased earning opportunities and improved living conditions in livestock-based communities".

The GEF Terminal Evaluation is intended to provide a comprehensive and systematic account of the performance of the Programme GEF Component by assessing its design, implementation, and achievement of objectives. The GEF Component under LMRP was Community-led Natural Resource Management and Enhanced Adaptive Capacities. In the GEF Document, the Project Operational title was Livestock and Rangelands Resilience Programme – financed by Least Developed Countries Fund (LDCF).

The LDCF Project Goal was: **"**Increased food security, incomes and climate resilience for poor households in pastoralist communities". The LDCF Project Development

Objective was: “Improved livelihoods and natural assets in livestock-based communities”. The project was shaped around three main lines of work, or Components: Component 1 - Enhanced capacity for community adaptive planning; Component 2 - Vulnerability reduction investments based on adaptive management of NRM; and Component 3 - Climate change preparedness and policy facilitation. The GEF Component is rated satisfactory (5), with high achievements compared to other components within LMRP.

The LDCF financing has supported the climate resilience of natural resources – rangelands and woodlands – through sustainable management practices and ecological restoration techniques, enhancing the adaptive capacity of pastoralist and agro-pastoralist communities to address climate risks, benefiting a total of 148,600 households.

LMRP has supported sustainable NRM through afforestation and rangelands restoration activities, conservation agriculture, sustainable management of water resources and protection of forests through the distribution of alternative energy sources for cooking. The majority of these interventions increased the adaptive capacity of communities, by improving shared ecosystems, reducing deforestation, and increasing access to basic services.

A significant number of water conservation structures/systems were rehabilitated/ upgraded and managed sustainably (under GEF/IFAD financing). A total of 136 out of a target of 60 sub-projects were achieved with a significant percentage of 226.7%.

Adding the ASAP-funded production and processing facilities supported with increased water availability and efficiency (100 projects), the total number of water sub-projects achieved reached 236 out of 94, representing 251% of the target.

Water is central to livelihood of the people and its scarcity hampers sustainable development. The rural communities in the programme area suffer from a shortage of both clean water for human and animal consumption and reliable water provision for agriculture. In many programme areas of intervention water constitutes the biggest challenge for pastoralists and provision of a permanent water source will lead to an increase in livestock populations and longer stays into the dry season than what rangelands can support.

The overachievements reported for water infrastructures are due to a combination of factors. Firstly, targeted beneficiaries identified access to water as their top priority. Secondly, the communities showed a strong commitment towards the realization of such structures which ensured a constant and timely financial contribution. Lastly, changes made at MTR, such as the change of the cluster modality from CAPs to CRCVPs and focus on village projects, as well as the great efforts exerted by the Programme

teams at local level and the use of the procurement system NOTUS, supported the high achievements in terms of increased water access.

Types of water interventions implemented included: rehabilitation of large water pits (Haffirs); rehabilitation of water yards; upgrading of mini-water hand pumps to water yards; maintenance and expansion of natural superficial water ponds (*Ruhood*) for livestock and establishment of underground concrete cemented water reservoirs. The programme supported the adoption of solar units as an alternative energy source to diesel generators. A total of 82 solar units were installed for water sub projects in the five states. This remarkably contributed to eliminating the costs connected to fuel and maintenance of generators, as well as providing a source of clean and renewable energy, with low maintenance costs and limited emissions of greenhouse gases after installation.

A total of 97,099 Households supported with increased water availability or efficiency were achieved out of a target of 60,000 with a performance rate of 161.8%. The intervention in water provision and sanitation was satisfactory in terms of relevance, effectiveness and efficiency.

The project further supported the conversion to renewable energy, distributing LPG units for cooking. The total cumulative amount of LPG units distributed to households reached 9,484. The activity further allowed to reduce pressure on the forest cover (3 to 5 trees were cut monthly per household previous to LPG distribution) and reduced the share of household income dedicated to energy needs for cooking.

A total of 992 KMs of livestock routes out of the target of 1100 KMs were demarcated with a percentage of 90.2%. The interventions in stock routes restoration were satisfactory and included: identification; surveying; demarcation; legalization and mapping. The total areas of stock routes sectors surveyed, demarcated, mapped and have co management structures established in the five States reached 84,910.3 Ha.

The project adaptation benefits also have a national-wide impact at the policy level, through the production of a National Adaptation Strategy for the Livestock Sector and development of the Rangelands Policy. , The project further conducted a feasibility study for an early-warning system (Drought Monitoring, Preparedness and Early Response System (DMPERS)) to provide farmers and pastoralists with reliable and timely information in relations to droughts.

Through the GEF grant, LMRP supported the establishment of mechanisms for organizing community groups and pastoralists, implemented sound environmental activities and conducted awareness-raising sessions to enhance the sustainability of natural resources management. The level of community groups engaged in NRM and climate risk management activities is satisfactory in terms of relevance, effectiveness and efficiency.

The investment in human capital, development and ownership of community organizations and networking, initiation to the co-management approach for natural resource management, empowerment of women and youth; all these interventions carry an element of sustainability. The communities are now able to prepare development plans that express their real needs (bottom-up approach) and they claimed that their voices are now heard in the decision-making government institutions at the locality and state levels.

Upon completion, recommendations focused on placing the demarcation and legalization of livestock routes within the wider framework of sustainable land use planning at state level; organizing and controlling the procedures for allocating lands for large agricultural companies; developing the design of the *Koriet* Animal traction to work as a planter in addition to its function as a plough for agricultural practices; promoting investment in rangelands restoration and fodder production; creation of technical coordination units to follow up LMRP outcomes and potential impacts in NRM interventions in coordination with related partners in the State to ensure sustainability; and ratifying the Rangeland Policy by the Cabinet.

Further recommendations include: the operation of the two Livestock Collection Points established in Wad Alnayal – Sennar State and Alrawat – White Nile State; follow up of the recently completed water projects in the States; review and update of the tripartite Agreements with the Water Authority and the Communities in order to ensure sustainability of this crucial community investment; and installation and operation of the designed Drought Monitoring Preparedness and Early Response System for weather and hazard prediction.

Introduction and Background:

The Livestock and Rangeland Resilience Programme was embedded within the Livestock Marketing and Resilience Program (LMRP), a joint effort between IFAD and the Government of Sudan/Ministry of Animal Resources (MoAR) to revive the livestock industry and optimize the use of a seriously impacted natural resource base under threat from climate change. The overall goal of LMRP was "Increased food security, incomes and climate resilience for poor households in pastoralist communities". The development objective was "Increased earning opportunities and improved living conditions in livestock-based communities".

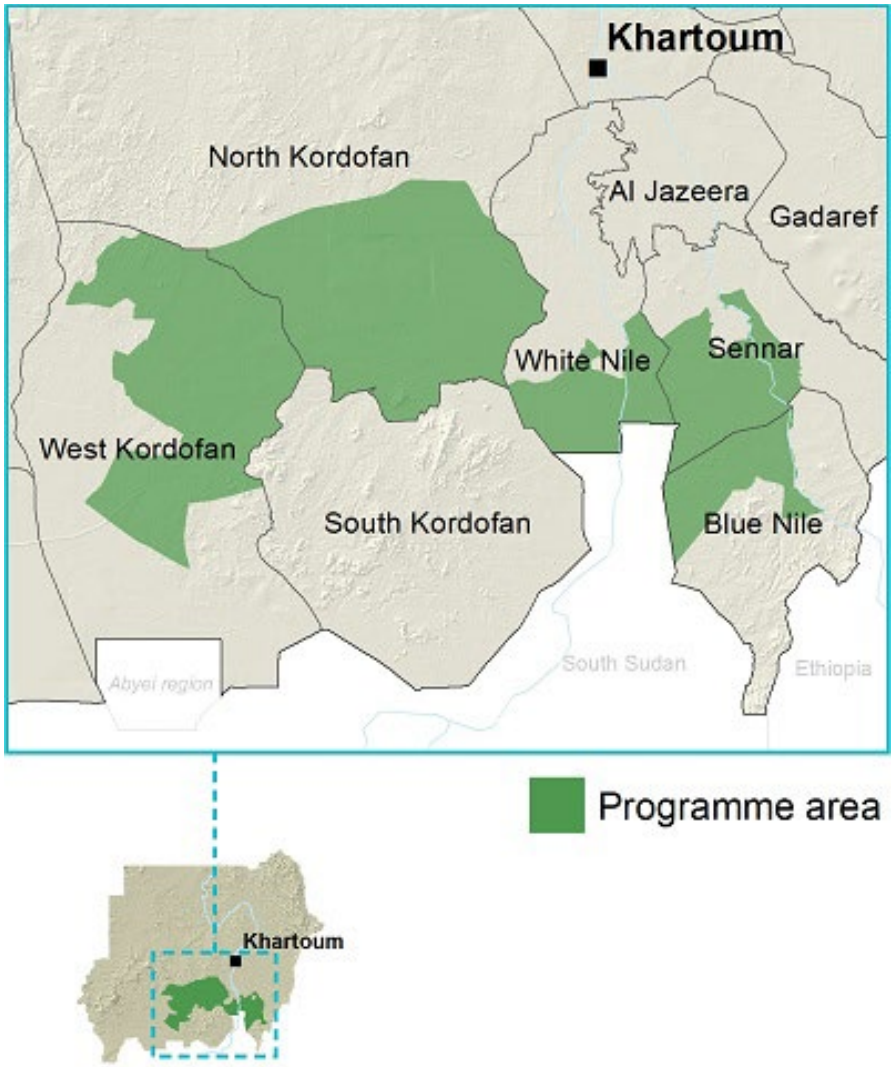
LMRP had three interlinked components, namely:

- Component 1: Livestock business development that aims to improve value-addition and market access for small-scale pastoralists and agro-pastoralists,
- Component 2: (LMRP GEF/LDCF Component) Community-led natural resources management and enhanced adaptive capacities to support a community lead process for priority natural resources management investments for building the sustainability of the livestock systems; and
- Component 3: Rural enterprise and social development to promote the up scaling of viable business plans with further technical support and access to affordable loans from microfinance institutions.

The GEF/LDCF Livestock and Rangeland Resilience Programme corresponded to Component 2 of LMRP, focusing on community-led NRM and enhancement of adaptive capacities to increase the sustainability of the livestock sector.

The programme concentrated on the heartland of the semi-arid livestock producing areas in the south of Sudan, building on the activities of previous and on-going initiatives in five contiguous States: West Kordofan, North Kordofan, White Nile, Sennar and Blue Nile.

Figure 1: Map of Intervention Areas



The Programme was planned to start in 300 clusters of villages in 16 contiguous localities, which have been selected on multiple criteria, including poverty and vulnerability to climate change and climate-related risk. The primary beneficiaries of the GEF/LDCF project have comprised those economically marginalised and excluded households residing in pastoralist and agro-pastoralist communities who: (i) have inadequate incomes from all sources to support a decent standard of living, and (ii) are potentially mostly affected by, and vulnerable to the impact of climate change.

The LDCF project has been designed keeping in mind the strategic priorities of the Sudanese Government on NRM and climate change adaptation, as well as the findings and recommendations of relevant studies and research, including IFAD's ECCA (July 2013).

The LDCF Project Goal was: “Increased food security, incomes and climate resilience for poor households in pastoralist communities”. By the end of the project, it was anticipated that 60,000 households in the project area will have increased climate resilience and will have sustainably moved out of poverty. Furthermore, 100,000 households would have improved asset ownership index compared to the baseline.

The LDCF Project Development Objective was: “Improved livelihoods and natural assets in livestock-based communities”. This objective was anticipated to be achieved through increasing by 50% the average incomes of rural poor household engaged in livestock value chains at project completion, with 20% of the target households participating actively in commercial farming by the end of the project.

The LDCF project was shaped around three main lines of work, or sub-components: Sub-Component 1 - Enhanced capacity for community adaptive planning; Sub-Component 2 - Vulnerability reduction investments based on adaptive management of NRM; and Sub-Component 3 - Climate change preparedness and policy facilitation.

The selection of programme villages was based on a cluster approach, based on geographic continuity for the fattening schemes, group formation, and Community Adaptive Plans CAPs (renamed Climate Resilience Community Village Plans (CRCVPs) after MTR) for natural resource management; access to markets and stock routes; willingness to co-invest in the VCs and NRM interventions; and high poverty levels and sufficient numbers of potential beneficiaries, particularly women and youth.

Programme Context

The IFAD-funded LMRP was approved in 2015. The Programme start date was 31 March 2015 and the closing date was 31 October 2022. Its implementation period (2017-2022) was characterized by many challenges including the following: (i) the state of political and economic instability and frequent turnover of government executive and political staff ; (ii) Freezing the Programme Account for 8 months during the February to September 2019 causing significant delay in programme activities; (iii) the COVID-19 pandemic since March 2020; (v) the unfavourable political condition and political tension after the change of regime on 25 October 2021; and (vi) depleting funds of the programme budget through overvaluation of SDG exchange rate. Moreover, the programme faced a high staff turnover and tried to hire new replacements, but the problem persisted in their lack of experience.

Table 2: LMRP Components and subcomponents:

Component 2: Community-led nature resource management and enhanced adaptive capacities

Subcomponent 2.1: Community-led natural resource management	
Outcome 2.1: Community-based natural resource management and remediation to reduce the vulnerability of settled and nomadic pastoralists.	Output 2.1.1: Community adaptive plans incorporating needs and priorities of poor women and men Output 2.1.2: More productive/improved rangelands and decreased resource-based conflict
Subcomponent 2.2: Climate change preparedness and policy facilitation	
Outcome 2.2: Response systems and innovative solutions for climate risk mitigation.	Output 2.2.1: A drought Monitoring, Preparedness and Early Response System (DMPERS) supports decision-making to mitigate climate risk in rangelands Output 2.2.2: Production of a National Sectoral Adaptation Strategy for the Livestock Sector (NSAS/LS) Output 2.2.3: Supporting conflict resolution on land disputes at the State level.

