

The Ministry of Agriculture & Natural Resources



Sudan Sustainable Natural Resources Management Project (SSNRMP3)



Environmental and Social Management Framework (ESMF) & Grievance Redress Mechanisms (GRM)

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ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
BD	Biodiversity GEF Focal Area
BRICKS	Building Resilience through Innovation, Communication and Knowledge Services
CBO	Community Based Organization
CM	Community Mobilizer
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
FM	Financial Management
FNC	Forestry National Corporation
GEF	Global Environment Facility
GGWI	Great Green Wall Initiative
GIS	Geographical Information System
GoS	Government of Sudan
HCENR	Higher Council for Environment and Natural Resources
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IGAD	Intergovernmental Authority on Development
I-PRSP	Interim Poverty Reduction Strategy Paper
ISN	Interim Strategy Note
M&E	Monitoring and Evaluation
MANR	Ministry of Agriculture and Natural Resources
NAPA	National Adaptation Program of Action
NGO	Non-Governmental Organization
NRM	Natural Resource Management
PA	Protected Area
PCR	Physical Cultural Resource
PIU	Project Implementation Unit
PDO	Project Development Objective
PF	Process Framework
PIM	Project Implementation Manual
PNSC	Project National Steering Committee
PSIR	Pressure State, Impact Response analysis
SLWM	Sustainable Land and Water Management
SPIU	State Project Implementation Unit
SPSC	State Project Steering Committee
SSNRMP	Sudan Sustainable Natural Resources Management Project
TA	Technical Assistance
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change
VDC	Village Development Committee

Executive Summary

The Sudan Sustainable Natural Resource Management Project (SSNRMP) is part of the Great Green Wall Initiative (GGWI) and falls under the World Bank Umbrella Program for the Sahel and West Africa countries in support of the GGWI. The Project Development Objective (PDO) and Global Environment Objective is to increase adoption of sustainable land and water management practices in targeted landscapes.

Phase I of the project was implemented in three localities, in the states of Kassala, Gezira and White Nile. The external financing, primarily from Global Environment Facility (GEF), was provided to the Government of Sudan (GoS) through the Ministry of Environment, Natural Resources and Physical Development, the national implementing agency for the SSNRMP, for the period of 5 year (2014-2019), with a budget of US\$7.73 million.

Phase II of the project is implemented in three states: River Nile, Northern and North Kordofan. The external financing, primarily from GEF has been provided to the GoS through the Ministry of Agriculture & Natural Resources (MANR), the national implementing agency for the SSNRMP, for the period of 5 year (2018-2023), with a budget of US\$ 5.5 million.

Phase III of the project will be implemented in two states: Gadarif and Khartoum. The Financing from GEF and LDCF will be provided to the GoS through MANR, the national implementing agency for period of 4 years (2020 – 2023) with budget of US\$ 5.9 million. The total fund for the three phases is US\$ 19.1 million.

Purpose of updating the ESMF

The Government of Sudan has approached the GEF for additional financing to expand its coverage to another three states within the GGW targeted states. The GEF has approved an additional US\$ 5.5 million to cover River Nile, Northern, and North Kordofan States. This document is to capture implementation experience of the ESMF in the parent project states and capture the lessons learned to be incorporated in the additional finance for the new two states. It constitutes an Environmental and Social Management Framework (ESMF) which is to be used by the SSNRMP in the targeted states to ensure that all environmental and social safeguards are adequately addressed. The key purpose of the document is the collection of all required data, information and materials to provide clear, comprehensive and practical guidance to the Client on integrating an environmental and social due diligence process into the Project's preparation and implementation.

The updated ESMF is to:

- (i) identify the environmental and socio-economic conditions, and the physical, chemical and biological baseline, within which the project will be implemented;
- (ii) list and define all relevant potential environmental and social risks and concerns that may arise as a result of the proposed Project and its sub-projects;
- (iii) specify appropriate roles and responsibilities of involved actors and parties;

- (iv) outline the necessary procedures for managing and monitoring environmental risks and social concerns related to the subprojects;
- (v) determine the training, capacity building and technical assistance needed to successfully and effectively implement the provisions of the ESMF;
- (vi) establish the Project funding required to implement the ESMF requirements;
- (vii) provide practical information resources for implementing the ESMF requirements; and
- (viii) formulate Grievance Redress Mechanism to be used in all project and sub-projects interventions.

For this update, the methods used include review of the previous ESMF and related literature, such as existing laws, frameworks and guidelines of the GoS and international institutions, existing grievance handling mechanism and practices, consultation and discussion meetings from central to community level for data generation. Moreover, it also includes study design and the definition of the process for data collection, interpretation and analysis.

Legislative framework

The key environmental law, which provides the overarching framework for environmental management and assessment, is the Environmental Conservation Act, enacted in 2001. The Act includes general principles and guidelines to be considered in implementing development projects and stipulates that project proponents to carry out an environmental and social impact assessment (ESIA) or at least conduct an environmental screening, before embarking on any development activity. There are environmental laws in each state that are in line with national laws and contain the same articles stated in national law. Additionally, the World Bank's environmental, social and legal safeguards policies apply.

Institutional roles and responsibilities

Under the proposed ESMF, MANR is responsible for ensuring that mechanisms and recommendations provided in this ESMF are implemented effectively. Environmental and social screening is conducted at sub-project level, and the State Project Implementation Units (SPIU) at state level are responsible for ensuring that sub-projects are screened for their environmental and social impacts prior to implementation.

Sub-project preparation, screening, review and appraisal process

The ESMF outlines the screening procedures, reporting systems, and responsibilities to be adopted by the implementing agency, MANR. The tools and mechanisms provided include:

- Process and criteria for screening subprojects;
- Terms of reference for the preparation of sub-project-specific Environmental and Social Management Plans (ESMP), and for annual environmental and social audits of the sub-project portfolio;
- Checklist on the environmental and social impacts of typical sub-projects; and
- GRM and compliance mechanisms.

Main potential environmental and social risks and impacts

The environmental and social impacts of activities under the SSNRMP are largely positive because of their role in rehabilitating degraded forests and rangelands. However, there are some potential social risks that may arise during the process of selecting the sites for different interventions, such as rehabilitation of degraded land, establishment of enclosures, access and use of rehabilitated rangeland, marginalisation of livelihood targeting, water use conflicts, access to basic services and conservation works. In addition, some minor negative environmental impacts can result from the construction and/or rehabilitation of small-scale investments in forest ecosystem rehabilitation and restoration, watershed and sustainable water management, rangeland management, and livelihood related activities. With the adoption of the processes for GRM, good housekeeping measures and a set of robust environmental and social management procedures, these impacts are expected to be minimised and confined to localized cases and temporary in nature. Impact and mitigation checklists are provided in the updated ESMF as a reference guide for identifying and managing these impacts.

Mitigation plans

Minor negative impacts could result from the construction and/or rehabilitation of small-scale investments, poorly managed access to, and movement in the forest and rangelands. These impacts could be mitigated if good diligent practice is employed during construction and operation of these small-scale investments, particularly related to livelihood interventions. Depending on the sub-project, these could be covered by simplified ESMPs. Effective implementation of ESMPs will ensure that the appropriate mitigation measures have been employed to avoid and/or minimize any potential negative impacts resulting from the proposed activity. MANR should agree with the targeted States and local level environment agencies on the supervision of the ESMP.

Public consultation and disclosure

Consultations with relevant stakeholders were conducted in the new states in January-February 2019. They included local communities, governmental officials at federal and state level, as well as international development organizations & projects such as (Drought Mitigation Programme funded by African Development Bank - Intergovernmental Authority on Development (IGAD), Carbon Sequestration Project – International Fund for Agricultural Development (IFAD), Butana Integrated Rural Development Project – IFAD, Refugees Areas Forest Rehabilitation Project (UNHCR, COR & FNC) , Islamic relief World Wide, ZOA Netherlands (INGO) operating in the states.

The consulted development partners have different modalities in natural resources management where the team captured the lessons learned and best practices used (e.g. using of Integrated Water Resources Management Approach). These approach helps to manage and develop water resources in a sustainable and balanced way, taking account of social, economic and environmental interests. It recognises the many different and competing interest groups, the sectors that use and abuse water, and the needs of the environment.

During sub-projects preparation and implementation, consultations will be carried out with all stakeholder groups including Government agencies, Non-government organizations (NGOs), and local communities. Updated ESMPs and other safeguard instruments prepared for sub-projects under the SSNRMP will be disclosed to the public.

Training

Training on the updated ESMF and the complementary Process Framework (PF) will be given to local government staff. Furthermore, awareness creation on the ESMF will be provided to relevant state and national level government staff and other relevant stakeholders.