Scope, Objective and Methods:

This terminal evaluation took place during the period from 3 to 31 October 2022. The methodology adopted included in-depth review, analysis and assessment of the programme performance and results based on the Project documents and reports listed in Annex 3. The evaluator followed the guidelines for GEF Agencies in Conducting Terminal Evaluation for Full Sized Projects. The evaluator also conducted verbal consultations with the Programme Director, Programme Financial Controller, State Implementation Unit (SIU) Coordinators, Natural Resource and Adaptation Specialists and the Range and Pasture Director.

The GEF Terminal Evaluation is intended to provide a comprehensive and systematic account of the performance of the Programme GEF Component by assessing its design, implementation, and achievement of objectives.

Theory of Change:

The design of the LMRP sets out to support Government's priority to convert the livestock sector from accumulation of animals to a more productive and sustainable business-oriented mode. Building on the successes of previous and ongoing IFAD-funded projects as well as other donors with livestock, natural resources development and income diversification initiatives, LMRP sought to tackle poverty alleviation by raising the incomes of poor households through the transformation of the rural economy from subsistence to an increasingly efficient market-based system founded

on the small-scale livestock sector that promotes livelihood improvement and decreases pressure on natural resources. To this end, the LMRP concentrated on resolving various closely-interlinked problems hindering the sustainable socio-economic rural development of Sudan: 1) the poorly-developed domestic and export value chains that generate very low real (cash) demand for livestock; 2) the limited and declining productivity and economic carrying capacity of lands used for rain-fed farming and extensive livestock husbandry; 3) the combination of increased climatic shocks and policies that are posing an increasing threat to the livelihoods of livestock communities; 4) the decreased availability of ecologically healthy and climate resilient rangelands and the altering of the traditional balance between pastoralists, agro-pastoralists and crop farmers, as well as disputes over the ownership and use of the dwindling natural resources; and 5) barriers to the poor in developing viable enterprises by mobilising their own and communal resources.

Pertaining specifically to the GEF component, the project was shaped around three main lines of work: 1) enhanced capacity for community adaptive planning; 2) Vulnerability reduction investments based on adaptive management of NRM; 3) climate change preparedness and policy facilitation.

LMRP focus on enhancing community-based natural resource management and remediation was expected to reduce the vulnerability of settled and nomadic pastoralists to different environmental hazards and reduce conflict around natural resources. This would be achieved by community driven planning, operation and maintenance of water and pastoral investments. A key pillar of this result would take place if the co-management of natural resources and setting up of a community based conflict resolution system is materialized.

Regarding the response systems and innovative solutions for climate risk mitigation, LMRP aimed at improving climate change preparedness through reduced risk and enhanced policy dialogue. This included developing a Drought Monitoring, Preparedness and Early Response System; drafting and obtaining Government endorsement for the National Adaptation Strategy for the Livestock Sector; and setting up a mechanism for resolution of land disputes. Working both at local level, through increased adaptive capacities of community structures, and on the policy level would allow to reach the LDCF Project Development Objective of improved livelihoods and enhanced climate resilience of pasture and agriculture communities through adaptive rangeland, agriculture and forest management.

Assessment of Project Results:

To assess the project results it is imperative to measure the project outputs and outcomes based on the set of indicators in the Climate Change Adaptation -

LDCF/SCCF Adaptation Monitoring and Assessment Tool (GEF Tracking tool) and the LMRP Logical Framework under community led natural resource management and climate change preparedness and policy facilitation components. Some results and outcomes were also highlighted in the outcome assessments and completion surveys conducted by Programme. These included: the Outcome Assessment Survey for the natural resource component (OAS); the LMRP End Line Survey (ELS); and the Programme Completion Review (PCR).

Climate Change Adaptation - LDCF/SCCF Adaptation Monitoring and Assessment Tool (GEF Tracking tool)

The Adaptation Monitoring and Assessment Tool (AMAT) is being introduced to measure progress toward achieving the outputs and outcomes established at the portfolio level under the LDCF/SCCF (Special Climate Change Fund) results framework for GEF-5. The GEF Tracking tool is a set of indicators for each GEF focal area that helps the GEF Secretariat track and report progress at the GEF portfolio level. As for similar GEF Projects the GEF Tracking tool was filled at Chief Executive Officer (CEO) Endorsement/Approval and at program Mid-term Review. The below table summarizes the terminal results for the relevant specific indicators selected from the attached GEF Tracking Tool, measured at project completion.
The GEF tracking tool reports on outcome and output indicators under the following three objectives.

- Objective1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level.
- Objective 2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level.
- Objective 3: Promote transfer and adoption of adaptation technology

Table 3: Climate Change Adaptation - LDCF/SCCF Adaptation Monitoring and Assessment Tool

Indicator	Outcome and Output Indicators	Metric	Terminal Results		Target at CEO Endorsement	
Objective1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level.						
Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas						
			Number	**Type**	**Number**	**Type**
Indicator 1.1.1	Adaptation actions implemented in national/sub-regional development frameworks	Adaptation actions implemented in national/sub-regional development frameworks	527	CRCVPs/CAPs	300	CAPs
			922	Stock routes	1100	Stock routes
Indicator 1.1.2	For each action listed under Indicator 1.1.1, indicate which ones include adaptation budget allocation and targets	Yes =Y, No=N	CAPs/CRCVPs	Y	CAPs	Y
Indicator 1.1.3	For each action listed under Indicator 1.1.1, indicate to what extent targets set out in plans have been met	Score: 1= Not significantly 2= Significantly 3= significantly	CAPs/CRCVPs	2	CAPs	2

			Stock routes	2	Stock routes	2
Output 1.1.1: Adaptation measures and necessary budget allocations included in relevant frameworks						
			Type	**Level**	**Type**	**Level**
Indicator 1.1.1.2	Sectoral strategies that include specific budgets for adaptation actions	List type and level	National Sectoral Adaptation Strategy of the Livestock Sector	Final NSAS/LS Report is submitted, the document is published, handed officially to MoAR and disseminated	National Sectoral Adaptation Strategy of the Livestock Sector	National
Outcome 1.2: Reduced vulnerability in development sectors						
			Female	**Male**	**Female**	**Male**
Indicator 1.2.3	Number of additional people provided with access to safe water supply and basic sanitation services given existing and projected climate change	number disaggregated by gender	340,147	339,547		
Indicator 1.2.4	Increase in water supply targeted areas	tons/m^3	**5,323,800 m3*** (*This is the total amount of water stored and produced from 236 water points and haffirs per one year)		500,000 m3	
Indicator 1.2.5	Increase in agricultural productivity in targeted areas	tons/ha	Increase in rangelands productivity 32%, - The productivity of sorghum, sesame and groundnut increased 42%, 60% and 42% respectively.		25% increase in rangeland productivity; 50% increase of crop yields	
Indicator 1.2.9	% change in food availability given existing and projected climate change	% change in food availability (measured in tons/year)	37.9% of the communities in the targeted states take three meals a day in comparison with 19.7% in the communities not targeted by the programme in the same states.			
Indicator 1.2.14	Vulnerability and risk perception index (Score) - Disaggregated by gender	Score (1 - 5) 3. Medium Vulnerability	3	3	3	3
Output 1.2.1: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability						
			Type	**Level**	**Type**	**Level**
Indicator 1.2.1.2	Resilient infrastructure measures introduced to prevent economic losses	Type and level	Water harvesting infrastructures	236 infrastructures with up to **5,323,800** m3 of water	Water harvesting infrastructure (e.g. Hafirs, underground tanks, runoff closed reservoirs, sand subsurface dams)	Up to 500,000 m3 of water
Indicator 1.2.1.3	Climate resilient agricultural practices introduced to promote food security	Type and level	Water conservation measures; conservation Agriculture, range restoration, stock routes restoration and afforestation	149,500 Ha	Improved soil and water conservation measures in crop farming (e.g. Conservation agriculture; Vallerani system)	12,000 ha
			Agroforestry	21,512 Ha	Green houses	800 units
			range restoration	48,910 Ha	Rangeland & woodlands restoration and sustainable management (e.g.	334,500 ha

					Temporary enclosures, rotation, seeding and planting)	
			Forest lands	42,445 Ha	-	-
			Wetlands	633 Ha	-	-
Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas						
			Female	**Male**	**Female**	**Male**
Indicator 1.3.1	Households and communities have more secure access to livelihood assets	*Score from 1 to 5* *4. Secure access to livelihood resources*	4	4	4	4
Indicator 1.3.2	% increase per capita income of farm households due to adaptation measures applied	%	50%		50%	
Output 1.3.1: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability						
Indicator 1.3.1.1	% of targeted households that have adopted resilient livelihoods under existing and projected climate change	%	60%		60%	
Indicator	**Outcome and Output Indicators**	**Metric**	**Terminal Results**		**Target at CEO Endorsement**	
Objective 2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level.						
Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas						
Indicator 2.1.1	Relevant risk information disseminated to stakeholders (yes/no)	Yes=1, No=0	1		1	
Output 2.1.1: Risk and vulnerability assessments conducted and updated						
Indicator 2.1.1.1	Updated risk and vulnerability assessment	Yes=1, No=0	1		1	
Indicator 2.1.1.2	Risk and vulnerability assessment conducted	Yes=1, No=1	1		1	
Output 2.1.2.: Systems in place to disseminate timely risk information						
			Number	**Type**	**Number**	**Type**
Indicator 2.1.2.1	Type and No. of monitoring systems in place	Number and type of monitoring systems	1	DMPERS	1	Drought Monitoring, Preparedness and Early Response System (DMPERS)
Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses						
			Number	**Type**	**Number**	**Type**
Indicator 2.2.1	No. and type of targeted institutions with increased adaptive capacity to reduce risks of and response to climate variability	Number and Type	527	VDCs	300	Village Development Committees
			126	Govt. Staff	126	Governmental staff from MoAgriculture and Irrigation, MoLivestock, Fisheries and

						Rangelands, MoWater resources, HCNER, FNC, SMA)
			Female	**Male**	**Female**	**Male**
Indicator 2.2.2	Capacity perception index	Score (1 - 5) 3. Substantial training in practical application (e.g. vocational training)	3	3	3	3
Outcome 2.3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level						
			Female	**Male**	**Female**	**Male**
Indicator 2.3.1	% of targeted population awareness of predicted adverse impacts of climate change and appropriate responses	Score (1 - 3) 3. High awareness level (above 75%)	3	3	3	3
			Type	**Scope**	**Type**	**Scope**
Indicator 2.3.1.1			CAPs and CRCVPs	527 CAPs and CRCVPs guiding climate resilient investments	Community-based Adaptation Plans (CAPs)	300 CAPs guiding climate-resilient investments of at least 60,000 HH
Risk reduction and awareness activities introduced at local level. Examples: - Monitoring/Forecasting capacity (EWS, Vulnerability mapping system) - Policy reform - Capacity reform - Agriculture diversification - Improved resilience of agricultural systems - Sustainable forest management - Strengthening infrastructure - Supporting livelihoods - Mangrove reforestation - Coastal drainage / irrigation system - Community-based adaptation - Erosion control/sustainable land and water management - Microfinance - Special programs for women - - Water storage - ICT and information dissemination - Other			State Level Adaptation Teams (SDATs)	180 technicians from government institutions	State-level Development and Adaptation Teams (SDATs)	180 technicians from State governmental institutions
			Adaptive capacity development for farmers and herders	At least 60,000 pastoralists and agro-pastoralists (50% women) participate in on-farm implementation of CC adaptation practices (water harvesting, land restoration, sustainable farming, improved cook stoves, etc)	Adaptive capacity development for farmers and herders	At least 60,000 pastoralists and agro-pastoralists (50% women) participate in on-farm implementation of CC adaptation practices (water harvesting, land restoration, sustainable farming, improved cook stoves, etc)
					EWS info dissemination	At least 60,000 pastoralists and agropastoralists (50% women) receive information on water & fodder situation based on DMPERS

			Microfinance	Approx. 5,000 micro-enterprises active on climate-resilient activities identified in the CAPs	Microfinance	Approx. 5,000 micro-enterprises active on climate-resilient activities identified in the CAPs
			Rangelands & woodlands restoration	149,500 ha of restored rangelands & woodlands directly or indirectly benefiting 100,000 households	Rangelands & woodlands restoration	334,500 ha of restored rangelands & woodlands directly or indirectly benefiting 100,000 households
					-	-
			Strengthening infrastructure	140,000 HH directly or indirectly benefiting from: 992 km of stocking routes demarcated and restored; increased capacity of water harvesting infrastructure providing 500,000 m3	Strengthening infrastructure	100,000 HH directly or indirectly benefiting from: 1,100 km of stocking routes demarcated and restored; increased capacity of water harvesting infrastructure providing 500,000 m3
			Number	**Type**	**Number**	**Type**
Indicator 2.3.1.2	No. and type of community groups trained in climate change risk reduction	Number and Type	527	VDCs	300	Village Development Committees
			25	SDATs		180
			52700	Farmers attending workshops for the development of CAPs, on-field training for CAPs implementation, and business training for income-generation activities (50% men and 50% women)	60000	Farmers attending workshops for the development of CAPs, on-field training for CAPs implementation, and business training for income-generation activities (50% men and 50% women)
Indicator	**Outcome and Output Indicators**	**Metric**	**Terminal Results**		**Target at CEO Endorsement**	
Objective 3: Promote transfer and adoption of adaptation technology						
Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas						
Output 3.1.1: Relevant adaptation technology transferred to targeted groups						
Indicator 3.1.1.1	Type of adaptation technologies transferred to targeted groups.	Type	Climate-proof Water harvesting		Climate-proof Water harvesting	