Monitoring and Evaluation

The use of ESMF and PF for managing the environmental and social impacts of the sub-projects will be included in the overall project monitoring, and there will be regular reporting and an annual audit on the implementation of the requirements of the updated ESMF, which will be carried out at state and locality levels.

For those projects, which require an ESMP, the environmental review will check that the environmental due diligence documentation was prepared, and that project implementation followed its recommendations. The physical aspects will be verified during site visits to the selected subproject sites and activities.

Proposed budget

The total estimated cost for environmental and social assessment capacity building, as well as training and awareness on the ESMF and PF is USD 110,000. However, this does not include costs related to any required mitigation measures for sub-projects, which should be assessed and internalized as part of the overall sub-project budget.

1. INTRODUCTION

Rationale for the use of the Safeguard Policies

1. The AF would bring benefits to communities in a timely and cost-effective manner given the fragility and the limited capacity of the client to prepare the project under the new IPF. Moreover, the expansion and/or the additional activities neither raise the safeguard category nor trigger any new safeguard risks and policies.
2. The expanded activities into the two new states can be handled by the existing project management arrangement. It will be within the implementation capacity of the PCU and the implementation arrangement will remain the same. Community mobilizers will be recruited in the new states to support the implementation of the ESMF.
3. The expansion and/or the additional activities neither raise the safeguard category nor trigger any new safeguard risks and policies. However, as stated in the updated ESMF and PF, institutional capacity building at state and locality level is required to ensure implementation of the instruments.

Project Overview

4. This document provides an update of the ESMF for the SSNRMP, which has received an additional finance from the Global Environment Facility (GEF). The additional finance will be allocated to expand the number of states covered to a total of eight states and extend the current closing date of the project for another five years to close by November 2023, making a total cost of US\$ 19.1 million.
5. Following the World Bank Board endorsement of the Sudan Interim Poverty Reduction Strategy Paper (I-PRSP) on 30 August 2013 and endorsed the Sudan Interim Strategy Note (ISN) for FY14-15, which mirrors the pillars of the government I-PRSP. The ISN is structured around two pillars: (I) Manage the Economic Transition; and (II) Address Socio-economic Roots of Conflict, with a cross-cutting focus on governance and gender contributing directly to the objectives of reducing extreme poverty and increasing shared prosperity in Sudan.
6. In most regions of Sudan, conflict over access to natural resources between pastoralists, agro-pastoralists and settled farmers is endemic and contributes to regional conflict, such as in the Sahel. Such conflict often leads to violence due to weak institutions for conflict management and especially weak natural resources management regimes. Climate change is likely to put further pressure on already fragile ecosystems and livelihoods dependent on them and may lead to further conflicts. A World Bank study of conflict drivers that threaten stability in Sudan was commissioned to help deepen understanding of conflict factors and accordingly, calibrate Bank engagement under the ISN. The main conclusion of the study was that “inequalities in allocation of public resources and in access to natural resources are the main drivers of conflict,

feeding into a potent mix of ideology, ethnicity and socio-economic marginalization¹. The study recommended that conflict mitigation and peace-building efforts around competition over natural resources are pressing priorities at all levels, including government policies on land-related investment (state land and foreign investment ones) and land associated policies that touch on migratory routes of transhumance populations as well as communal land rights. Especially at the local level, the role of the traditional native administration systems as well as civil society actors working in peace-building and conflict resolution, is very important. Therefore, the environmental risks associated with both urban growth and extractive activities should be addressed to reduce possible future conflicts.

7. The SSNRMP is contributing to the ISN, particularly Pillar I, by supporting livelihood enhancing, community-based integrated sustainable land and water management. The project corresponds with the central features of the Government's I-PRSP, and is designed to fund a number of small-scale, community-based sub-projects that will be identified and planned by the communities, with technical support of project-financed extension teams, and then approved for funding by local government authorities.
8. The Ministry of Agriculture & Natural Resources (MANR) is responsible for implementing the SSNRMP, including the provisions of this updated ESMF. The ESMF is to be used by the SSNRMP in order to ensure that all environmental and social safeguards are adequately addressed and Grievance Redress Mechanisms are established and functional.

Purpose and Objective of ESMF

9. The objectives of this ESMF are to:
 - Identify key environmental and socioeconomic conditions relevant for project implementation, and establish a physical, biological and social baseline;
 - Specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to sub-projects;
 - Establish clear procedures and methodologies for the environmental and social screening, assessment, review, approval and implementation of sub-projects to be financed under the project;
 - Assess key environmental and social impacts and effects expected to result from project implementation, even if on a generic level, estimate the magnitude and duration of effects, their nature (positive or negative);
 - Design a set of generic measures for impact mitigation, or the enhancement of positive effects, which provide guidance and a framework for latter preparation of specific ESMPs that would be tailored to sub-projects identified under the program;
 - Determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF; and

¹ IDA Report No: 80051-SD: Sudan Interim Strategy Note (FY 2014-2015), August 2013.

- Define the required funding to implement the ESMF requirements (mainly screening and selection of sub-projects, and the preparation of appropriate safeguards instruments, such as ESMP).
10. In addition to meeting the above objectives, the ESMF is intended to facilitate the implementation of the project based on the following principles:
- Provide support to communities to develop their sub-project application to avoid or minimize negative environmental and social effects;
 - Provide support to local authorities to review applications and determine if additional, more detailed environmental or social screening or assessment is required before applications can be approved;
 - Provide support to communities, local authorities and local implementation units in carrying out their respective roles by funding training, information resources and technical assistance; and
 - Provide funding to annual reviews for sub-project portfolio review, assessing compliance, reviewing lessons learnt, and improving future performance, as well as assessing the occurrence of, and potential for cumulative impacts due to project funding and other development activities.

Methods of the ESMF preparation

11. Review of Relevant Policies and Laws

A review of relevant environmental and social management and assessment policies and laws in the country was made to take into account these policies and laws in the preparation of this ESMF. The guidelines provide not only the applicable procedures but also the institutional arrangement for environmental and social management and assessment at national and state levels.

Summary of Stakeholder Consultations

12. Stakeholder consultations were carried out during designing of project activities as well as ESMF preparation exercise with the aim of explaining the objectives and scope of the project as well as to discuss and respond to project issues of concern by different stakeholders. The consultations were conducted in the two states with the participation of community leaders and community members from the potential areas for project implementation, including pastoralist associations, farmers associations and key government offices directly involved in the project implementation. In Gadarif, the consultation (27-30 January 2019) included 53 officials of which 14 were women, in Khartoum State the people participated in the consultation (7-28 February 2019) were 44 officials and 3 were women. The consultation processes included orientation meetings with the senior officials from the state, locality, and State Ministries of Agriculture, Animal Resources, and Irrigation. In addition, consultations were carried out with leaders from the targeted communities at the locality and prioritised administrative units.

Summary of Issues Raised During Stakeholders' Consultations

Issues	Recommended Actions
Government Institutions	
The limited capacity of government agencies to enforce laws and to curb illegal felling of trees, encroachment of forest land by farmers and pastoralists	Capacity building of key agencies and sufficient resourcing of their activities
Underestimating the knowledge of pastoralists by scientists in managing rangelands	Respecting the local communities and considering their aspirations and thoughts should guide project implementation
Community buy-in, low level of participation, recurrent drought and low government capacity will undermine the project	Community participation and ownership and capacity building of government offices; interventions for alternative livelihood and income and job creation
Intricacy of access to water at household level for domestic use; horizontal expansion of agriculture causing destruction of trees, bushes and blocking nomadic routes	Water harvesting, harvesting and utilization of flood water in the rainy season by constructing hafirs, creating equitable access to water,
Conflict over land use between farmers and pastoralists	Community participation, effective implementation of laws and conflict resolution mechanisms
Participatory range management is difficult and slow process to have impact	Strengthen capacity of local implementing institutions and community; organizing and working with community groups; learning from past experiences of working with communities and best practices
Effective coordination among various stakeholders could be a challenge	Involvement of all relevant stakeholders from the start and specifying the roles and responsibilities of each of them
Communities may not accept the project and object to it	Strong public communication campaign to popularize the project;
Communities	
Community capacity in natural resource management is limited	Skills training for communities in managing natural resources for the implementation of the project.
Low capacity for effective utilization of water resources, lack of capacity in government agencies, weak transparency in the use of funds and the land tenure will pose challenges	Training and introduction of techniques for water harvesting; strong community participation and transparent system of fund management. Community participation; institutional support for community organizations such as pastoralist and farmers associations (previously known as unions).