			Climate-resilient farming practices (Conservation agriculture, zero tillage, *koreit* plough – animal traction, climate-resilient crop varieties)		Climate-resilient farming practices (e.g. Conservation agriculture, crop rotation, integrated pest management; climate-resilient crop varieties)	
			Sustainable rangelands restoration and management		Sustainable rangelands restoration and management	
			Afforestation		Sand fixation	
			GAS Cylinders, sand bricks machines		Improved cook stoves	
			Type of technology	**No. of HH**	**Type of technology**	**No. of HH**
Indicator 3.1.1.2	Type of relevant climate change adaptation technology implemented in selected areas by participatory stakeholders	Number of Households	Rangeland restoration techniques (seeding and planting, temporary enclosures, rotation)	50000	Rangeland restoration techniques (seeding and planting, temporary enclosures, rotation)	60000
			Climate-resilient farming practices	8000	Climate-resilient farming practices	12000
			Climate-proof Water harvesting	47200	Climate-proof Water harvesting	60000
			Improved cook stoves	9484	Improved cook stoves	13200
			Demarcated stocking routes	18000	Demarcated stocking routes	20000
			Female	Male	Female	Male
Indicator 3.2.2	Strengthened capacity to transfer appropriate adaptation technologies	Score (1-3) disaggregated by gender: 3. High capacity achieved (>75% correct)	3	3	3	3
Output 3.2.1: Skills increased for relevant individuals in transfer of adaptation technology						
			Female	**Male**	**Female**	**Male**
Indicator 3.2.1.1	No. of individuals trained in adaptation-related technologies	Number of individuals disaggregated by gender	8 SDATs; 527 VDCs; 63 staff from relevant ministries at Federal and State level	17 SDATs; 527 VDCs; 63 staff from relevant ministries at Federal and State level	90 SDATs; 300 VDCs; 63 staff from relevant ministries at Federal and State level	90 SDATs; 300 VDCs; 63 staff from relevant ministries at Federal and State level
Output 3.2.2: Relevant policies and frameworks developed and adopted to facilitate adaptation technology transfer						
Indicator 3.2.2.1	No. of policies developed or strengthened	Number of policies	1		1	

From the AMAT progress measurement it is apparent that the LDCF Performance against the selected the outcomes and outputs indicators is satisfactory. Under outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas, indicators measured were adaptation actions mainly CRCVPs and livestock routes. Under output 1.1.1: Adaptation measures and necessary budget allocations included in relevant frameworks, the indicator was on sectoral adaptation strategies (NSAS/LS).

Under outcome 1.2: Reduced vulnerability in development sectors: indicators reported included people access to water supply, increase in water supply, agricultural productivity and percentage change in food availability. The programme rehabilitated 236 water projects and based on haffirs capacity and water points' productivity the increase in water supply was calculated as 5,323,800 m^3 per year.

Number of additional people provided with access to safe water supply and basic sanitation services given existing and projected climate change reached 679,693.

The productivity of sorghum, sesame and groundnut increased 42%, 60% and 42% respectively, reflecting increase in agricultural productivity in targeted areas and an efficient and effective use of farming inputs. 527 community groups were trained in climate change risk reduction.

Under output 1.2.1: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, the indicators made reference to water harvesting infrastructures, water conservation measures, conservation agriculture, range restoration, livestock routes restoration, afforestation and agroforestry.

Under outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas, the indicators assessed reflected satisfactory achievement of secured access to livelihood resources.

According to the end line survey, 65.2% of the targeted poor smallholder household members were supported in coping with the effects of climate change 6. 72% of the surveyed households reported improved access to land, forests, water or water bodies for production purposes. 1,040,488 people were engaged as members in NRM groups and climate risk management activities.

Under outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas, vulnerability assessments were conducted during the CAPs development process and the SECAP. The DMPERS design and feasibility study was completed and ready to be supported and operated by concerned authorities.

Under outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses, 527 village development committees were established and capacitated with increased adaptive capacity to reduce risks of and response to climate variability.

Under outcome 2.3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level, Programme targeted communities are well aware of adaptation and risk reduction processes, risk reduction and awareness activities introduced at local level included the 527 CAPs/CRCVPs, 180 Government staff involved in the Programme, the SCGs members, the pastoralists and the 140,000 households directly or indirectly benefitting from the interventions.

Under outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas, indicators reflected on types of relevant climate change adaptation technology implemented in selected areas by participatory stakeholders including; climate resilient agricultural technologies adopted, water harvesting techniques, alternative energy and stock routes demarcation techniques. Other indicators also included strengthened capacity to transfer appropriate adaptation technologies, individuals trained in adaptation-related technologies and number of policies developed or strengthened. The programme provided technical support to the RPGD that resulted in development of the Rangelands Policy.

Types of adaptation technologies transferred to targeted groups included: water harvesting techniques; animal traction implements for land preparation; solar units used in operation of water projects; introduction of LPG units for Households as an alternative to Biomass energy, sand bricks machines to promote alternative building materials, tree nursery and community forestry practices.

Table 4: LMRP Component 2 Log frame indicators

Component 2: Community led Natural Resource Management and Enhanced Adaptive Capacities			
Poor smallholder household members supported in coping with the effects of climate change (ASAP)			
Name	**End target**	**End result**	**Achieved (%)**
Females	183600	142414	77.6
Males	176400	92273	52.3
Total	360000	234687	65.2
Number of water conservation structures/system rehabilitated / upgraded and managed sustainably (under GEF/IFAD financing)			
Water structure	60	136	226.7
Production and processing facilities supported with increased water availability and efficiency			
Facilities	34	100	194.1
Community groups engaged in NRM and climate risk management activities			
Groups	300	527	175.7
Females	357000	609674	170.8
Males	343000	430666	125.6
Total	700000	1040488	148.6
Resources under climate-resilient practices			
Land area – ha	334000	149500	44.8
No of km of Stock routes demarcated (animal corridors)			
Distance in Km	1100	992	90.2
Households supported with increased water availability or efficiency			
Households	60000	97099	161.8

The log frame table shows that LMRP GEF Component has attained high levels of achievements in providing services and inputs that streamlined the objectives of the NR Component and sub-components.

Programme Outputs and Outcomes:

Outcome 2.1: Community-based natural resource management and remediation to reduce the vulnerability of settled and nomadic pastoralists.

Output 2.1.1: Community adaptive plans incorporating needs and priorities of poor women and men

The Community Adaptive Plans (CAPs) and Climate Resilience Community Village Plans (CRCVPs) interventions achieved under this output included water conservation structures rehabilitated, areas of lands restored, and community groups involved. The indicators under this output included:

As part of Climate Resilience Community Village Plans, water came as a top priority. Types of water interventions implemented included: rehabilitation of large water pits (Haffirs); rehabilitation of water yards; upgrading of mini-water hand pumps to water yards; maintenance and expansion of natural water ponds (*Ruhood*) for livestock and establishment of underground concrete cemented water reservoirs.

A significant number of water conservation structures/system were rehabilitated / upgraded and managed sustainably (under GEF/IFAD financing), a total of 136 out of a target of 60 sub-projects were achieved with a significant percentage of 226.7%.

Adding the production and processing facilities supported with increased water availability and efficiency through ASAP funding (100 projects), the total number of water sub-projects achieved reached 236 out of 94, representing 251% of the target.

The overachievements reported for water infrastructures are due to a combination of factors. Firstly, targeted beneficiaries identified access to water as their top priority. Secondly, the communities showed a strong commitment towards the realization of such structures which ensured a constant and timely financial contribution. Lastly, changes made at MTR, such as the change of the cluster modality from CAPs to CRCVPs and focus on village projects, as well as the great efforts exerted by the Programme teams at local level and the use of the procurement system NOTUS, supported the high achievements in terms of increased water access.

Water infrastructures were supported with a system of solar units as an alternative energy source to diesel generators. A total of 82 solar units were installed for water sub projects in the five states. This remarkably contributed to reduce the cost of

operations for communities, as well as reducing the emissions of GHG and environmental impact of water structures.

A total of 97,099 households were supported with increased water availability or efficiency, achieving 161.8% of the initial target. The rehabilitation of water points and haffirs secured water for livestock during the dry season along stock routes and facilitated access to clean water both in terms of, increased amounts of available water and reduced water fetching time.

The intervention in water provision and sanitation was satisfactory in terms of relevance, effectiveness and efficiency.

In parallel with the physical works, LMRP established 867 Village Development Committees (VDCs) and 236 Water Management Committees at village level. Community procurement committees were involved in the processes from the Bid Advertisement up to the final steps of construction and handing over of the sub-project. On average, the communities contributed with a minimum of 8.5% to the total cost of the water subproject. The Water Committee was responsible of management and operation of the water point. Water Committees received training in management, planning, accounting/bookkeeping, operation and water sanitation. Fencing of water points and haffirs was adopted to ensure clean water source and animals were separated from humans. A tripartite agreement is signed between the VDC, the Water Authorities and the Programme for the management of the water source and distribution of water revenues. Village revenues were used in maintenance, operation and investing in social services.

Despite the success of the initiative, a number of communities in Sennar State faced difficulties in ensuring the fair distribution of revenues, due to the forthcoming project completion. This was discussed with the State authorities during the IFAD completion mission and a recommendation was made for the ongoing IFAD-funded project SNLRP to renew the tripartite agreements for water projects established by LMRP in Sennar.

2. Community groups engaged in NRM and climate risk management activities. This reflected the number of CRCVPs/VDCs participating in the programme NRM interventions and the total members/village beneficiaries. The target for community groups involved in CAPs/CRCVPs in the Logical Framework is 300, whereas the actual total number achieved in the 16 localities was 527 (175.7%). The nature of NRM and climate risk management activities adopted by these groups included water conservation, range restoration, conservation agriculture, women farms, afforestation/forest management, and alternative biomass energy (LPG cylinders). LMRP provided inputs for conservation agriculture in terms of improved seeds and land preparation implements (animal traction – *Koriet*).

CRCVPs groups were actively involved in the implementation and management of the NRM interventions. Specialized community committees were formed including water committees, natural resource management committees, forest committees, LPG committees and women farm groups.

The total community group members engaged reached 1,040,488 out of a target of 700,000 (148.6%) of whom 59% were female and 41% were male. These rates reflected the intensive community mobilization conducted and the high level of participation in the programme interventions. The level of Community groups engaged in NRM and climate risk management activities is satisfactory in terms of relevance, effectiveness and efficiency.

The MTR introduced a number of changes, including a new organizational framework for a more cost-effective management structure, the introduction of youth groups, which resulted in higher outreach and coverage in favour of the local communities within the settled villages and the pastoralists, as well as the conversion of Community Adaptive Plans (CAPs) into Climate Resilience Community Village Plans (CRCVPs).

Post MTR, the project scaled up CR CVPs in a network modality in the five States, establishing 8 Networks, grouping several communities with a shared ecosystem. These structures were based on the experience of community networks established in River Nile and Gedarif States with the support of an IFAD-funded project. CRCVPs Networks were mobilized, trained and linked with stakeholders for joint strategic planning.

Awareness campaigns and community mobilization

As part of its outreach, the project implemented several awareness campaigns. The steps included general meetings, group discussions, adopting GALS, PLA and CEAP tools, needs assessment; defining priorities; future vision, selecting VDC members and setting the village plan.

Support to communities also included capacity development and training packages in fields of project management, finance, community procurement, water sanitation, water points operation, conservation agriculture, farm management, food processing, cheese making, safety measures for LPG, seedling production and afforestation.

The results of this technical support were clearly reflected in the proper management of CRCVPs interventions and investment in water projects. Another aspect is the tangible commitment of communities and the payment of the community contribution with a minimum of 8.5% of the total cost of the sub-projects.

Output 2.1.2: More productive/improved rangelands and decreased resource-based conflict

A total of 149,500 Hectares of land under climate resilient practices or CRCVPs and NRM interventions were achieved out of the target of 334,000 hectares (44.8%). This

included agroforestry interventions 21,512 Ha, pasture and rangelands 84,910 Ha, forest land 42,445 Ha and areas of wetlands 633 Ha.

The limited achievement under this output was determined by several factors. First, open rangelands are not registered and not mapped in Sudan, which makes it more difficult to track the encroachment and expansion of agricultural fields and schemes at the expense of the natural rangelands. Second, even in mapped and demarcated livestock routes, the project had to address issues of encroachment and conflicts that were mitigated through the co-management approach and establishment of conflict resolution centres. An additional challenge is posed by the increased pressure on Sudanese rangelands, resulting from the restricted mobility southwards (crossing the borders) after the secession of South Sudan. Despite the efforts exerted by the project in addressing the different constraints related to open rangelands restoration, the project felt that the target for land restoration was too ambitious.

Moreover, other activities should be taken into account when calculating the land restoration objective. It would be important to calculate the accumulative benefit of adopting alternative energy sources, reducing the amounts of wood removed for cooking or building huts and hence protecting lands in addition to increasing awareness on environmental friendly practices. Accumulative benefits of restoration interventions further include up scaling and the future opportunity for increasing areas as seeds germination is not at equilibrium.

This has been confirmed by the Natural Resource outcome assessment survey HHs, as 62.9%% of them stated that rangelands coverage have been improved as a result of the program interventions. The results also showed that a percentage of 62.9% of the total surveyed HHs confirmed a positive change in rangelands production.

Alternative Energy Sources: To protect the natural resources, the programme provided the communities with environmentally friendly technologies namely improved cook-stoves, distribution of LPG units, use of solar energy and distribution of brick-making machines as alternative energy sources. Brick machines are used to produce sand cemented bricks for building permanent house rooms and outer walls instead of using local wood materials for building huts and woody fences. 26 brick machines were distributed to villages. This contributed to reducing tree removal and changing the local building pattern. The total cumulative amount of LPG units distributed to households reached 9484. The revolving of LPG units among households reached 2893 (30.5%). The activity further allowed to reduce pressure on the forest cover (3 to 5 trees were cut monthly per household previous to LPG distribution) and reduced the share of household income dedicated to energy needs for cooking (saving approximately 5000 SDGs per month/HH). Besides the environmental and economic benefits, the adoption of LPGs reduced the time needed for cooking by 2.4 hours with positive impacts on women's workload (Source: Success Story – LPG as an alternative

energy source). Community facilitators further supported the organization of the refilling process and the sustainability of the initiative seems promising, as long as the price of petroleum products remains stable.

The revolving modality was adopted for the distribution of LPG units, based on periodical instalments to be paid by the beneficiaries in order to refund the cost of the LPG. The amount collected would then be used to purchase more LPGs, distributed to other community members. The revolving mechanism allowed more households to own the units and adopt the technique hence contributing to their income, health and wellbeing. The revolving mechanism was affected by the devaluation of the currency and the sharp increase in LPG units and filling prices. In 2017/2018 the average price of the LPG unit was SDG 4,000, whereas the price for one unit reached SDG 48,000 in 2022. In spite of this communities were keen to revolve and use the available amounts of money to buy more units. During the last 2 years the LPG distribution and revolving was managed by the SCGs and the achievements were progressive. The results in Blue Nile were more than 100% revolving.

Based on the results of the end line survey: 49% of households respondents received Gas cylinders provided by LMRP. Adoption of LPG as climate change technology and practices during the last 12 months reached 55%. About 76.3% – 92.7% of households of Blue Nile and Sinnar states believed that the time allocated for firewood collection has decreased.

Based on the LMRP Completion Report 160 villages adopted alternative energy. The LPG activity reduced the share of household income dedicated to energy needs for cooking (approximately 7,000 to 10,000 SDG were previously spent on firewood and/or charcoal). Over the last year, due to the rising inflation, the price of LPGs has increased to a point where the revolving mechanism was no longer functional.

Km of Stock routes demarcated (animal corridors): a total of 992 km of livestock routes out of the target of 1100 km were demarcated with a percentage of 90.2%. The interventions in stock routes restoration included: identification of targeted sectors by the Range and Pasture Administration; surveying involving the Survey Department in the State; demarcation using cement pole markers (West Kordofan, North Kordofan and White Nile State) or excavated pits with lifted soil hills and planting trees (Blue Nile and Sennar States); and stock routes mapping. The total areas of stock routes sectors surveyed, demarcated, mapped and have co management structures established in the five States reached 84,910.3 Ha.

Technical support for the legalization of stock routes was also provided, including consultation workshops at states and federal level involving all stakeholders and decision makers.

The co management approach: The co-management of livestock routes approach was applied and resulted in formation of co-management structures in the five States. These included: co-management committees composed of multidisciplinary teams; Pastoralist Field Schools; Pastoralist Forums; and Conflict Resolution Mechanisms.

Management of livestock routes is a cross cutting issue that includes managing mobility of herds, involving of pastoralists in management process, keeping of stock corridors open, restoration of adjacent rangelands, establishing of local mechanism for conflict resolution between pastoralists and farmers and providing of necessary services along stock routes. Mobility as main feature of traditional pastoral production system needs to be handled with care because it is strongly related to land ownership, a sensitive issue in Sudan.

Technical support was provided by the co-management consultant in the five states, covering natural resource management and stock routes sectors co-management concepts & mechanism; developing plans for field level implementation of co-management and related activities; introducing of pastoralist field schools (PFSs) and assisting in building capacities of the staff and concerned communities.

The work achieved included the identification of the already selected routes and verifying the primary data collected by implementing staff; review of available secondary data related to natural resources and pastoral communities who were benefiting from the utilization of stock routes; zoning of selected stock routes into NRM units; formulating of local co-management teams; selection & training of conflict mediators to assist in resolving of resource- based conflict; selecting of PFS facilitators; conducting of training sessions for staff, stakeholders and concerned team members; negotiating to reach agreements on sharing resources and how to implement the reached agreements; linking of co-management structures with rural finance systems and assisting in introducing of small business models.

Services provided along stock routes included 15 tri - motorcycles distributed to the co-management committees along stock routes sectors, establishment of the Livestock Collection points in Wad Alnayal and Alrawat, establishment of water points, expansion of *ruhood* (natural water ponds) along stock routes, rehabilitation of livestock markets and training on food processing industries.

According to the Project Completion Report and Endline Survey, the interventions on livestock routes restoration were satisfactory and remarkably contributed to reduction of conflicts between farmers and pastoralists. Conflict resolution mechanisms and local authorities opened the blocked sectors of the stock route in Sennar State, and solved some persistent issues around the White Nile Eastern stock route, which was successfully demarcated. As a result disputes between nomadic, settled communities and the semi-mechanized farming sector were reduced by 82.7% (LMRP Endline Survey).

Outcome 2.2: Response systems and innovative solutions for climate risk mitigation.

Output 2.2.1: A Drought Monitoring, Preparedness and Early Response System (DMPERS) supports decision-making to mitigate climate risk in rangelands.

Originally, the project envisaged the design and establishment of a Drought Monitoring Preparedness and Early Response System (DMPERS) for weather and hazard prediction, specifically geared to the livestock and pasture sector in Sudan. The DMPERS TORs were discussed with Remote Sensing Seismology Authority (RSSA), Higher Council for Environment and Natural Resources (HCENR), Sudanese Meteorological Authority (SMA) and the concerned departments of the Ministry of Animal Resources and it was agreed that the MoAR would host and manage the system to ensure future sustainability. However, post MTR, the stakeholders felt the need to explore existing systems and similar ongoing initiatives in the country, in order to avoid duplication. It was therefore decided to focus on the system feasibility and preliminary design, rather than implementation. University of Khartoum Consultancy Corporation (UKCC) was recruited and the feasibility study and the DMPERS design was completed in 2022. The document was published and handed over to IFAD SNLRP and MoAR.

Four factors contributed to the delay in the implementation of DMPERS: 1) the consultation process on the DMPERS TORs took longer than foreseen, as the project wanted to ensure a wider participation at country level; 2) the National Competitive Bidding procurement procedures adopted and handled by the Central Coordination Unit (CCU); 3) the recommendation of the IFAD 4th SPV Mission to incorporate the DMPERS in the existing FAO Early Warning System; and 4) the decision to switch to a feasibility study entailed an update of the TORs and relaunch of the procurement process.

LMRP submitted the first draft DMPERS TORs to IFAD in July 2017. This was followed by the Expression of Interest that was cleared by IFAD in January 2018. The CCU-IFAD advertised the specific note of the Request for Proposals in February 2018 and received the Consultants' Expression of Interest shortly afterwards. In September 2019, the CCU submitted the Technical Evaluation Report on the Request for Proposals (RFP) for the Provision of Consulting Services concerning International Technical Assistance for the set-up of DMPERS. The IFAD 4th SPV Mission March – April 2020 recommended incorporating the LMRP DMPERS into the existing FAO Early Warning System, ensuring visibility and acknowledging LMRP - IFAD in the FAO system. LMRP approached FAO concerning this recommendation and held a meeting in March 2020 with Assistant FAO Rep. Later LMRP was informed that the scope of DMPERS ToR is larger than the model adopted by FAO as they are not involved in generation of data.

The IFAD 5th SPV Mission October – November 2020 recommended to solicit possible and feasible options to implement and sustain DMPERS and if not feasible within the given time frame, skip it. In May 2021, the ToR was updated focusing on system feasibility and design and LMRP proceeded using the IFAD procurement system NOTUS, finalized the steps and recruited the firm (UKCC). The contract was signed in October 2021 and the DMPERS Final Report was submitted in April 2022.

The procurement of LMRP consultancies, works and goods remarkably improved after the adoption of the IFAD procurement NOTUS and the Quality Based Selection (QBS) consultancies were directly handled by the Programme. It was then agreed that the IFAD-funded Sustainable Natural Resource and Livelihood Programme (SNRLP) would support the implementation of the system, building on the studies produced by UKCC. This output is rated moderately unsatisfactory.

Output 2.2.2: Production of a National Sectoral Adaptation Strategy for the Livestock Sector (NSAS/LS)

The National Sectoral Adaptation Strategy for the Livestock Sector was produced by a team of highly skilled consultants, hired by the project. The methodology adopted by the consultants included technical consultation meetings; state-level workshops; community group discussions; and a final Validation Workshop. The Strategy was published with an Arabic version and handed over to the MoAR and Range and Pasture Directorate in November 2020.

Principles for project interventions identified included a collaborative management of natural resources; awareness and education; design and implementation of an Environmental Impact Assessment (EIA)/ Environmental Social Impact Assessment (ESIA). In addition to supporting dialogue and consultation processes, integrate with and implement regional initiatives, develop integrated Decision Support System (DSS) and Monitoring and Evaluation.

The Range and Pasture General Directorate (RPGD) supported by the Programme developed the Rangelands Policy and led a comprehensive consultation on its adoption.

The RPGD is currently involved in relevant technical projects and initiatives based on the recommendations of the NSAS/LS. These include: Mainstreaming Livestock Monitoring tools (IGAD/FAO); Maximizing Benefits of Crop Residues (Livestock Development Fund); Building Resilience in the face of Climate Change (GCF/HCENR); Protective Areas in North Kordofan, Sennar and Gedarif (GCF/HCENR); NAP Readiness Training Project – Impacts of Climate Change on Rangelands; Pastoral community Protocol for pastoralists rights and indigenous knowledge - Wagar Area, Kassala State.

Output 2.2.3: Supporting conflict resolution on land disputes at the State level:

Support to conflict resolution around land disputes was achieved through a set of activities. The project firstly conducted an assessment, including conflict maps, an analysis of livestock corridors, identifying challenges, opportunities and priority actions. The conflict map of the Five States reflected a general pattern where most of the conflict are of resource-based nature. Investigating the causes of conflict the study differentiated between root causes, proximate causes and triggering factors. Range resources are depleted and livestock routes have become major zones of conflict in the Five States. The routes are progressively shrinking and closed off as a result of expanding agriculture, in both the traditional and semi mechanized sectors.

LMRP took action on some key priority actions identified by the assessment, including: Focus on Co-Management, route demarcation, rehabilitation and support to small businesses; Investment in the youth as main actors in conflict; Capacity building of customary institutions; Establishment of permanent forum for community dialogue (The pastoralist forum and the conflict resolution mechanisms); Advocacy for policy and institutional reform capitalizing on knowledge products; Fostering strong partnerships and joint actions with related actors; Effective utilization of the local media to send peace messages.

Conflict Resolution Mechanisms:

As part of the co-management approach, conflict resolution centres were established and capacitated at stock routes' sector level. The Conflict Resolution Centers in Rahad – North Kordofan State, Um Algura – White Nile State, Mazmoum – Sennar State and Lagawa – West Kordofan, were mobilized, rehabilitated and supported with equipment. Such structures contributed to reducing the conflicts as perceived by the communities. The results of the programme assessments regarding conflict resolution were satisfactory. The percentage of households reporting reduced climate related damages/losses reached 145%. According to the programme end line survey, the majority of the target respondents (62.9%-83.7%) believed that conflicts occurrence was reduced as a result of project interventions, specifically referring to conflicts between pastoralists and farmers.

Policy Engagement and Facilitation and Natural Resource Governance:

Five State Policy Engagement and Facilitation Sessions and one Interstate session were conducted and involved all related stakeholders focusing on priority policy and legislation issues with emphasis on the Governance Framework for Natural Resources.

Consultation findings and outputs focused on issues of: stakeholders and actors; policy legislations and laws; intercommunity networks and community-based organizations; and institutional environment.

A natural resource governance Road Map for the whole programme was developed. This consolidated roadmap is aiming to develop an innovative policy engagement model and replica for enhanced natural resource governance under recovered institutional environment. The NR Governance Road map was translated to Arabic, published and handed over to the MoAR and Range and Pasture Directorate.

The Range and Pasture Policy

LMRP provided technical support for the Range and Pasture General Directorate for the development of the National Rangelands Policy. A series of five State consultation workshops and the national workshop were conducted involving all related stakeholders. The final policy document was prepared and was submitted to the MoAR in August 2022. The Main Pillars of the Rangeland Policy included: Conservation and protection of rangeland resources; Recognition of pastoralists' rights on their defined grazing lands; Awareness raising and sensitizing pastoralist communities and: Improving research in natural rangelands.

Project Outcomes:

Outcome 2.1: Community-based natural resource management and remediation to reduce the vulnerability of settled and nomadic pastoralists.

Outcome 2.2: Response systems and innovative solutions for climate risk mitigation.

The delivery of the afore-mentioned programme outputs has remarkably contributed to the targeted outcomes. With LMRP completion it is apparent that the GEF component played a significant role in the achievement of the Programme outcomes. The Project design based on communities involvement in NRM and vulnerability assessment, forming structures, adopting available tools, and investing in local initiatives positively affected outcomes achievement.
The GEF component was linked to other LMRP components. The enhancement of the quality and availability of the natural resources -namely water and fodder - achieved through this Component has contributed to the target for improved community livestock productivity and value chains of Component 1 of LMRP. The provision of water and fodder has supported the trend for increased quality of the livestock and resulted the creation of service-based jobs and business for the local communities, including the implementation of priority investments generated by the CAPs/CRCVPs. Hence the GEF component has contributed to generating demand for the financial services under Component 3 and facilitated the establishment of sustainable microenterprises. The GEF component was therefore deemed relevant within the wider LMRP structure and logic of intervention.

Relevance: The LDCF project has been designed according to the strategic priorities of the Sudanese Government on NRM and climate change adaptation, as well as the

findings and recommendations of relevant studies and research, including IFAD's ECCA (July 2013). The study analyzed environmental and climate change challenges and opportunities affecting local communities and produced recommendations to enhance the sustainability of IFAD's investments in the agriculture and rural development sector. The design further took into account the climate scenario analyses conducted as part of the preparation of the First and Second National Communications to UNFCCC, indicating that average temperatures were expected to rise significantly compared to baseline expectations.

The project design allowed for an integrated set of interventions aimed at increasing the resilience of smallholder farmers and livestock keepers to climate change, acting both at local and national level. The focus on community structures and mobilization allowed to increase the local ownership of interventions and maximize the investments in water structures.