Issues	Recommended Actions
Overgrazing, illicit felling of trees, tribal conflicts, fires, charcoal making and low level of awareness about natural resource management are challenges for project	Fuel saving technologies, capacity building of implementation agencies at local level to enable them enforce laws and regulations, participation of communities and their organizations in project activities, developing land use plan/mapping in consultation with the different land users.
Women should benefit from project	Participation of women conservation activities

Stakeholders' views and concerns:

13. **Views:** All the stakeholders view the proposed project as a positive initiative that will support and build on the earlier work done by the government, other donors and NGOs. Stakeholders view the overall objective and the project design as a constructive initiative in terms of biodiversity conservation, re-generation of natural resources, and community support by prompting alternative livelihood activities as well as enhancing protection of forest, rangeland and water resources.
14. **Concerns:** communities raised the concern of lack of awareness about the intended project activities as well as low knowledge and capacity at community levels to implement those activities. Communities do not have sufficient information about the project and particularly regarding the areas with possible restriction of access to cultivation and pasture in and around forest reserves and rangeland, which are not clearly delineated yet at project preparation. They raised concerns about the impacts on access to grazing rights, collection of dead wood, and possible agroforestry practices under the guidance of forest officials. They also raised the concern about herders' respect to the demarcated pastoralist migratory corridors (Livestock routes) in range reserves areas. This should be delineated on ground by markers and raise awareness among herders' communities in the locality on the processes for accessing those resources. In Gadarif they used the shelterbelt in rain-fed agriculture as livestock routes and rest areas where they emphasize on its importance for their livestock grazing and mitigation of potential conflicts between pastoralists and farmers.
15. **Recommendations:** During consultations, the government representatives recommended formation of forest committees at local levels in the targeted states in collaboration with village Popular Committees for co-management of forest reserves and to inject new blood in the existing committees. They also recommended establishment of village and school nurseries as means of contributing to forest rehabilitation. The officials also suggested a plan for capacity building including in-service training and institutional support to the staff in the relevant technical departments of targeted new states. The proposed Forest Committees should be linked with the forest authorities to get the technical advice from forest experts. These recommendations are incorporated into activities of the subprojects. Also, the government officials recommend diversification in the project activities to be as package (Forest & Rangelands rehabilitation and livelihoods activities).

16. A Process Framework has been prepared and updated as part of the AF to provide principles that will guide the project's preparation of management plans for forest and rangeland and the identification and implementation of the different subproject activities related to rangeland, water resources, forest reserves and livelihood activities. The process will be used to ensure that marginalized and vulnerable people are consulted and engaged in sub-projects implementation which restricts access to and use of natural resources. Vulnerable and marginalized people would be identified during the social assessment, which would be conducted, before implementation of subproject activities.
17. The local leaders agree to the recommendations made by government officials and promised to contribute in the management of their natural resources base whether it is forest or rangeland. In fact, they stated that they are the arm of Forest and Range and Pastures Departments at the local level and contribute to protection of the forest because of benefits they get from the forest.
18. The inhabitants living close to proposed sites were consulted in groups and as individuals as well as their local leaders to get their concerns about the reserved areas and how they could be involved. Communities recommended that local committees should be composed of community representatives, leaders and government officials to ensure that access to the resources in forest or in range reserves is allowed particularly for collection of dead wood, fodder grasses, Non-Timber Forest products such as honey. Committees to be established as agreed by the local inhabitants and government officials will play a major role in organizing the use of resources in a sustainable manner. In this respect, the need for livelihood intervention has been emphasized to ensure that communities have alternative source of income and livelihood. The community consulted confirmed their real needs for rehabilitation of the adjacent forest as they are pastoralists and depend totally on these protective forests for grazing and other forest products. In Sharg Elneel (Sayal Elfaki Saad Area) communities make great efforts in protecting and managing the adjacent reserved forests from encroachment of traditional agriculture and large-scale investors and they express their needs to rehabilitate their forests as they depend basically on it.
19. Regarding the possible sub-projects needed by the local communities, they recommended the following:
 - Establishment of Hafirs outside the forest and range reserves for animal use and rehabilitate the existing Hafirs and water sources.
 - Establish village and school nurseries.
 - Establish woodlots and home gardens for women.
 - Seeding rangelands with palatable fodder grasses.
 - Distribution of improved milking small ruminants to improve the local breeds.
 - Train local inhabitants in making improved traditional mud stoves.
20. Currently, varying degree of community participation exists with the different institutions in the two states. The project will support natural resource management activities such as

afforestation, community forestry, demarcation of community and government forest reserves, and seedling production for afforestation. While communities expressed that some degree of participation exists, the level of participation is not sufficient. The communities recommended to increase the technical capacities of the government staff from local implementing agencies and increase joint planning for increased transparency in the use of funds to ensure effective communities' participation. The first component of the SSNRM will address the policy reform and institutional support. Changes in land use following the landscape approach and preparation of Forest and Range management plans require meaningful consultation with different land users- farmers and pastoralists- as well as other forest resource users. The lack of meaningful participation may lead to conflicts among different users of natural resources.

21. There is a need for better coordination of activities by government offices. Some government offices have indicated that they coordinate their activities with other government agencies. Communities however stated that such coordination effort needs to be strengthened. A Special focus and attention will be given to gender inequalities, and the project will promote participation and representation of vulnerable groups, particularly women and landless in different levels of decision-making.

2. PROJECT DESCRIPTION

22. The proposed AF is sought to finance implementation on another geographic scale and expanding the range of SSNRMP interventions to other ecosystems through the following activities: (i) scale up SLWM interventions from the original target of 57,000 ha in the two new States to bring about 221,000 ha of land under forest and range management which would result in a net carbon absorption of an estimated 2 million Metric Tonnes of carbon dioxide per annum; (ii) promote community rehabilitation of degraded lands and forests, including biodiversity conservation, and establishment of wind breaks and shelterbelts; (iii) promote biodiversity conservation by rehabilitation/establishing the wildlife sanctuaries (in Khartoum and Gadarif States) and prepare management plans using the concept of Community Based Wildlife and Biodiversity. SSNRMP will support the research-based activities focusing on finding out the linkages between malaria and climate change. Scholarship will be availed to post graduate students to carry out this study and the findings will be disseminated to the different interested groups at national and state level.
23. Conservation as described in Aichi strategic target E: "Enhance implementation through participatory planning, knowledge management and capacity building" for which specific targets would be developed during the project appraisal and (iv) support the participating communities with improved seeds of indigenous trees that are drought tolerant as a coping mechanism against climate change, in addition to early warning and climatic information about the growing season. In Khartoum State, biodiversity conservation activities would include supporting range and pasture development in Sharg Elneel locality (Sayal Elfaki Saad Area), which will complement the achievements made in the piloted locality in the original SSNRMP targeted area of Gazira State. Overall, water harvesting structure and water management, will be essential for enrichment planting, natural resources regeneration in the new project areas and therefore, instrumental to increasing the resilience of the rural communities. SSNRMP will

support the Khartoum shelterbelt in filling gaps in area (first 5 km) implemented by Khartoum Higher Council for Environment to be as model and can be replicated and marketed by the council to other partners.

24. The activities are based on adopting the appropriate approach in the northern boundary of the Great Green Wall in Sudan. This northern boundary is characterized by vulnerability to climate change, low climate resilience, and high poverty. The proposed intervention will contribute to carbon sequestration and increased resilience of the beneficiary communities to climatic variability. The AF will tackle environmental degradation, while enhancing management of natural resource-based livelihoods in the targeted communities and surrounding areas that would be supported by policy framework at national and state levels.

Project Development Objective

25. The PDO and Global Environment Objective is “to increase adoption of sustainable land and water management practices in targeted landscapes”.

Project Components

26. The project will have three components: (1) Institutional and policy framework; (2) Community based sustainable management of rangelands, forests and biodiversity; and (3) Project management.

Component 1: Institutional and policy framework

27. This component finances technical assistance, workshops, goods, services and operational costs to build or strengthen national, state and local level capacities to strengthen policy and regulatory frameworks, remove critical knowledge barriers, and develop an enabling environment for the on-the-ground activities. The project design hinges on improving the vertical and lateral coordination from the federal to the local community levels and between the various government, non-government and community players. The project design will also address the sustainability concerns providing tailored solutions. Component 1 supports:
28. Institutional capacity building: The project supports key institutions involved in NRM by strengthening their capacity to formulate, implement and monitor programs and projects in this area. The capacity development program is flexible and modular. Institutional, technical, and administrative training needs are determined through consultative mechanisms at all levels. The project provides institutional support to MANR, Forest National Corporation (FNC), Range and Pasture Administration: (i) develop effective interagency collaboration mechanisms at the central and state level; (ii) assist communities in preparing and implementing investments under integrated land management plans; and (iii) manage, monitor, and maintain infrastructures by Village Development Committees (VDC).
29. Information and knowledge management: The project has drawn the MANR and FNC much closer together at the central and state levels. Lessons of implementation are to be disseminated through regular events (in country) and through South-South knowledge exchanges in the Horn of Africa Region; knowledge exchange happens through IGAD Drought Resilience Initiative regional platform. The project supports the Pressure State, Impact Response analysis of land and biodiversity degradation, including assessment of land management practices.