The Project outcomes are consistent with the GEF focal areas and strategies of Biodiversity, Climate Change Adaptation, Climate Change Mitigation, Sustainable Forest Management, Capacity Development, and Land Degradation.
GEF Project relevance is rated satisfactory in light of the constraints facing the country at large and the smallholder rain fed livestock subsector in particular. The end line survey and final completion mission confirmed that group priorities and needs were addressed through both LMRP hard investments and 'soft' interventions.

- The LMRP was designed in line with GoS National Poverty Eradication Strategy of 2014 and Poverty Strategy Paper 2011, 2014, with two overarching goals: (i) achieving peace and reducing the risk of future conflicts; and (ii) making a lasting impact on poverty and progress on other MDGs.
- The LMRP was also in line with GoS Agricultural Revival Programme (ARP) of 2008, including its financing priorities: water sector development, promotion of agricultural mechanization and natural resources management aimed at enabling smallholder farmers and herders to sustainably shift from subsistence agriculture to market-oriented agriculture.
- The LMRP was also aligned with the Sudan's Nationally Determined Contributions (NDC) in line with Article 2 of the United Nations Framework on Climate Change (UNFCCC) "to achieve stabilization of greenhouse gas concentrations in the atmosphere". LMRP response measures adopted focused on adaptation and mitigation measures including; solar energy units, use of alternative energy sources, afforestation and reforestation, water conservation, introduction of climate resilient crop varieties, introduction of agroforestry and management of grazing areas.

- The LMRP was also in line with IFAD RB-COSOP aimed at building technical, financial and social asset base of poor rural people, through optimum use of investment projects as a vehicle to support institutional reforms in land and water governance.
- The LMRP supported and further developed the Government's priority to convert the livestock sector into a more productive and sustainable business-oriented model.
- The LMRP design is building on experiences of several earlier projects supported by IFAD and other donors, featuring small-scale livestock and income diversification elements particularly to upscale the successful parts of the completed Improving Livestock Production and Marketing Project (ILPMP).

GEF Project effectiveness: Despite implementation challenges, the performance effectiveness is rated satisfactory. The Project completed relatively as planned at design with a six month no-cost extension of completion date to coincide with closing date. It has been effective in delivering expected results, in relation to time, budget and outreach.

Rural poverty impact: The performance is rated moderately satisfactory, some proxies could be used to show such positive impact. According to the end line survey, LMRP produced a 30% increase in gross household income from agricultural (30%) and non-agricultural activities (38%). The project also resulted in a 16.5% in the production asset index[1] and a 14.4% increase in the household durable asset index[2]. All beneficiaries interviewed by the completion mission indicate an increase in their household (HH) appliances. Moreover, permanent brick houses have increasingly replaced mud houses throughout the Project area.

Gender equality and women's empowerment: Project performance is rated moderately satisfactory. The empowerment of women is quite clear, given their roles within VDCs and increase in the number of LSCGS/SCGs formed and registered. These group are becoming economically active and have an important role in decision-making processes within their communities. Their representation in VDCs and networking is not less than 33%. They do not only participate in the meetings, but they impact the decisions taken. Their voices are now heard in the decision-making government institutions. Moreover, the targeting for Climate Resilience Community

[1] Index of agricultural assets calculated using PCA and normalized from 0 to 1. Agricultural assets include hand hoes, slashers, axes, saws, knifes, sickles, treadle pumps, hand carts, ox carts, ox ploughs, tractors, tractor ploughs, motorised pumps, mechanical dryers solar dryers, grain mills, poultry houses, livestock enclosures, storage houses, granaries, bicycles, motorcycles, car, lorries and boats.

[2] Index of durable assets calculated using principal component analysis (PCA) and normalized from 0 to 1. Durable assets include chairs, sofas, fans, sewing machines, refrigerators, charcoal stoves, kerosene stoves, electric stoves, radios, cd players, televisions, satellite dishes, solar panels, generators, smart phones, computers and jewellery.

Village Plans (CRCVPs) involves gender-sensitive engagement. Women were actively engaged in CR CVPs farming activities (house gardens), range restoration, food industry, and alternative energy LPG.

The programme created 12,381 jobs for women. In the programme area about 88.4% of the microfinance offered to women, while only 11.6% offered to men. Normally the committee for water management comprises from 5 persons, two women and three men. Percentage of women occupies the position of chair (1.3%), treasure (30%), secretary (23.7%) and deputy chair (18.8%). Overall, 75.3% of women occupies at least one position in the VDCs. Gender Action Learning System (GALS) is successfully delivered for 172 communities reaching total of 9773 beneficiaries (5401 female and 4372 male).

It is to be noted that, despite the significant impact on women incomes and empowerment at community level, the project lacked a truly transformative approach.

Human and social capital: LDCF Project performance is rated satisfactory. LMRP conducted a number of training and capacity building activities, contributing to the empowerment of women, youth, and marginalised community members. Trainings were provided for individuals in the areas of climate change adaptation, natural resources, financial literacy and microfinance, bookkeeping, food processing, gender relations, as well as Income Generating Activities. Capacity-building and community mobilization activities allowed for the formation of community structures for the co-management of natural resources. LMRP further supported the federation of communities into Networks, increasing their coordination in the joint management of shared ecosystems and their involvement at locality level.

Food security and Nutrition: Although LMRP is by deign not nutrition sensitive and no anthropologic assessment was conducted, its performance with relation to food security and nutrition is rated moderately satisfactory. According to the end line survey, households supported by LMRP reported an increase in the availability of food supplies from 5-8 months to 10-12 months. LMRP further supported diversified diets with an increased intake of vegetables, poultry meat and eggs on three meals per day basis. Several interventions aimed at improving diets (e.g. the distribution of vegetable seeds). The majority of beneficiaries reported increased consumption of milk as a result of LMRP interventions. Trainings on food processing allowed a diversified diet as well as increased incomes for trained women. The distribution of LPGs further supported food security, as cooking a wider range of products became easier.

Agricultural productivity: LDCF Project performance is rated moderately satisfactory. The Project implemented several interventions in the field of climate-smart agriculture. These included the provision of trainings and inputs for conservation agriculture, introducing specifically quick maturing and drought resistant sorghum varieties, water-harvesting technologies and an adaptable animal-drawn plough

(Koriat). The productivity of sorghum, sesame and groundnut increased 42%, 60% and 42% respectively, reflecting an efficient and effective use of farming inputs.

Adaptation to climate change: Project performance on adaptation to climate change is rated moderately satisfactory. LMRP implemented a set of activities aimed at increasing access to basic services, particularly water, community assets and adaptive capabilities. A key activity was the rehabilitation of water structures coupled with solar energy, which significantly improved access to water for both irrigation and livestock rearing. The Project further supported the creation of 527 Climate Resilience Community Village Plans aimed at prioritizing community activities within an integrated NRM approach for an enhanced resilience to climate change. A National Sectoral Adaptation Strategy was developed, including the identification of Strategic Areas for intervention. LMRP further completed the development of its Exit Strategy, with a focus on the sustainability of the NRM and adaptation dimension. A feasibility study was conducted for the design of the DMPERS only within the last year of implementation.

Environment and natural resources management; Project performance is rated satisfactory. The crucial LMRP focus in this respect is to enhance awareness about the importance of natural resources. Communities also reflect strong commitment and determination to protect and manage these resources. Therefore, mechanisms for organizing community groups and pastoralists, implementation of sound environmental activities and awareness raising to enhance sustainability of natural resources are in place. Mapping of community land and natural resources and the establishment of community networks around the issue of natural resource management indicate that commitment.

Targeting and outreach: Project performance is rated satisfactory. The selection of the communities and villages targeted by the LMRP was based on agreed poverty criteria, specified in the appraisal documents. Communities benefiting from the project were prioritized according to the following socio-economic characteristics: (i) a cluster approach, based on geographic continuity for the fattening schemes, group formation, and CRCVP; (ii) access to markets and stock routes; (iii) willingness to co-invest in the value chains and natural resources management interventions; and (iv) high poverty levels and sufficient numbers of potential beneficiaries, particularly women and youth. Other LMRP activities, such as Jubraka development, community nurseries, food processing and sensitisation on nutritional aspects and hygiene measures at HH level, access to finance through SCGs are by definition self-targeting because of the limited interest of less poor in these activities. The cumulative number of persons receiving services promoted or supported by the Programme reached 836840, i.e. 139% of end target estimates. This is equivalent to 162955 HHs, distributed as follows in terms of HH members: male (343794), female (493046), and youth (715471). About resilience to climate change, the cumulative number of poor smallholder household members supported in coping with the effects of climate change reached 234687

persons (65% of end target). LMRP supported activities either have a community outreach like the water and rangelands investments, or is self-targeted at the poor as is the case with the savings and credit groups and the livestock groups which membership is small livestock holders and rural women.

Physical targets and output delivery Project performance on output delivery is rated satisfactory. With few exceptions, most of the Project end targets have been achieved and /or exceeded.

Efficiency: The GEF Project implementation was cost-effective. The no-cost extension of 6 months helped to achieve most of the targets and spend the allocated budget (88.51%). Some challenging factors affected implementation including the state of political and economic instability and frequent turnover of government executive and political staff; freezing the Programme Account for 8 months during the February to September 2019 causing significant delay in programme activities; the COVID-19 pandemic since March 2020; the unfavourable political condition and political tension after the change of regime on 25 October 2021; and depleting funds of the programme budget through overvaluation of SDG exchange rate.

Despite these factors, LMRP was consistent in implementing the work plans, achieving the set targets, updating the procurement plans, and involving key stakeholders and communities. The no cost extension enabled the implementation of the planned activities and community projects, however, due to the load of contracts implemented in Q3 and to ensure a smooth handover of interventions and assets, IFAD provided an additional extension of one month during October 2022.

Selected results and findings of the Programme Assessments (PCR, ELS, and OAS):

Programme Completion Report (PCR)

The key performance indicators

The Programme Outreach: In terms of Programme outreach, and as at end of June 2022, the cumulative number of individuals receiving services promoted or supported by the Programme reached 836,840. As much as 59% of the recipients of programme services are female and 41 % male. A high percentage (87%) of recipients are young persons across the two gender categories. The higher number of female and young recipients is due to the nature of programme services. Access to rural financial services is largely in favour of females and young recipients, as compared to adult men. The programme exceeded its outreach target level by 35% on average for both sexes.

The Programme was designed to intervene in approximately 1,000 villages representing 33% of the villages and population within the Programme area. Overall, 86.7% of the targeted villages were covered by the programme.

HH Income: LMRP enhanced the capacities of the communities in management, group work, planning, bookkeeping, saving and credit, procurement, financial management and income generating activities. The programme also provided support in the areas of water, climate change adaptive technologies like improved seeds, conservation agriculture, LPG units. All these activities contributed positively to HHs incomes. Strong evidence from beneficiaries, their success stories suggest a recognizable increase in their income.

Food security: Beneficiary households are consuming three meals up from two and the meals are more diversified with more frequent consumption of vegetables and where available poultry meat and eggs. This result was confirmed by the results of the End Line Survey (July 2022) which reported 37.9% of the communities in the targeted states take three meals a day in comparison with 19.7% in the communities not targeted by the programme in the same states. The targeted HH reported storage of part of crop produced as food security strategy and they performed better than the non-targeted households under adverse climatic conditions benefiting from the technologies provided by LMRP.

Component 2 Outcome Assessment Survey:

The NR outcome assessment survey main findings included:

- Percentage increase in rangeland productivity in target areas 32% compared to the set target of 25% (128%)
- Greenhouse gas emissions (CO_2) avoided and/or sequestered 5049320 tons compared to the set target of 17,600,000 tons (28.7%)
- Results also confirmed that percentages of 17.3%, 15.3%, 6.4%, 13.3% and 5.6% attributed the positive change in rangelands in appearance of new plants, increasing rangelands productivity, less invasive species, appearance of more preferred plants types and less chance for conflict occurrence.
- 87.7% of the surveyed HHs in the five States reported that water is accessible for them, and 92.6% attributed this to the Program interventions. Water points managed with participation from local communities.
- 33.6% of the surveyed HHs use livestock routes. The use of the livestock routes varies among States and become easier due to the program interventions (by a total percent of 51.1%).

LMRP End Line Survey:

The Programme End Line survey main findings included:

- When asked about LMRP role in improving the water sources, 63, 86, 91, 58, and 94 percent of the respondents of White Nile, North Kordofan, West Kordofan, Blue Nile, and Sinnar states respectively were positive.

- The End Line Survey reported an increase of 55, 25, 6 and 143 percent of income from sorghum, groundnut, sesame and vegetables respectively as compared to non-targeted groups in addition to increase in livestock number.
- ELS showed that 80% - 95.7% of the households reported being able and confident to fulfil/achieve issues related to achieving planned goals, difficult tasks, overcoming challenges successfully, and completed any different tasks compared to others.

Knowledge Management

LMRP supported the production and dissemination of knowledge around natural resource management. The achievements included Knowledge Management Trainings for staff, participation in the PROCASUR Learning Routes; CRCVPs Networks Exchange visits; KM Core Group meetings and events.

KM Products and materials disseminated:

- The photo report – 150 copies, including the most prominent activities that were implemented during the lifetime of the program.
- Success stories (book) - 150 copies, including 4 success stories and best practices for each state.
- Design and printing of posters – 20 copies, Offset, Aluminum Frames, 60 * 80 cm.
- Documentary films 9.
- The Knowledge films 9.
- Interactive DVD - USB keys 100 copies: designed and produced in Arabic and English and includes the following: Brief about the program; Reports; Studies; Documentary films; Activities that were broadcast through various media; Photo library about Components across States; Knowledge films; Success stories; Publications; Radio episodes; and Presentations.
- Programme Management Unit distributed 240 jackets, 300 T- Shirt, 240 side cap and 60 cloth bags
- Component 2 Studies (NSAS/LS – co management – PFS – Legalization of stock routes)
- Component 3 studies (Assessment of SCGs – Revolving of First Loss Deposit)
- Gender Assessment study.

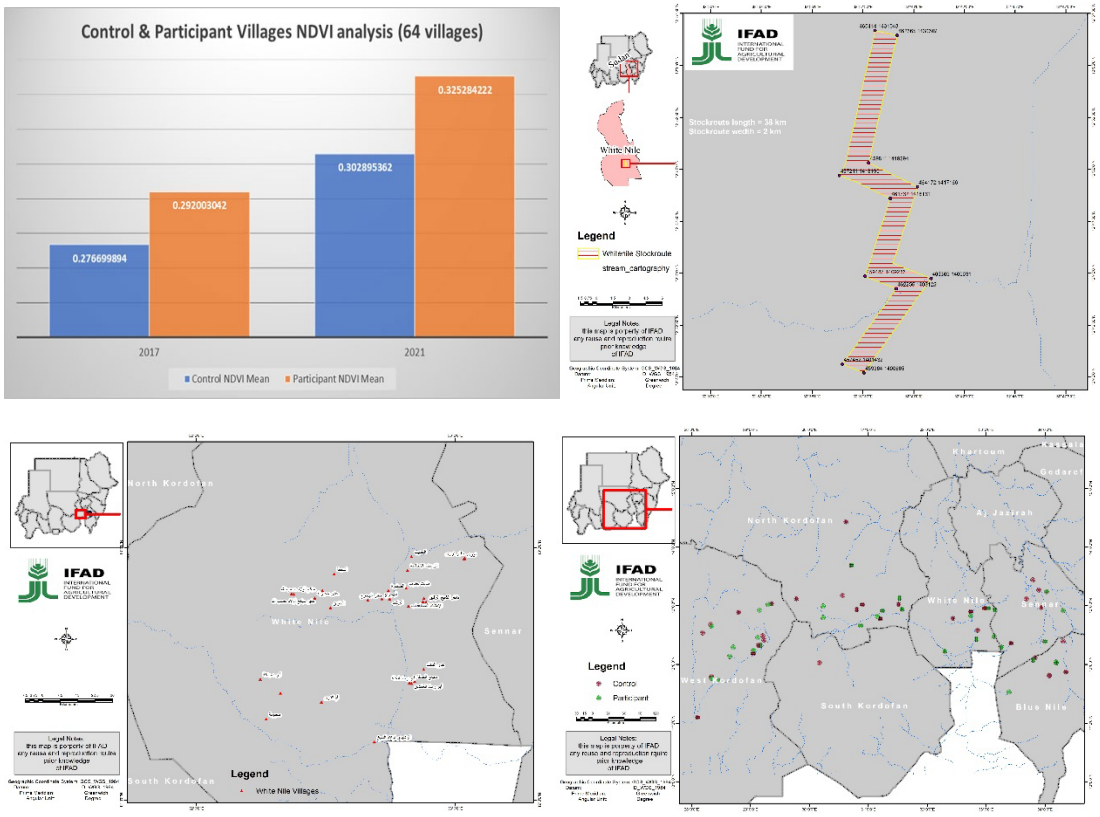
LMRP achievements in NR knowledge production and dissemination to communities and stakeholders contributed to imparting knowledge and experiences and sharing lessons learned and success stories. The result is awareness raising and capacity development at multiple levels. The exchange visits to Ex-BIRDP CRCVPs Networks

contributed to the full understanding and adoption of the modality in the LMRP CRCVPs Networks.

Geo-referencing

From the start the LMRP highlighted the issue of Geo-referencing the activities and interventions. The field officers received training courses in Remote Sensing, GPS and GIS. Trainings were provided by the Remote Sensing and Seismology Authority (RSSA) and Specialized GIS and mapping Consultants on application of the GPS and GIS. Mr. Renaud Colmant from IFAD NEN also provided Training on GIS using Galileo for IFAD Projects Officers. Professional GPS trackers were procured by the Programme and distributed to the field officers.

Field officers collected the coordinates for stock routes, villages and interventions. A GIS Specialist assisted the programme to correct the geo-coordinates of the villages and carried out a geo-spatial analysis of changes in vegetation as a proxy indicator for the environmental impact of the project.



Social Tenure Domain Model (STDM)

STDM is a complimentary approach to land administration which appreciates the roles played by the local residents in mapping out resources within their vicinity. It is a useful tool for defining resource tenure systems (use rights, occupancy, leases, etc);

spatial unit (resources distribution and their structure) and supporting documents from other parties. The platform is developed on open source platform and runs with GIS software QGIS.

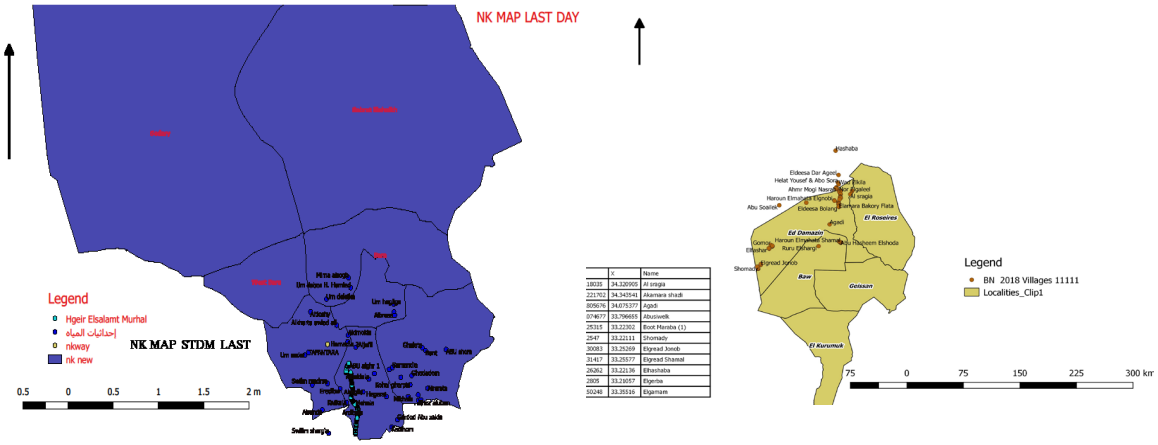
STDM was developed as an outcome of a joint initiative implemented by Resource Conflict Institute- Kenya (RECONCILE) and LMRP under the title: *Building the missing evidences around livestock mobility to foster inclusive landscape-level rangeland governance and crop production: New tools to strengthen adaptive climate resilient capacities for Sudan portfolio.*

The overall objective of the partnership was shaping and enhancing the sustainability of IFAD's investments to enable a more resilient livestock sector in the Sudan. In this connection, the project sought to mainstream participatory pastoral land use planning, conflict sensitive programming and the empowerment of pastoralists and farmers for more positive and mutually beneficial interactions between them and between them and public authorities. The project was implemented during January – December 2019. The approaches and tools were piloted in selected LMRP localities North Kordofan and Sinnar States.

The joint initiative results included the mapping of livestock routes; the development of a mobile app for real-time tracking of conflicts; the analysis of policy and institutional context for livestock mobility in Sudan; the analysis of policy and institutional context for livestock mobility in the Horn of Africa; the development of STDM toolkit; the Policy Facilitation Workshop; and Exchange and Learning Visit to Nakuru by LMRP technical staff.

The outcomes of the project included improved governance and management of pastoral natural resources in selected LRMP localities; a pilot of participatory planning and land conflict resolution methodologies in natural resource management; the establishment of a dialogue and collaboration framework enabling different stakeholders to engage in evidence based policy making and sustainable pastoral innovations at the state and federal level; and improved knowledge management and learning, achieved through shared platforms and events.

RECONCILE was able to introduce into LMRP innovative technologies for sustainable land and natural resource use planning and management, and conflict monitoring and reporting. It also clarified opportunities in regional level processes that could make an advantage of sharing experiences and good practice lessons.



Sustainability

The investment in human development (training and capacity building), the empowerment of community organizations and networking, the introduction of the co-management approach for NRM, as well as the empowerment of women and youth, carry an element of sustainability. The communities are now able to prepare development plans that express their real needs (bottom-up approach) and they claimed that their voices are now heard in the decision-making government institutions at the locality and state levels. Efforts at local level have been complemented by interventions at State and Federal level to create a conducive policy environment and sustainable interventions in terms of climate adaptation within the livestock sector.

LMRP interventions and support in policy facilitation is a good base for sustainability. A wide state and national level consultation was adopted that resulted in the National Sectoral Adaptation Strategy, Natural Resource Governance Framework and the Conflict Resolution/co management Mechanisms. All related stakeholders were involved in the process. The structures and committees established were well oriented and capacitated to play their roles in conflict resolution and resource management.

Moreover, the sustainability of interventions was strengthened by addressing specific environmental and climatic risks that were a threat to the sector's productivity. To this end, LMRP supported activities to limit the overgrazing of natural rangelands, to curb deforestation, and reduce the vulnerability of targeted communities to natural disasters, such as floods and droughts. Through its support to policy development, the institutionalization of local knowledge and capacities, and awareness raising on

climate issues; combined with investments on adaptation and resilience measures, the project contributed to building disaster preparedness and response in its interventions, as well as increased adaptive capacities at multiple level, fostering a long-term sustainability.

The programme has many interventions that deserve to be scaled up. The strong link and coordination with government institutions including deployment of the extension staff and establishing SIUs, experience in formation of VDCs, SCGs, Networking, PFSs, Co-management of stock routes, training of the communities in management, procurement, group work, are examples of interventions to be scaled up in other villages and localities.

At the CRCVPs level, the revenues and profits from Water sub-projects (fees) were used to finance other prioritized needs by the local community e.g. building parts of schools etc. Some CRCVPs developed links with Microfinance Institutions whereby additional activities were financed and sustained.

As part of the Knowledge Products, several sample success stories and good practices were highlighted, published, shared and disseminated to stakeholders and communities. These included women success stories on farming, fattening, savings, access to microfinance institutions and small businesses. The results were outstanding in increasing their incomes and improving their families' status and living conditions.

At completion, a comprehensive exit strategy for Programme's activities has been developed with full participation of government institutions and communities, with a focus on the sustainability of the NRM and adaptation dimension. Overall, there is a high degree of beneficiary commitment to operate and maintain the investments made under the Programme in relation to water resources and rangelands management, forest restoration, as well as provision of alternative energy sources.

Assessment of Risks to Sustainability of Project Outcomes:

Financial risks

Outcome 3: Community-based natural resource management and remediation to reduce the vulnerability of settled and nomadic pastoralists. This outcome is based on the outputs of CRCVPs/CAPs interventions and rangelands/stock routes restoration.

The Programme provided financial support for the CRCVPs interventions in terms of water points' rehabilitation, rangelands restoration, provision of tree seedlings, afforestation, agricultural inputs and seeds, supply of LPG units and bricks making machines. The sustainability of these outcomes is challenged by factors related to the Programme termination and the follow up of activities.

Regarding the water projects, the community contributed a minimum of 8.5% in cash. This is a positive factor of ownership and commitment. Other factors that promotes sustainability include the trained water committees, the financial and bookkeeping documents, the tripartite agreement (LMRP, WMC, SWC), the periodical maintenance and the water profits from revenues that could contribute to the development of the community. These factors make the sustainability of water projects outcomes likely.

Regarding forestry interventions the community participated in allocating lands, planting trees and the local committee supported by FNC is supervising the management and protection of community forests. The *Acacia senegal* woodlots established in North and West Kordofan remain a potential for sustained gum Arabic produce. The sustainability of forest plantations outcomes is likely.

Regarding alternative energy, the Programme provided the households with LPG units and the VDC adopted a system of repaying the unit cost by monthly instalments. The amounts collected from the repayments were used to buy new additional units for other families. The plan went well at the beginning but later was negatively affected by the currency inflation rates and the devaluation of the SDG. This resulted in increase in units and gas filling prices and delayed repayments. The sustainability of achieving the outcomes resulting from adopting LPG units is moderately likely but the sustainability of revolving LPG units is moderately unlikely.

Regarding climate-smart agriculture, the programme provided technical and financial support for inputs and establishment of women farms and conservation agriculture. The most important outcome is technology transfer and use of improved varieties, animal traction *(Koriet)* and drip irrigation system. The sustainability of conservation agriculture outcome is moderately likely.

Socio-political risks

Tribal conflicts are a real threat to sustainability of the programme outcomes. They are usually triggered by land disputes and conflicts over available resources. They result in infrastructure damages, abandonment of lands and resources, loss of lives and people massive displacement. In cases of conflicts happening in neighbouring countries the influx of refugees across the borders is a real burden to the social fabric and a threat to natural resources. Conflicts have a negative effect on management of local projects, hence sustainability of the outcome in such situations is moderately unlikely.

Institutional Framework and governance risks

The Programme interventions in livestock routes included identification, surveying, demarcation, restoration legalization and mapping. The institutions involved in the

process included the Range and pasture administrations in the States, the survey departments, the States authorities, the localities authorities, the ministry of agriculture, ministry of animal resources and the forests national corporation.

The stakeholders involved in the process included the pastoralists, farmers, villagers, security forces, land authorities, water authorities, national administration, tribal leaders and local unions.

The issue of demarcation and legalization in some stock routes sectors was impeded by farmers and villagers. The natural rangelands are not registered officially by the Range and Pasture Directorate. The co management approach adopted in the stock routes sectors significantly helped in establishing co management structures and providing services and investment infrastructures (Collection points). The conflict resolution mechanisms played a crucial role in facilitating the process and resolving bottlenecks. The sustainability of stock routes restoration associated outcome is moderately likely.

Environmental risks

Deforestation of community forests, overgrazing of natural rangelands, vulnerability to natural disasters such as floods and droughts are potential environmental risks. An example of this happened in Sennar State in 2020 where the towns and fields were flooded by the Blue Nile River. Accessibility to production sites was a real issue. Upon recede of the flood, some forest areas were rehabilitated and seeds were disseminated using local adaptive Acacia species and this contributed to the increase in planted areas. The Programme adopted inclusive governance, emphasized participation, promoted gender neutrality, decentralization, transparency and accountability. The Programme also provided support for development of policy, local knowledge, capacity, and awareness raising on climate issues; invested on adaptation and resilience measures; and contributed to building disaster preparedness and response into the design and implementation of the projects. Sustainability in such situations is moderately likely.