30. A communication plan will be developed and implemented to disseminate information on project results and lessons learned to key stakeholders. SSNRMP receives support from the Building Resilience through Innovation, Communication, and Knowledge Services (BRICKS) Project (P130888) in strategic communication and contribute to knowledge exchange initiatives benefiting project implementation, within the TerrAfrica platform and other exchange initiatives.
31. Malaria. Although there are global models of climate change which predict changes in malaria incidence spatially and temporally in Sudan, there are no studies based on available local data. Therefore, an AF activity will include a call for proposals to national universities to underwrite locally-relevant studies. The call will focus on identifying and explaining current and future changes in conditions for malaria incidence, how irrigation and water harvesting facilities can be protected from becoming larvae breeding grounds for mosquitos, and other relevant topics in the malaria – climate change – water management nexus as well as gender impacts of malaria. The project will facilitate the discussion of their findings with governmental agencies, international organizations and recognized experts in order to identify actionable recommendations. A synopsis of these studies, to include potential policy response measures and practical steps to address climate-induced diseases through sustainable NRM, will be disseminated. The AF Results Framework includes a dedicated indicator to reflect on the progress of this activity.

Component 2: Community based sustainable management of rangelands, forests and biodiversity

32. This component works on incorporating innovative technologies in community-based sustainable NRM from the menu of interventions that would match socio-economic and physical conditions of specific localities. Subcomponents include: (i) addressing climate change impacts on water resources and agriculture by promoting innovative climate-smart NRM technologies; and (ii) alleviating negative impacts of environmental degradation and climate change on human health.
33. Rangeland management: Given the importance of livestock in Sudan and its impact on land degradation, sustainable rangeland management activities related to husbandry and livestock are crucial. Activities include establishment of shelter belts for sand dune fixation, demarcation of animal migration routes and grazing land rotations, establishment of nurseries for rangeland rehabilitation, clearing and opening of fire lines to protect rangelands. Community level project activities may include rehabilitation and cultivation in open spaces and seeding rangelands to improve range condition with fodder grasses.
34. Integrated land management plans: The project will support the preparation of NRM plans for the gazetted Om Seraig reserve in the Butana area in the Central Gadarif locality of Gadarif State, Sharg Elneel locality (Sayal Elfaki Saad Area); a forest Reserve and shelterbelt in Khartoum.
35. Protection and use of water resources. SSNRMP designed a collaborative management system between communities and the water authorities, where communities manage the operation of the water structure and the State Water Corporation provides technical back-stopping. The project design will take into account concerns for integrated water resources management. Community level project activities may include rehabilitation of existing hafirs and water sources, using other water harvesting techniques to utilize the water from wadis and khors

- (seasonal streams). Even though the rainwater harvesting structures hold a small amount of water, due diligence will be applied to make sure rainwater would not be blocked from flowing down stream. Groundwater recharge capacity will be assessed before operations are put in place.
36. Forest ecosystem rehabilitation and restoration: In Khartoum State, the project will gazette and rehabilitate 3,750 ha of the Sharg Elneel Forest Reserve & Khartoum shelterbelt, while in Gadarif State, 12,000 ha of the gazetted Om Seraig reserve in the Butana area will be rehabilitated. Proposed sites can support many of the original small mammals, birds, reptiles, and diverse flora species of the Sahel biome. The project is expected to indirectly benefit biodiversity conservation through the gazetting of forest reserves, restoration of native vegetation by reforestation, enrichment planting, natural regeneration and effective implementation of management plans.
 37. Strengthening resilience of communities through establishing multiple water harvesting structures, including with the application of GHG technologies (solar panels), strengthening the asset base of rural farmers including natural and financial capital, increasing the diversity of smallholder farming systems through the promotion of mixed cropping-livestock systems and diversification of crops; enhancing household food security and wellbeing through the introduction and improvement of home gardens; promoting equity and inclusion of vulnerable and marginal groups especially women; enhancing local institutions through support to VDCs; diversifying access to alternative sources of energy, and improving the availability of/and smallholder access to climate information. Phase 3 will explore the demand for biogas technologies, which convert biological waste into energy. In addition to having a clean renewable energy provide gas for household needs, many families make extensive use of the fertilizer by-product that biogas digesters provide.
 38. Engaging the private sector. Since the beginning of SSNRMP, the project has linked public agencies, private sector and financial institutions through workshops, conferences and training to exchange perspectives and understand the role of private and public actors in community resilience activities. Component 1's focus on regulatory frameworks and policies has facilitated market entry of climate resilience technologies. Some of these include: (i) solar panels to replace diesel pumps for remote village communities; (ii) gas cylinders to replace firewood for village cooking; (iii) non-forest product marketing to reduce transactional costs to market; and (iv) a piloting of biogas technology in SSNRMP3. The introduction of environmentally sound technologies is encouraging communities to establish further micro-finance capacities and the local private sector to further invest in commercializing these same technologies.
 39. Development of locality extension approaches based on incentive structures established for supporting and promoting SLWM. Capacity of new extension agents will be built through training in (i) appropriate SLWM technologies and current extension approaches and (ii) in best technologies for root and tuber crops. Existing training materials have been revised to incorporate lessons learnt during previous project support. An incentive system for extension staff based on performance assessment has been developed and implemented, to promote excellence of extension support. Study tours to countries with relevant SLWM experiences and local study tours to best SLWM practice sites will continue to be supported. The key elements of the extension approach are: (a) establishment of demonstration plots for select SLWM

technologies in target communities, and (b) supporting formation of farmer groups or individuals interested in applying similar technologies.

40. This component also finances technical assistance, training, investments, goods, works, services and operational costs related to the promotion of wider adoption of community-based SLWM practices in forests and rangelands in the targeted communities. Local communities will acquire the capacity to effectively participate in selection of rangeland activities, negotiation of access to grazing grounds, setting the guidelines for formation of local organization and associations (cooperatives) around specific NRM livelihood initiatives.

Component 3: Project management

41. Project Management includes support for day-to-day project management including, procurement, financial management, environmental and social safeguards, annual work plans and organization of supervision missions.
42. Monitoring and Evaluation will provide support for operating a Monitoring and Evaluation (M&E) system that will track the project results, including those registered in the GEF tracking tools for Biodiversity, Land Degradation and Sustainable Forest Management. The M&E system will work in coordination with the Sahel and West Africa Program so that key indicators can be aggregated from the country level to the regional Sahel level. To achieve this, the project will receive complementary support from the BRICKS project for regional portfolio monitoring that will reinforce benchmarking and improved investment design and execution.

Anticipated subproject types

43. Sub-project types that could be financed by the SSNRMP are shown in Table 1 below.

Table 1: Types of Sub-projects that could be financed by the SSNRMP

SLWM Practices		
Land/water management approaches	Land/water management technologies	
Land use regimes	Agronomic and vegetative measures	Structural measures
<ul style="list-style-type: none"> • Watershed plans • Community land use plans • Grazing agreements, closures, etc. • Biodiversity corridors • PA management • Conservation zones • Other 	<ul style="list-style-type: none"> • Inter-cropping • Agro-forestry in crop or grazing systems • afforestation and reforestation • Mulching and crop residue • Crop rotation • Fallowing • Low till • Composting/green manure • Integrated pest management • Vegetative strip cover • Contour planting • re-vegetation of rangelands • Integrated crop-livestock systems • Woodlots • Alternatives to wood fuel • Sand dune stabilization • Other 	<ul style="list-style-type: none"> • Terraces and other physical measures (e.g. soil bunds, stone bunds, bench terraces, etc.) • Flood control and drainage measures (e.g. rock catchments' water harvesting, cut-off drains, vegetative waterways, stone-paved waterways, flood water diversion, etc.) • Water harvesting, runoff management, and small-scale irrigation (shallow wells / boreholes, micro ponds, underground cisterns, percolation pits, ponds, spring development, roof water harvesting, river bed dams, stream diversion weir, farm dam, tie ridges, inter-row water harvesting, half-moon structures, etc.) • Gully control measures (e.g. stone check dams, brushwood check dams, gully cut/reshaping and filling, gully revegetation, etc.) • Other

Key Achievements

44. Under Component 1, the expected outcome is to improve the national institutional capacity and policy framework to include NRM in local development planning. It comprises three sub-components: Institutional capacity building, support to policy framework, and information and knowledge management. The project has conducted five key studies: (1) capacity building and training needs assessment; (2) support to policy framework; (3) gaps assessment and development of communication strategy and work plan; (4) integrated land management plans; and (5) Mesquite control management action plan. The water sector policies framework should receive more attention as it is core for any environmental activities in drought-prone areas. Achievements to date, however, including: (i) M&E training delivered in Khartoum and White Nile State for participating communities; (ii) Workshops for project staff conducted on: (a) Remote Sensing and Geographical Information System (GIS) applied on M&E, (b) Carbon

sequestration, (c) Documentation and dissemination of best practices, (d) GEF M&E tool, and (e) Report writing; and (iii) Ten project staff and seventeen stakeholders attended a Remote Sensing and GIS workshop.

45. For component 2: Community-based sustainable management of rangelands, forests, and biodiversity: the project has met and exceeded its 2016 afforestation target of 3750 ha carrying out enrichment planting of an additional 1890 ha through seed broadcasting of indigenous tree species - *Acacia seyal*, *Acacia tortilis* and *Acacia melifera*. Four hundred and twenty hectares of rangeland has also been established. The project supported establishment of locally owned tree nurseries. The project has successfully demarcated and enclosed four 4.2 ha rangelands (3 in Gezira and 1 in White Nile states) designed to boost grass seed production for rangeland rehabilitation. The project has established one central station and four mobile forest and wildlife range camps out of a target of 8 such camps. The central camp has been equipped with basic communication devices to facilitate coordinated patrol and is powered by solar panels to ensure a 24-hour low cost and sustainable power supply for the communication equipment. The project has recruited one Community Mobiliser/Facilitator for each SPIU who are helping to create awareness about the project goals and objectives, potential benefits for communities, ensuring that subprojects are screened for their environmental and social impacts and guide beneficiaries in prioritizing their livelihoods activities in line with project goals. In general, the project met its main core indicator, in which women representing 29% out of 35% of beneficiaries planned during the project lifetime.

Rationale for AF

46. The additional financing of US\$5.9 million will support scaling up of original project activities and restructuring to accommodate innovative technology transfer and climate change adaptation activities in support of combating land degradation through an integrated natural resources management approach. The AF will build upon the SSNRMP institutional structures that have been put in place, utilizing economies of scale and creating efficiencies in a low-capacity environment. Although the original PDO will be retained, intermediate indicators will be updated to reflect changes in components and activities.
47. Through this project, Sudan would fast-track the implementation of its first Nationally Determined Contribution under the Paris Agreement by pursuing Land Degradation Neutrality through integrated natural resources management that generates and fosters adaptive approaches to climate change, climate mitigation, sustainable land management and biodiversity benefits. In response to climate predictions which show that “humid agro-climate zones will shift southwards rendering areas of the North increasingly unsuitable for agriculture²” with grave implications for food security and the livelihoods of farming communities and pastoralists, the project will contribute to addressing root causes of land degradation and vulnerability and implement cross-cutting solutions for adaptation, mitigation, land degradation and sustainable development.

² <https://www.wri.org/our-work/project/world-resources-report/climate-change-adaptation-and-decision-making-sudan>

48. The proposed additional grant activities are consistent with the Vulnerability and Resilience pillar of the World Bank Africa strategy: Africa's Future and the World Bank's Support to it, and the Africa's Climate Business Plan (Accelerating Climate Resilient and Low Carbon Development, 2015). It is also aligned with efforts on Enhancing Resilience of Dryland Areas and the Bank's conflict and fragility agenda which emphasize action on internal and external stresses that burden countries with low response capability.
49. Project objectives are consistent with two objectives of the GEF programming strategy for 2018-2022, namely Objective 1: Reduce Vulnerability and Increase Resilience through Innovation and Technology Transfer for Climate Change Adaptation and Objective 2: Mainstream Climate Change Adaptation and Resilience for Systemic Impact.
50. The AF grant will help capture the efficiencies and economies of scale by expanding sustainable management of land and water resources in the Northern Savannah Zone of Sudan under a SLWM approach and enrich the original menu of SLWM interventions within the agricultural, natural resources and biodiversity areas. It will support the implementation of biodiversity-friendly activities in the community based natural resources management areas within the northern drought-prone areas of the country. This expansion through integrating the various land and water-uses would improve contiguity of communities along the target sub-landscape resources in those targeted areas. It will amplify benefits from rangeland management and optimize project impacts and benefits to communities within the targeted states. The AF grant will enhance resilient agricultural and livelihood systems through introduction of an integrated ecosystem and agroforestry activities.
51. Strategic Context. Both the original and proposed additional grant activities are consistent with the Vulnerability and Resilience pillar of the World Bank Africa strategy: Africa's Future and the World Bank's Support to it, and the focus on Enhancing Resilience of Dryland Areas; and with the Bank's conflict and fragility agenda as captured in the 2011 World Development Report on Conflict, Security and Development, which emphasizes action on internal and external stresses that burden countries with low response capability. They also contribute to the World Bank Africa Climate Change Plan including its pillar on resilient landscape, the World Bank FY14-15 Interim Strategy Note (ISN, September 2013, Report No. 80051-SD) for Sudan and specifically respond to the priorities under Pillar 2 on addressing the socioeconomic roots of conflict, which includes sustainable natural resource management, using community-driven development.
52. The new project areas were selected based on their relevance to the GGWI³ belt in Sudan and as they possess the potential for sustainable land and water management challenges, within the National Adaptation Plan recommended measures for those areas/regions.
53. Khartoum and Gadarif states are in semi-arid Butana area, Khartoum lie in the central part while Gadarif state lie in the south part of GGWI. The country's GGWI strategy is to cover all

³ This belt passes through 11 States of the Sudan Federal system.

the states that are affected by the encroachment of desertification. All the communities that live in the GGWI belt are amongst the most vulnerable to climatic shocks. Furthermore, these areas are now seriously affected by deforestation and land degradation due to people movement, migration and displacement attributed to climate change and man-made stresses.

54. The selection criteria applied in the two states are areas where there are reserved forests together with potentials for integration with rangeland management beside the annual rainfall below or near 450mm coupled with the communities' interests and willingness to participate in SSNRMP subprojects. The selection was generated from the stakeholders consultation process carried out by SSNRMP team.
55. The project will also contribute to the GGWI cross-cutting theme of Governance and Gender that aims to mainstream women's access to public resources and opportunities. Built on TerrAfrica experience in multi-sector, multi-partner approaches to define sustainable land management investment priorities, the GGWI provides a flexible framework for 12 countries, including Sudan, to implement national priorities to tackle land degradation, to conserve biodiversity, and to adapt to and mitigate climate change. Sustainable management of natural resources has economic importance especially for the poor, thus contributing to achieving the corporate goals of poverty reduction and shared prosperity.
56. The project complements planned and ongoing poverty reduction efforts in the drought stricken less resilient areas of the country. The proposed activities to be supported with the LDCF funds correspond to the priority sectoral and geographical areas in the Sudan National Adaptation Program of Action (NAPA). In Sudan, the NAPA report (2007) showed that the groups that are the most vulnerable to climate risks are the traditional rain-fed farmers and pastoralists. Rain-fed farmers and pastoralists are typically the least able to cope with climate-related shocks in Sudan. There is ample evidence of past climatic shocks generating a chain of events that led to the disintegration of community and the discontinuity of human habitation. The NAPA consultation process confirmed that there is widespread interest in the introduction of certain types of measures to preserve agricultural production capability, conserve water resources, and inhibit the spread of disease.
57. The AF will furnish investments and capacity development in two most vulnerable sectors as identified in the NAPA – forest (agriculture), water and health - with inherent health benefits through increased agricultural productivity and access to water. Specifically, the project will support bottom-up land use approaches for the project beneficiaries to enhance their climate resilient/adaptive livelihoods options.
58. ***Building on Successful Implementation.*** The proposed AF will build upon the enabling existing systems, structures and capacity developed under the SSNRMP to improve the food security using the integrated landscape/ecosystems approach. The proposed AF aims to expand SSNRMP practices for enhanced environmental benefits and improved food security and up-scale the target area coverage that will provide adequate scale to demonstrate transformative impacts at the landscape level.