Progress to Impact

The GEF/LDCF Project contribution to change is obvious. Capacities of participating communities and stakeholders are developed. The level of community awareness is significantly raised and is reflected in active participation of communities in the interventions as well as the commitment to their roles of mobilization, planning, implementation, monitoring and financial contribution to the costs of projects. The established community structures, VDCs, community procurement committees, water committees, co-management teams, PFSs and Conflict Resolution Mechanisms

significantly contributed to regulatory frameworks, increase in income and improvement of community situations.

The documented success stories reflected the real change made by farmers and women in production farms, microenterprises, investment in water projects, alternative energy sources and smart agriculture.

The CAPs and CRCVPs developed by the Programme are sustained by the communities in particular water infrastructures, range enclosures and conflict resolution centres. The payment for water services generated revenues and profits. Successful examples included water committees who invested in other services needed by the community such as rehabilitation of schools, clinics, supporting the village electricity funds and water pipelines for houses. The established registered VDCs and other community structures are in a good position to asses and prioritize local needs and attract development partners for the welfare of their communities.

The community and local governments' commitment contributed to the attained results and impacts. The community contributed by allocating lands for tree plantations, smart agriculture, range enclosures, and women farms. The community also contributed in cash for water projects. The community participated in the manual work in agricultural, range and forestry projects. The community contributed through active participation in all the meetings and trainings, accommodating events, receiving evaluation missions and contractor company teams for maintenance and rehabilitation of water points.

The local government authorities contributed to this change by facilitating the interventions at local level, issuing permits, authorizing lands allocated, providing technical and legal support and facilitating missions and learning routes.
Other actors and factors that contributed to the change included the good coordination with partners at state and local level including Water Authorities, Range and Pasture Administrations, Forests National Corporation, Agricultural Technology Transfer and other ongoing IFAD projects (WSRMP, IAMDP and SNLRP).

Un-intended impacts

1. Returnees: The LMRP interventions in water and promoting community investments in *Umlamis* and *Egaila Kharbash* villages, North Kordofan State attracted many migrating families to return back and settle after the improvement in living situations.

2. The revenues and profits from CRCVPs water sub-projects fees were used to finance other prioritized needs by the local community e.g. building parts of schools, rehabilitation of clinics and contribution to electricity projects.
3. The co – management approach adopted in opening and restoring the White Nile Western stock route resulted in facilitating the livestock mobility and is activating the work in South Kordofan as a neighboring State to proceed with opening stock routes and adopt the approach.
4. The co management and conflict resolution mechanism in Dali & Mazmoum, Sennar State succeeded in dealing with a sort of tribal/political conflict at the local level in Dali and reached a sort of reconciliation and settlement that saved people lives.

Assessment of M&E System

Programme performance on M&E is rated moderately unsatisfactory. M&E work plan, budgeting and Financing was not separated. M&E activities were part of the LMRP Annual Work plans. The LMRP Base Line Survey did not cater for the GEF indicators. The NR Baseline Survey was conducted but delayed because of the procurement processes with the final report only submitted in early 2020.

M&E Design

The GEF Tracking Tool, elaborated earlier under Project Results section, included measures for base line data, target at CEO Endorsement and terminal results. Clear baseline data, targets and appropriate indicators were there to track gender and socioeconomic results. Base line survey results for the NR component were not ready by CEO Endorsement but later this was available. The M&E system was shared between LDCF and LMRP and indicators were also clearly stated in the LMRP Logical Framework.

M&E Implementation:

Implementation was the responsibility of LMRP M&E Unit. The structure included 2 Knowledge Management/M&E Officers at PMU level for the LMRP Eastern and Western sectors. The NRAM beard the responsibility of provision of the data and information related to GEF indicators collected by the SDATs and NRASs. The data and information for the Logical Framework was updated annually and the GEF Tracking tool indicators were updated for the MTR and at Project completion for terminal results. The LMRP Logical Framework indicators were revised during the MTR.

IFAD MTR recommended "Integrating GEF indicators in the M&E system to track GEF activities in LMRP M&E system" to ensure the collection of these indicators at Project

Completion. The plan was to ensure that the Outcome Indicators to be measured are integrated into the M&E System. A set of relevant indicators were highlighted and shared with GEF including outcome and output indicators after reviewing the GEF Tracking Tool Indicators.

The findings of the LMRP PCR and the IFAD final completion mission elaborated on assessment of the Programme M&E and the main points highlighted as follows:

Capacity Building:

An international consultant was hired to establish the management information system (MIS) in the project and conducted a training for the M&E officers, component experts at SIU and 5 secretaries responsible for data entry. Few on the job training events were conducted for field staff on data collection techniques, analysis and reporting aiming at imparting some relevant knowledge and skills to the field staff to perform their duties. Field staff assigned M&E functions stated that these trainings were not regular, limited in duration and content and therefore not adequate.

Monitoring and Evaluation Plans:

Monitoring and evaluation system lacked annual work plans that were to be discussed and endorsed by program staff. A M&E master plan did not exist. This would have been an important document that is aligned with log frame indicators, and include data collection and execution plans, guiding data analysis and reporting.

Management Information System

LMRP contracted an international consultant to establish the MIS for the programme and train the staff on the system regarding data entry, analysis and generation of physical outputs, outcomes indicators besides financial reports. Following this training, M&E networks were established (31 staff members) and a component focal person was nominated for data collection, secretaries to conduct data entry and M&E officers to validate the data and prepare data collection formats to be applied in the field. These arrangements did not function properly due to the lack of agreed and unified forms for data collection; updating was not conducted in timely fashion; inconsistency of reports generated from the system compared with those reported directly from the field; occasional changing of the focal persons doing data collection and lack of training and mentoring for the field staff. Therefore, the system worked for a while then completely ceased functioning.

Assessment of implementation and execution

Quality of implementation (refers to IFAD performance)

IFAD was responsible for the coordination and supervision of the LDCF project, in accordance with GEF standards and procedures. Supervision and implementation support has been a continuous process, involving ongoing communication and engagement with the GoS, the project team and other relevant stakeholders.

The presence of an IFAD Country Office in Khartoum expedited these processes. At inception, IFAD has reviewed and updated the Logical Framework of the project with participation of representatives from all stakeholder groups, prepared the Overall Work Plan & Budget and fine-tuned the first Annual Work Plan & Budget (AWPB).

A total of 6 IFAD supervision and implementation support missions were conducted during the life span of the project and were concluded with the final IFAD Completion Mission 23 July – 5 August 2022. The Programme Mid-Term Review was conducted during December 2019 and reassessed the LMRP design in the light of implementation experience. The mission recommended adjustments to the Programme approach, activities and implementation arrangements for the remaining life of LDCF and suggested revisions to project Logical Framework, M&E and budgets.

Towards the end of the programme IFAD has carried out an End Line Survey, a comprehensive Project Completion Review and the Final Completion Mission where achievements set against design targets were summarised to assess overall outcomes/impact and prospects for sustainability of gains in the economic and social resilience of the target population.

IFAD included LMRP in several working groups, improving its delivery on a few points.

LMRP was a member in the Knowledge Management Core Group involving IFAD sister Projects, Ministry of Agriculture, Ministry of Animal Resources, and chaired by the Central Coordination Unit for IFAD Financed Projects (CCU-IFAD).

LMRP was also a member in the Early Warning Early Action Technical Working Group that includes members from FAO, WFP, IFAD, FEWSNET, OCHA, FSTS, SMA and HAC. The main objective of the EWEA Working Group is to facilitate coordinated early action implementation based on accurate and timely early warnings.

At the Regional level, LMRP successfully accomplished the partnership with Resource Conflict Institute (RECONCILE - Kenya) for implementing the project named "*Building the missing evidences around livestock mobility & and strengthening adaptive capacities to foster inclusive landscape-level rangeland governance and climate resilient crop production initiative"*

Quality of Execution (MoAR through PMU)

The Ministry of Animal Resources (MoAR), which is the designated Lead Programme Agency, has played a pivotal role in the development and design of the LDCF project. The MoAR was responsible for the implementation of the project and has played its role in the Steering Committee and ensuring linkages to other relevant Ministries and States and Agencies.

The LDCF was implemented as an integrated component of LMRP, under the leadership of the Ministry of Animal Resources (MoAR). MoAR has overall oversight of LDCF as part of the larger LMRP programme through the Programme Management Unit (PMU) in Kosti. Five State Implementation Units (SIU) were established. Each SIU was established by a decree from the State Minister of Agriculture, Animal Resources and Irrigation. The SMAARI and SMLFR participated in monitoring Programme activities at State level and represented the State in the PSC.
The Programme Steering Committee (PSC) set up for LMRP has oriented the strategy of the project, overseeing planning, reviewing progress and impact, and ensuring linkages with related projects, government services and relevant stakeholders.
In each of the States, LDCF implementation was supported by a State Steering Committee (SSC) set up in the framework of the LMRP implementation arrangements. The SSC has been responsible for facilitating implementation and ensuring that impediments to the implementation of project activities are eliminated, as well as reviewing progress.

The LMRP Programme Management Unit (PMU) includes the Programme Manager, The Finance Controller, The Senior Procurement Officer and The Component Managers. The focal point for the GEF Component is the Natural Resource and Adaptation Manager. Five Natural Resource and Adaptation Specialists and five State Development Adaptation Teams are stationed at States level under the supervision of the LMRP State Coordinators.

Due to economic factors mentioned earlier, LMRP faced a high staff turnover and tried to hire new replacement, but the problem persisted in their lack of experience.

LMRP submitted the GEF Project Implementation Report (PIR) for the GEF fiscal years 2017, 2018, 2019, 2020, 2021 and 2022 based on the GEF template. The detailed reports covered general project information, contributions to innovations and lessons learned, critical operations bottlenecks, GEF overall project ratings, measuring for results and measuring performance.

LMRP also submitted the updated LDCF Adaptation Monitoring and Assessment Tool (GEF Tracking Tool) template during the MTR and upon programme completion for terminal results (Attached).

Stakeholder involvement

LMRP has closely worked and coordinated with related stakeholders and institutions at federal, state and locality levels. MoUs were signed with Range and Pasture Administration, Forests National Corporation, Water Provision Authorities, Ministry of Agriculture/Livestock at States level. This remarkably facilitated the achievement of stated targets in CRCVPs interventions.

LMRP signed an MOU with DAL Group, for piloting three start-ups on Gum Arabic drying and preliminary cleaning businesses in LMRP's targeted areas and women communities of North Kordofan State.

Objective of the intervention is to increase women income & creation of jobs in three communities in Sheikan & Umruwaba localities targeting 10 women Saving and Credit Groups (200 members). Activities involved SCGs identification, opening SCG bank accounts in *Ibdaa* Bank, training of women groups and provision of tools & equipment's by DAL, transfer of money to SCGs accounts by LMRP, collection of cleaned dry gum by the women and purchasing of the product by the company (1.3 tons).

Results of the intervention included: Increase of production due to finance & training; increase in prices and incomes; jobs created for women; good quality and volume of produce. Main Lessons learned included: Securing of finance by LMRP assisted them to produce; Provision of training & tools by DAL lead to produced high quality product.

Other partners and stakeholders included Contractors' Companies involved in implementation of CRCVPs and water projects; NGOs, CBOs, IFAD sister projects (WSRMP, IAMDP, SNLRP), FAO, WFP, UNDP, IGAD, CORE-UNHCR.

LMRP established partnerships with national banks and microfinance institutions to secure loans for targeted households and communities. Examples of these are Agricultural Bank Initiative (ABSUMI), Savings Bank and Ibdaa Bank.

Financing Planning

The LMRP bank accounts (both designated and operating) were initially maintained with Bank of Khartoum. During the year 2019, the program suffered from a freeze in the designated bank account open in Bank of Khartoum, due to a ministerial decree requesting the transfer of all foreign currency accounts to the central Bank of Sudan. The transfer occurred in September 2019 but this caused a shortage in the funds available under operating account, and the program postponed some payments, mainly related to investment costs.

Exchange rate environment – The exchange rates applicable in Sudan resulted in confusion and uncertainty regarding the correct rates to apply in preparing the AWPB and making payments with reference to US dollar amounts in the AWPB such as salaries. This was an issue during the time that the Central Bank of Sudan exchanges rates were not aligned with the market rates offered by the market. Various IFAD missions engaged Government on this issue and it was agreed to utilise market rates. An important gap noted until February 2021 between the official exchange rate and the informal market exchange rate, led to high inflation that reached 269.3 % as per International Monetary Fund statistics at the end of December 2020. This aspect contributed to the acceleration of the disbursements under the different financiers, mainly related to activities which involved imported items procured locally (vehicles spare parts, cost of civil works,). With the decision of adopting a floating exchange rate in February, the official exchange rate went from 1 USD against 55 SDG in early February 2021 to 1 USD against 563 SDG in August 2022. It is noted that the first transfer from the designated account to the operating bank account in SDG in July 2016 was at the rate of 1 EUR against 7.0567 SDG.

Co-financing

The co-finance modality remarkably contributed to the attainment of the project results. The grants category disbursement was shared between GEF and ASAP with a percentage of 53.5% and 46.5% respectively. The commitment of GEF, IFAD, ASAP and GoS facilitated the timely disbursement of funds and hence achieving the planned interventions. The vehicles and equipment category as well as capacity building activities were covered by IFAD.

Delays

Significant delays that affected the attainment of the project results included the delay in the procurement procedures for the NR baseline survey for almost 2 years, the final report was submitted in early 2020. The situation in procurement processes was significantly improved after adopting the IFAD No Objection Tracking Utility System (NOTUS).

The delay in the ToR consultation processes, system affiliation and recruitment procedures for the DMPERS. This resulted in implementing the design and feasibility study but the operation of the system is recommended to be handled by the ongoing IFAD Projects.