59. **Mainstreamed Implementation.** The project's implementation is fully mainstreamed into Government system, with the Project managed and implemented by the existing Government structures coordinated by MANR. The mainstreamed arrangements are favourable in cost-effectiveness and sustainability compared to the temporary project implementation units. Under the AF, further devolution of implementation responsibilities to the lower level, i.e. state and locality levels, will be capacitated and supported, since Project implementation modalities have now been well established and would be strengthened to ensure management of implementation of different project inputs and activities.
60. **High Demand and Absorptive Capacity.** Notably, there is high demand for project support to SLWM and community based natural resources management activities among project benefiting communities. Demand exceeds currently available funding by about two-fold, demonstrating both the ownership and high absorptive capacity at the targeted areas. The AF will help address these issues by funding scaling-up activities in the beneficiary communities.
61. **Key AF Outcomes.** Key outcomes for the proposed AF include expanded adoption of integrated sustainable land and water management practices by target communities, improved sustained flow of environmental services in agro-ecosystems, improved management of existing protected areas and of outside protected areas. The AF activities are mostly expanding the scale of the ongoing activities with an increased focus on water management issues. These will help reverse land degradation, enhance maintenance of biodiversity, and increase resilience and food security of rural livelihoods in target areas and to achieve the land degradation neutrality targets (as stated in the Sustainable Development Goal 15.3) in the intervention areas. In addition, the environmental services provided by the project communities through SLWM, soil and water conservation, good farming practices and biodiversity conservation could be converted into commodities that contribute to environmental sustainability and improve natural capital assets at the local level.
62. **Consistency with Government Priorities.** The project's priorities are aligned with Sudan's vision of modernizing its agricultural sector to improve food security in an environmentally sustainable manner with a focus on smallholder farmers, particularly in the most fragile ecosystems. The Project activities are fully consistent with the Country determined adaptation and mitigation actions included in the Sudan's Initial National Communication to the United National Framework Convention on Climate Change (UNFCCC, dated September 2011), Second National Communication to UNFCCC (July 2015), Sudan National Action Plan (dated February 2013), and Sudan's commitments under its Disaster Risk Management Strategy (DRM). The project support will also contribute to Sudan's progress on 2020 Aichi Biodiversity⁴ under Strategic Goal A (Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society); Strategic Goal B (Reduce the direct pressures on biodiversity and promote sustainable use); and Strategic Goal D (Enhance the benefits to all from biodiversity and ecosystem services).

⁴ Under the Convention of Biological Diversity

63. **Safeguards Implementation Experiences in Phase 1:** The project will use its previous implementation practices to develop its environmental and social safeguards application in Phase 2 and 3 and to share the best practices with assigned specialists (community mobilizer) at SPIU level under the oversight by the PCU Safeguards Specialist with assistance from the M&E and SPIU coordinators. Decentralization of the safeguards to the field level will make it practical and easy to adopt and will bring this in line with development approaches used by SSNRMP. Technical support in terms of frequent field visits to facilitate and speed up corrective measures application during the subprojects' implementation coupled with different training and workshops to the stakeholders across all levels is crucial in making the safeguards a common practice.
64. Using simplified formats will facilitate the role of the community mobilizers in dealing with the safeguard issues at the field level. It is recommended to apply the safeguards measures from the beginning of the subproject implementation to focus on mitigation and preventative measures rather corrective measures. Mainstreaming safeguards within SSNRMP financial and procurement transactions at national and state level is useful for early mitigation measures to ensure project's commitments to the environmental and social issues in terms of procuring civil works, goods and services with special consideration for effectiveness and efficiency to avoid any delay which can arise in financial and procurement transactions.

Promotion of innovative Climate- Smart Technologies:

65. Promote innovative climate-smart natural resources management technologies, such as high-efficiency hydro-pumps and solar PV, as well as alleviate negative impacts of environmental degradation and climate change on vulnerable communities in these two States. This is highly innovative in the context of Sudan as it seeks to both engage the private sector for sustainable natural resources management to strengthen resilience, including in water and agriculture sectors, and also implement Paris Agreement priorities as they relate to the health sector, a completely underserved area where climate impacts need to be addressed in order for Sudan to create an environment in which achieving the Sustainable Development Goals and maximizing finance for development will be possible.
66. The AF will also promote innovative climate-smart technologies to systematically leverage Sudan's environment and natural resources to maximize finance for development, including testing and demonstrating climate-smart agriculture and water technologies that enhance livelihoods and reduce environmental degradation in unison.

Malaria Control:

67. The geographic distribution of malaria depends on climate. Regions where the climate is ideal for the Anopheles mosquitoes that transmit malaria parasites, are more prone to the disease. Anopheles mosquitoes thrive in regions with warm temperatures, humid conditions, and high rainfall. Thus, tropical and subtropical areas are ideal. Warm temperatures are also required for malaria parasites to complete their growth cycle within the mosquitoes. At temperatures below 20°C (68°F) the parasite Plasmodium falciparum cannot complete its growth cycle in

the mosquitoes so it cannot be transmitted. However, there is another strain of malaria parasite called Plasmodium vivax which can complete its life cycle in lower temperatures.

68. SSNRMP will finance research-based scholarships focusing on the relationships between the climate change and malaria where the findings of the study will be road map for the future malaria interventions. This was highly recommended by the Ministry of Health during the consultation which will fill the gaps in information regarding the linkages between climate change and malaria within Sudan ecological context. The study findings will be disseminated through communication methods to different stakeholders. This study will be bench mark for future studies in relation of climate change and health in general.

69. **Consistency with NAPA Principles.** The proposed AF is fully consistent with the NAPA design regarding its focus on building resilience, knowledge and gender. The proposed new areas/regions for the SSNRMP are consistent with the NAPA highest priority options, namely:

- Enhancing resilience to increasing rainfall variability through rangeland rehabilitation and water harvesting in the Butana area of Gadarif & Khartoum States;
- Improving sustainable agricultural practices under increasing heat stress in the Gadarif State; and,
- Key Adaptation Activities in Public Health (Sudan Adaptation Programme of Action) Previous studies in Sudan have confirmed the correlation between temperature and precipitation patterns and malaria, meningitis, and leishmaniasis, diseases that afflict millions throughout the country. While the NAPA consultation process confirmed that malaria is a major concern, the other diseases were also prioritized for adaptive measures. Adaptation activities will need to take into account the diversity of factors that influence the capacity to cope with health outbreaks. Specifically, major adaptation activities and needs that have been identified across the five ecological zones are as follows:
 - Improve community sanitation and medical services, including capacities for diagnosis and treatment;
 - Building of community awareness regarding preventative measures for malaria, meningitis, and leishmaniasis;
 - Introduction of preventive measures to restrict malaria transmission such as mosquito nets, treatment/drying up of breeding sites;
 - Introduction of early disease diagnosis and treatment programmes for malaria, meningitis, and leishmaniasis;
 - Improvement of irrigation system management so as to reduce breeding sites; and
 - Provision of alternative water supply systems for domestic use that do not involve open standing water areas.

70. **Resilience:** the Project will continue to support strengthening resilience of participating households - this will be achieved, among others, through: strengthening the asset base of rural farmers (including natural capital through improved soil fertility and financial capital through increased gains as a result of enhanced yields and value addition); increasing the diversity of smallholder farming systems (through the promotion of mixed cropping-livestock systems and diversification of crops); promoting equity and inclusion of vulnerable and marginal groups

(especially women); enhancing local institutions (through support to VDCs); and improving the availability of/and smallholder access to climate information (through awareness and training / demonstration activities and through knowledge exchanges);

71. **Knowledge Management:** effective knowledge management is a lynchpin of the project to achieving sustainable scale-up of integrated natural resources management approaches at community level. Lessons and experiences of implementation are being and will continue to be disseminated and shared through regular events (in country) and through south-south knowledge exchanges in the Horn of Africa Region; knowledge exchange will also happen through a feedback loop to the regional platform for the IGAD Drought Resilience Initiative (IDDRSI);
72. **Gender:** Project's approach to mainstreaming gender consideration is fully consistent with the GEF Policy on Gender Mainstreaming and the World Bank Group's renewed Gender strategy. The project puts particular emphasis on greater involvement of women in participation in the planning and decision-making structures (community watershed management teams) and implementation of sub-projects. The PDO indicator on direct project beneficiaries is disaggregated to indicate percentage of women out of all direct project beneficiaries; the same applies to two Intermediate Results indicators in the Project's Results Framework.
73. **GBV risk and labor influx:** Subprojects will be identified and largely implemented by the community members. At the project level, there will be a GBV assessment and action plan will be developed to address the concerns, if any. Regarding labor influx, the labor for the implementation of the subprojects will come largely from within the community and it will not be a concern. Not a concern in a sense that, there is no influx of external labor to undertake the implementation of the sub project activities. Whereas, the structural gender norms, values and potential issues will be explored as part of the screening of the sub project activities, mainly by the community mobilizer in collaboration with the project environment and social specialist.
74. **Strong Multi-Stakeholder Platforms.** Establishment of robust multi-stakeholder platforms at the national, state and community level is a key to Project's sustainability. This approach helps engage all stakeholders through strengthening of institutional frameworks for sustainability and resilience. At the national level, the project will continue to work with the Project Steering Committee (PSC), which is responsible for providing the overall guidance to implementation of the SSNRMP. At the locality level, the project support will help establish Locality SLWM Committees in the two new target states, in addition to providing further support and capacity to the old piloted localities. At the community level, Community based NRM Teams (CNRMT) will be established and strengthened, to empower communities make informed choices on sustainable land and natural resources. In the CNRM communities, similar structures will be supported for community-level decision making on common resource pools (Community Natural Resource Management Committees (CNRMC). Establishment of community-level governance structures will be tracked through a new indicator under the Project Results Framework.

Project Target Areas

75. The first two phases of the SSNRMP has been implemented in six states, namely, Kassala, Gezira and White Nile, and the second phase covered River Nile, North Kordofan and Northern States, the third phase will cover the new states supported by the additional finance are Khartoum and Gadarif. All targeted states share common ecological and socio-economic conditions (Figure 1). Fluctuation in rainfalls, land degradation, decline in productivity, and reduction in biodiversity, accompanied by socioeconomic problems in addition to climate change are challenges that all the eight States share. The project will support a variety of sustainable land and water management practices such as soil conservation techniques, crop management, agro-forestry practices, water harvesting, malaria control interventions, climate smart technologies and improved livestock management activities.

78. A Technical Committee representing all relevant stakeholders and chaired by the undersecretary of MANR will provide technical advice and meets quarterly to discuss work plans and implementation progress.
79. A Project Coordination Unit (PCU), based in the MANR, will be responsible for carrying out the day-to-day management, overall supervision and coordination of the project implementation at all levels and ensure ESMF and GRM processes are followed, monitored and reported. It will report to the PNSC and will be supported by required staff from the existing government officials, hired consultants and others. During Phase I&II of the project, the safeguard monitoring duties was carried out by the M&E Specialist in the first year, while in the second year the project recruited a consultant to provide inputs when needed throughout the year. For the AF the project already recruited safeguards specialist for the whole period of the project reflected in the budget, and some additional tasks will be added such as community development and mobilization beside the safeguard.
80. State Project Steering Committee (SPSC), headed by the State minister for Production & Economic Resources (Kassala, White Nile, Gezira, North Kordofan, River Nile, Northern, Khartoum and Gadarif), with membership of State Directors of state Ministry of Production and Economic Resources, Wildlife Conservation General Administration, Forestry National Corporation, and Range and Pasture Administration will provide guidance at state level. On call for Technology Transfer & Extension beside Malaria Control Department at each state.
81. The SPIUs will be responsible for carrying out the day-to-day management, overall supervision and coordination of the project implementation in each locality targeted in the state, and ensure ESMF and GRM processes are followed, monitored and reported. The SPIU will report to the PCU and SPSC and will be supported by key staff from the existing state government officials, hired consultants and others. The Coordinator of the SPIU will work closely with all the stakeholders at the State, locality and community levels to facilitate project implementation, and will serve as secretary to the SPSC.
82. At village level, VDCs will be used to liaison the project with the community and facilitate project implementation.
83. At the SPIUs and local level, Community facilitators trained on the ESMF/PF will be responsible for the implementation of safeguards instruments. Since Community facilitators came on board in the last year of the parent project implementation in Phase 1, there was an improvement in the screening of sub-project for their E&S impacts. This arrangement has worked, and it will continue with additional capacity building to the Community facilitators. This step will commence from the beginning in Phases 2 and 3 as the community mobilizer is one of the SPIU team assigned to shoulder these tasks with help from SPIU coordinator and M&E and their TORs were streamlined towards safeguards responsibility. Technical support from PCU safeguards specialist will be in place to SPIU teams. An early technical support for safeguards will mitigate any potential negative impacts will arise at early stages of the subprojects implementation and make all SSNRMP team at the same level of safeguards related knowledge.

3. ENVIRONMENTAL AND SOCIAL MANAGEMENT REQUIREMENTS

Regulatory Framework for Environmental and Social Impact Assessment (ESIA)

84. Sudan is a Federal country divided into 18 States. There are three levels of governance/authority; National level, State level and Locality level. The powers are divided among the various levels as follows:

- At the National level, the federal organs exercise powers of planning, legislation and execution on Federal lands, natural resources, mineral and subterranean wealth, inter – State waters, national electricity projects, epidemics and natural disasters.
- The state organs within the boundaries of the State exercise power on: lands, natural resources, animal wealth, wildlife, non-Nilotic waters and electric power. There are concurrent powers where both Federal (National) and State organs exercise on education, health, environment, tourism, industry and meteorology.
- The localities exercise powers within the locality boundaries through local orders to be approved by the locality legislative organ.

Social dimensions

85. The local traditional and ethnic institutions that play important roles in livelihood and social dimension issues at local level, is the inherited tribal structure, named as native administration, (Nazir, Omda, Sheikh) but re-structured in recent years, as popular committee to include elites and political parties. It starts from the village level, village cluster and urban dwellers' level. Nearly all villages have elected popular committees to administer the village affairs in coordination and collaboration with the Sheikh. Any development activity at the village level starts with permits or requests issued by the Village Popular Committee to be raised to the Locality for approval.

86. The Community Committee supervise the implementation of both Traditional Customary Regulations as well as delegated by the authority to implement Forest and Range and Pasture Regulations in the past and now new community committees are under processing to shoulder the same tasks. In this respect, they organize village land for agriculture and areas to be left for grazing. They also should organize nomadic corridors as livestock routes, specify their grazing areas and mobilize local communities to: open fire lines to protect rangelands from bush fires; to fight locust attack; prohibit illegal tree felling; and, organize use of water resources. However, the old native structure still plays very important roles in natural resource management and in mobilization of local communities. At the village level, there are a number of institutions with inputs in environmental management, the most important of which is the village Sheikh who controls land allotment and takes part in specifying grazing areas.

87. In the environmental field, such committees play important roles in sanitation and garbage collection beside taking part in mobilization of local communities and providing direct links to the locality for any issues related to village affairs.
88. Sudan is one of the first African countries that passed sectoral laws for the protection of the environment. These laws are further supported by an umbrella law enacted in 2001 "Environmental Conservation Act 2001". This Act provides general principles and guidelines to be considered in implementing any development project. The Law (Act) makes it the responsibility of the project proponents, before embarking on any development activity, to carry out an EIA to identify the positive and negative impacts of the project, together with recommendations to mitigate negative impacts. The Act provides definitions and clarifications regarding natural resources management, pollutants and sources of pollution, endorses the Polluter Pays Principle and specifies issues to be considered in EIAs (Article 18):
- Description of the existing environment before the project;
 - Description of the project activities;
 - Assessment of potential environmental and social impacts, both positive and negative;
 - Provision of recommendations to mitigate the negative environmental and social effects.
89. To implement the Environmental Guidelines and the provisions of the Act, a Higher Council for Environment and Natural Resources (HCENR) was established in 1991.
90. The Transitional National Constitution of the Republic of Sudan (2005), amended in 2016, further supports environmental protection. This Constitution is based on the provisions and articles of the Comprehensive Peace Agreement 2005, and relevant articles of the 1998 Constitution of the Sudan. The Transitional Constitution endorses the rights of citizens to live in clean environment (Article 11) and directs attention to the protection and conservation of natural resources. Article 43 (2) of the Transitional Constitution gives the National Government the right to expropriate land for development purposes and compensate the owners. There are a number of articles related to natural resource management, pollution control, and protection of cultural heritage sites and respect of traditional and customary regulations related to land ownership. The Transitional Constitution also specifies lands that are under National powers (Federal level) and those under the control of states as well as joint powers (concurrent powers) shared by the Federal and States institutions.
91. The temporary Constitution of Sudan is the Draft Constitutional Declaration, which was signed by representatives of the Transitional Military Council and the Forces of Freedom and Change alliance on 4 August 2019. This replaced the Interim National Constitution of the Republic of Sudan, 2005 (INC) adopted on 6 July 2005, which had been suspended on 11 April 2019 after success of December Revolution in the country. This declaration stated that all laws remain as it is unless it canceled or changed by the National Transitional Legislative Council.
92. The states manage issues related to State lands that are not under the National control. These include; management, lease and utilization of lands belonging to States, town and rural planning and agricultural lands within the state boundaries. The concurrent powers include

matters related to urban development, planning and housing, electricity generation, waste management, consumer safety and protection, water resources other than inter – state waters and regulation of land tenure and the rights on land.