IFAD's Social Environmental and Climate Assessment Procedures (SECAP):

Despite the lack of a SECAP appendix in the design document, LMRP developed specific templates to ensure the alignment of its activities with the SECAP

requirements (2017 version). Although SECAP related documents, such as the Environmental and Social Management Plan (ESMP), were not produced, the SECAP recommendations were well taken and integrated into the AWPB, GEF design document, and procurement plan. Specifically, under the GEF component all CRCVPs include SECAP Guidance Statements. Each sub-project financed through the CR CVPs takes into account preventive actions and mitigation measures to avoid and curb negative environmental and social impacts. Key measures included fencing water points, separating watering points for human and animal consumption, installation of solar units to operate water points, adopting alternative energy sources (LPG) and sand brick machines to relieve pressure on wood biomass, restoration of rangelands along stock routes, afforestation, not using chemical fertilizers or pesticides, and building tree nurseries.

Seven Guidance Statements were thoroughly developed and examples for each was discussed and agreed upon at PMU level. The seven Guidance Statements include: 1) Biodiversity and Protected Area Management; 2) Agrochemicals; 3) Energy; 4) Forest Resources; 5) Livestock and Range Resources; 6) Water; 7) Small Dams.

At design, LMRP was classified as Category B project, meaning that the programme may have some adverse environmental and/or social impacts on human populations or environmentally significant areas, but the impacts: (i) are less adverse than those for category A; (ii) are site specific and few are irreversible in nature; and (iii) can be readily remedied by appropriate preventive actions and/or mitigation measures. ASAP and GEF funding co-financed activities under component 2, aimed at increasing the resilience to climate change of targeted beneficiaries.

CR CVPs have substituted CAPs with a stronger community-driven and landscape focus. Community networks have been created around shared natural resources with clear safeguarding policies. Always under GEF component, the project introduced the co-management approach to the demarcated livestock routes, as a measure to reduce conflict and ensure that key stakeholders are included in the management of the migratory routes through a participatory approach. The environmental impact of livestock routes has been decreased through the planting of seedlings around poles, to pursue a green demarcation. Furthermore, range seeds have been broadcasted to restore degraded rangelands. The distribution of LPGs, with the main aim of reducing the pressure on the forest cover, has been used as an entry point to mainstream gender and nutrition interventions. The LPGs have reportedly reduced drudgery among beneficiary women, who reported saving time that they previously dedicated to collecting firewood and to cooking. Moreover, since cooking has become easier, female beneficiaries who received LPGs reported having a more varied diet. The establishment of solar power units in water points has further reduced the amount of fuel required to power these structures.

The lack of a complaints and redress mechanism has been compensated by a strong focus on community-driven development, translated into a strong participation of communities in the implementation of activities and creation of community structures for the management of water points and shared ecosystems. SIUs supported a participatory planning process to develop 527 CR CVPs, with the aim of capacitating community members in managing their resources sustainably. This allowed for increased resilience to climate change, but also to other shocks, such as the COVID-19 pandemic.

Gender equity and women Empowerment:

Empowerment of women is quite clear, taking important positions in VDCs and forming and legally registering LSCGS/SCGs. These group are becoming economically active and have an important role in decision making process in their communities. Their contribution in household expenditure is recognizable. Their representation in VDCs and networking is not less than 33%. They do not only participate in the meetings, but they impact the decisions taken. Their voices are now heard in the decision-making government institutions. The targeting for Climate Resilience Community Village Plans (CRCVPs) involves gender-sensitive engagement. Women were actively engaged in CR CVPs farming activities (house gardens), range restoration, food industry, and alternative energy LPG.

The programme created 12,381 jobs for women. In the programme area about 88.4% of the microfinance offered to women, while only 11.6% offered to men. Normally the committee for water management comprises from 5 persons, two women and three men. Percentage of women occupies the position of chair (1.3%), treasure (30%), secretary (23.7%) and deputy chair (18.8%). Overall, 75.3% of women occupies at least one position in the VDCs. Gender Action Learning System (GALS) is successfully delivered for 172 communities reaching total of 9773 beneficiaries (5401 female and 4372 male).

Conclusions and Lessons Learned

The GEF Project is rated satisfactory. The GEF financing has increased the climate resilience of natural resources – rangelands and woodlands – through sustainable management practices and ecological restoration techniques, enhancing the adaptive capacity of pastoralist and agro-pastoralist communities to address climate risks, benefiting a total of 148,600 households in 867 villages in 5 States. (148.6%).

Several lessons learned were identified during the evaluation and listed below.

- The natural resource co-management approach adopted by the Program is considered a particularly successful intervention, as it upgrades the capacity of pastoralists and farmers to take part in natural resource management. In

addition to that, it supports the role of women in decision-making at community level, especially pastoralists and nomadic women.

- The adoption of co-management approach not only enabled joint decision making at specific livestock sectors, but even helped in the coordination of different sectors within specific livestock routes, which is another added value, as this was one of the challenges faced by the Range and Pasture Directorate.
- Pastoralists Field Schools proved to be a relevant intervention that attracted all pastoralists and became a forum for protection/restoration of stock routes and enhancing investment in available resources. The PFS enabled pastoralists to better assess their environmental risks, tackle problems and better utilize natural forest products. Because this was not practiced widely before it is expected to bring a shared understanding among farmers and pastoralists on the necessity of integrity of these two activities to ensure sustainability.
- Bridging the gap between pastoralists and farmers is a remarkable achievement as shown by the adoption of the co-management approach. This is because the co-management committees involved both pastoralists and farmers in one setting, which helped to minimize disputes and promote coordination and collaboration that are needed for sustainable NRM.
- Intermediate technology (Animal traction - *Koriet*) adopted by agro pastoralists for land preparation in West Kurdofan, proved to be an appropriate technology that was widely used and disseminated as an alternative to traditional farming tools and tractors. A total of 950 animal traction plows were distributed to farmers. The implement is simple, harmless to the soil structure, saves time as the farmer will not wait for his turn to hire a tractor. The amounts of agricultural by-products after harvesting are more than the case when using traditional tools or tractor, hence increasing fodder amounts for livestock.
- Access to water as a basic service proved to be crucial in the successful implementation of development activities. The Programme successfully ensured access to water with related benefits for both individual and community development, as well as increased capacity to cope with the effects of climate change. The rural communities in the programme area suffer from a shortage of clean water for both human and animal consumption. Water is essential for development, but needs to be sustainably managed to enhance livelihood opportunities and reduce conflict.
- In order to prevent encroachment of crop farms into the livestock routes, it is imperative that proper and participatory mapping and demarcations are carried out. Enforcement of agreed upon migratory and grazing rules adhered to by all parties concerned.
- Disputes occur for various reasons such as boundary conflicts or ownership or inheritance issues primarily through competing claims between crop farmers

and pastoralists and to some extent among clans. The analysis of these kind of conflicts and the interventions requires empowerment of and strengthened conflict resolution centres that were existing within the project areas. Both conflict and dispute management records need to be properly established and maintained to support the conflict hotspot mapping to facilitate the prediction, warning, reporting and response on a timely basis.

Table 5: Recommendations:

No.	Recommendation	Actors in charge of implementation	Deadlines
1	The demarcation and legalization of livestock routes needs concrete placing within the wider framework of sustainable land use planning and equitable natural resource management at State level.	Ministry of Agriculture; MoAR; Range and Pasture Directorate; States governments; State MoPERs; Co-management teams; Conflict Resolution Mechanisms	February 2023
2	Based on the community experience and request it is recommended to develop the design of the *Koriet* Animal traction to work as a planter in addition to its function as a plough for agricultural practices.	West Kordofan State MoPER; Agricultural Research; Farmers Union.	February 2023
3	To protect natural rangelands it is recommended not to certify large agricultural investment companies to work in grazing areas except with the approval of the RPGD, concerned state authorities, co management structures and the people of interest.	RPGD; Ministry of Agriculture; concerned state authorities; land authorities; co management structures	March 2023
4	Promote investment in rangelands restoration and fodder production. This requires an appropriate modelling on how to invest in rangelands restoration.	RPGD; Agricultural Research; Private sector; Pastoralists.	March 2023
5	The Ministry of Agriculture in the state to form technical coordination units to	State MoPER; State Water Authorities;	December 2022

	follow up LMRP outcomes and potential impacts in NRM interventions including water sub-projects, livestock routes, co-management structures, community groups/networks and community forests in coordination with related partners in the State to ensure sustainability.	FNC; co management structures; CRCVP Networks.	
6	The MoAR to follow procedures to ratify the Rangeland Policy by the Cabinet.	RPGD; MoAR; The Cabinet.	December 2022
7	The operation of the two Livestock Collection Points established in Wad Alnayal – Sennar State and Alrawat – White Nile State. The two CRCVPs Networks were registered and trained. The recommendation is to support implementation of the business plans and linking them to potential investment institutions.	SNLRP; IAMDP; LESP; CRCVPs Networks; Co management structures.	December 2022
8	Follow up of the recently completed water projects in the States; and review and update the tripartite Agreements with the Water Authority and the Communities in order to ensure sustainability of this crucial community investment.	SNLRP; States MoPERs; States Water Authorities; VDCs; Village Water Committees.	December 2022
9	Follow up of the recently established Community Development Centre in Alrawat, White Nile State by building the capacities of the VDC and the specialized committees, formulation and implementation of the centre's business plan.	SNLRP; State MoPER; VDC.	December 2022
10	Instalment and operation of the designed Drought Monitoring Preparedness and	SNLRP	January 2023

	Early Response System for weather and hazard prediction.		

Annexes:

1. **The Evaluation Terms of Reference (TOR);**

Expected Activities:

- Provide a comprehensive and systematic account of the performance of the GEF-Funded LMRP component by assessing its design, implementation and achievement of objectives;
- Review all Project documents and reports and collect all information deemed necessary to understand and analyse the Project implementation achievements and failures, management and implementation capacities, structure and sustainability;
- Prepare a first draft of the LMRP GEF Terminal Evaluation Report in line with guidelines for GEF Agencies in Conducting Terminal Evaluation for Full Sized Projects, which includes sections on General Information, Project Theory of Change, Assessment of Project Results, Outputs, Outcomes, Sustainability, Progress to Impact, Assessment of Monitoring and Evaluation Systems, Assessment of Implementation and Execution, Other Assessments and Lessons and Recommendations;
- Address any comments made by the GEF Independent Office of Evaluation on the Draft Terminal Evaluation Report;
- If necessary and related to GEF Funding, undertake any other task assigned by the IFAD Country Director.

Expected Outputs:

- LMRP GEF Terminal Evaluation Report in line with the GEF Evaluation Policy (2019) and the Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full Sized Projects.
- Revised LMRP GEF Terminal Evaluation Report based on GEF Independent Office of Evaluation's comments; 31 October 2022.

2. List of documents reviewed/ consulted;

- LMRP Base line Survey
- Component 2 Base line Survey
- Livestock Marketing and Resilience Programme, Final project design report, 12 November, 2014
- GEF Livestock and Rangeland Resilience Programme – Project Document, September 2014
- LMRP - Community led Natural Resource Management and Enhanced Adaptive Capacities Annual Progress Reports
- GEF Project Implementation Annual reports (PIRs)
- IFAD Supervision Missions' reports
- Mid-Term Review of Livestock Marketing and Resilience Program (LMRP), 01/12/2019 – 20/12/2019
- Component 2 Technical Studies and Consultancies
- Programme End Line Survey (ELS)
- Programme Completion Report (PCR)
- IFAD LMRP Completion Report
- Programme M&E reports
- GEF Tracking tool indicators
- FAO GIS Consultant INDVI tables and maps

3. **Summary of co-finance information and a statement of project expenditure by activity;**

Key information

Financing terms ECD GRANTS

Source of Financing LDCF Least Developed Countries Fund

Status of funds:

Category allocation					**All amounts are expressed in USD**
CATEGORY CODE	CATEGORY DESCRIPTION	ALLOCATED	DISBURSED AMOUNT	DISBURSED %	AVAILABLE BALANCE
200008	CONSULTANCIES	1,288,000.00	562,839.69	43.70%	725,160.31
200012	GRANTS AND SUBSIDIES	7,067,000.00	5,860,268.50	82.92%	1,206,731.50
00013	GOODS, SERVICES AND INPUTS	53,000.00	50,044.15	94.42%	2,955.85
200019	TRAINING (WORKSHOPS AND MEETING)	118,000.00	47,626.06	40.36%	70,373.94
270001	AUTHORISED ALLOCATION	0.00	1,025,396.21	0.00%	-1,025,396.21
		8,526,000.00	7,546,174.61	88.51%	979,825.39

**See attached IFAD Financing Overview Report for more information (Attachment 2)*

4. Comprehensive list of knowledge products

Publications and links

- National Sectoral Adaptation Strategy for the Livestock Sector;
- Legalization of livestock routes (Arabic)
- Guidelines for livestock routes co management mechanism (Arabic)
- Pastoralists Field Schools (Arabic)
- Drought Monitoring Preparedness and Early Response System (DMPERS)
- Natural Resource Governance Framework (Arabic)
- LMRP Exit Strategy
- Inspiring Success Stories (English and Arabic)
- LMRP Photo Report (English and Arabic)
- Public Private Partnerships [PPPs] – IFAD & DAL Joint Venture.
- "Abuswailik" Water Access for Sustainable Living.
- "Alwifaq" Women Group: Women on the Lead for Economic and Social Empowerment.
- Gender Assessment Study,
- The Success Story: *From subsistence to self-sufficiency: how women in Sudan are using savings and credit groups to build a better future*

This is an IFAD Web Story that was developed based on a LMRP draft reflecting the experience of Alwifag Group, Yerwa village, Blue Nile State. The story is available on the following link:

- ifad.org: https://www.ifad.org/en/web/latest/-/from-subsistence-to-self-sufficiency-how-women-in-sudan-are-using-savings-and-credit-groups-to-build-a-better-future

Interactive DVD – USB and Documentary Films