Land Regulations

93. These regulations are specified in the Transitional Constitution Part Thirteen under Chapter II – Land Resources, in Article 186. It is stated that:

- The regulation of land tenure, usage and exercise of rights thereon shall be a concurrent competence, exercised at the appropriate level of government.
- Rights in land owned by the government of the Sudan shall be exercised through the appropriate or designated level of government.
- All levels of government shall institute a process to progressively develop and amend the relevant laws to incorporate customary laws, practices, local heritage and international trends and practices.

94. Specific details and procedure on land are found in sectoral laws such as:

- **Land Registration and Settlement Act 1925:** this Act provides rules to determine rights on land and other rights attached to it and ensure land registration;
- **Land Acquisition Act 1930:** This Act gives the government the power to appropriate lands for development purposes in accordance with the provision of the Constitution and Civil Transaction Act 1984; Government lands cannot be sold or bought and no claims of ownership are accepted for them;
- **The Civil Transactions Act 1984:** this Act regulates the different issues related to civil transactions with respect to titles on land, means of land acquisition, easement rights and conditions to be observed by land users and gives guidelines and details for practical implementation of issues related to land acquisition;
- **Disposition of Lands and Physical Planning Act 1994:** this Act regulated designation of lands for different purposes and urban planning.

95. According to the Transitional Constitution of 2005, adjusted 2016, the compensation is as follows:

“Equitable compensation for those who enjoy property rights in lands that are seized or exploited for the extraction of natural resources in the subsoil from the area in which they have rights”.

Customary Land Tenure

96. The above are formal legislations passed by the government to organize land tenure. However, most of Sudan’s lands are organized by Customary and Traditional Rules and Regulations. Private ownership is found only in areas along the Nile where land registration was carried according to Land Registration and Settlement Act of 1925. Most of the areas away from the

Nile are under Traditional Communal Tenure where rights over land, less than full ownership, are recognized. Hence, in these areas four forms of land tenure emerged. These are:

1. Government lands with community rights;
2. Government lands with no community rights (unoccupied lands, wetlands, water catchments, etc.);
3. Hawakir (land recognized as tribal homeland – Dar, or areas granted to individuals by previous Sultans);
4. Lease (licence): land granted by the government to investors for a limited number of years.

97. Within the customary land tenure, there is the tribal homeland (Dar) with demarcated boundaries recognized by neighbouring tribes and local authorities. The tribal land is organized and supervised by the “Nazir” (the chief or tribal leader). Within the tribal land, there is clan land organized by the “Omda”. Within the clan's land, there are a number of villages, each with its land allocation organized and controlled by the village “Sheikh”. Within the village land, each villager practices his private ownership respected and recognized by all. The unclaimed land is used as rangeland or allotted to migrants by the village “Sheikh” provided that they respect the traditional rule of surrendering 1/10 of the crop to the “Sheikh”. As a general rule, land allotted to any person cannot be withdrawn unless he/ she leaves the village. Under such circumstances, the land abandoned by any person reverts to the community to be re-allotted to someone else. In all cases, the owner of the land is free to hire part of his land or dispose of it in the way he likes. After death, his children or relatives inherit the land.

98. These customary rules are to be respected in any development activity. Land needed for public use and according to Civil Transactions Act 1984, the owner must be compensated in any form, whether land for land, a small fee or in many cases, the village community willingly donates land needed for public use.

99. It should be noted here that rangelands and water resources (pools) are communally owned and utilized. They are not appropriated by individuals and pasturelands are always defined as uncultivated lands. Nomads have definite corridors (Murhal, Masar) to avoid farms and allowed to utilize uncultivated areas. Tribal chiefs usually specify these routes and grazing areas for nomads.

100. Generally, these Acts provide procedures for land expropriation for development purposes and ways to specify rights in order to compensate the owner. The Urban Planning Act sets specific rules for the separation of industrial areas from the residential ones. In carrying out EIA, the legal requirements are not confined to the above-mentioned Acts. There are other important sectoral laws that must be considered and used as yardsticks to identify the negative environmental effects. The Environmental Health Act of 1975 and the Public Health Act 1975, provide regulations and restrictions for industries regarding water and air pollutions (standards). According to these Acts, protection obligations extend to cover animal and plant life. Specifically, the Acts cover issues related to collection, treatment and disposal of waste.

Also, they prohibit water pollution by addition of any solid or liquid wastes, chemicals, sewage and remains of animals on water resources such as rivers, hafirs, and wetlands.

101. On the other hand, the Electricity Act of 2001 controls the electricity market. It provides regulations regarding the protection of network and standards regarding environmental protection. Article 9 of the said Act requires that any developer (investor) must comply with existing laws regarding roads, water courses, communication network, environmental issues and archaeological sites. Article 13 explains the environmental standards that must be taken into consideration when establishing power plants. Article 17 requires compensation to any damage that the project may cause to life and property.
102. Other laws of relevance to this project include; the Investment Act of 1999 and different updates and amendments, requires an EIA study as a pre-condition for giving license to implement the project, the Industrial Safety Act 1976 whose objective is to protect the work environment and the safety of workers. The Location of Industries Act of 1977 prohibits the location of industries in residential areas.

International Agreements

103. Beside these National Laws, the Sudan signed and ratified a large number of Multilateral Environmental Agreements. International agreements of relevance to this project include:
- Biodiversity Convention.
 - Desertification Convention.
 - United Nations Framework on Climate Change.
 - Bamako Convention on Trans - boundary Movement of Hazardous Waste.
 - Vienna Convention (ozone layer depletion).
 - Montreal Protocol.
 - Ramsar (wetlands) Convention.
 - Kyoto Protocol.

Institutional Arrangements: National and Local Levels

104. The institutions at National Level responsible for the implementation and monitoring compliance to both national and international agreements include:

Summary of the safeguard implementation institutional arrangement

105. The technical institutions at the targeted localities in close coordination with the local communities and SPIU will identify the different priority intervention areas in the field of natural resources that contribute to the delivery of potential activities in support achieving the targeted results of sustainable land and water management interventions. The SPIU should conduct the environment assessment and social assessment with participation of local communities. The findings of the environmental and social assessments will be shared with

the locality legislative council and national development partners to select the potential ones that can contribute to the development of natural resources in the targeted areas.

The Higher Council for Environment and Natural Resources (HCENR)

106. The HCENR is concerned with policies, legislation and strategic planning in relation to environmental and natural resources conservation and management. It has adopted a range of policies for the protection of environment that include: encouragement, support and coordination of scientific research in all fields of the environment and natural resources development and conservation, review and approval of environmental & social impact assessment studies and setting of an environmental management plan, environment conservation in coordination with the appropriate authorities in the states and work towards securing governmental, popular and international funding for the environment and natural resources development and conservation.

107. The HCENR is the government coordinating body concerned with integration of environment in national development activities. HCENR is the focal point of all the Environmental Conventions which emerged from the UNCED Rio Summit, including the following projects: The Capacity 21 Project, Climate Change Enabling Project and the Biodiversity Project which are considered as institutional strengthening projects within the HCENR. The organization setup of the HCENR include coordination units for these projects and National Technical Committees representing all relevant sectors concerned with the implementations of the respective conventions.

108. ***The activities of the HCENR include:***

- Assessment of Biodiversity resources and the preparation of the National Biodiversity Strategy and Action Plan
- Assessment of the National Capacities related to Environmental Management and the Preparation of Environment Strategy and Action Plan
- Assessment of Environment & natural resources policies and legislation and the preparation of the Environmental Legislation
- Assessment of GHG sources and sinks, V&A and GHG mitigation options and the preparation of Sudan's National Communication.
- Capacity building, environmental awareness and sustainable human development.

109. The environmental and social acts and laws provide standards to be applied in assessing the probable environmental impacts of the project. It is important to note here that State organs and Local laws deal with issues at State or Local levels, while the Federal Acts are more concerned with general directives and set limits and standards to certain environmental concerns without going into details of problems of local nature. Although EIA is a requirement of the Sudan Environmental Conservation Act of 2001, EIAs were being undertaken before 2001 for most projects, especially those funded by international organizations and Agencies. In most cases, EIAs were conducted by prominent local and international consulting firms and submitted to the HCENR for approval. At the ministerial level, only the Ministry of Energy

and Mining has established an Environmental Unit and drafted its own guidelines and regulations for companies working in petroleum development.

110. Sudan's Environmental Conservation Act (2001), particularly the Articles related to EIA, still requires incorporation of by – laws and adopts more specifications on standards. In this connection, the work of Sudan Standards and Metrology Organization (SSMO) adds to the legal requirements for environmental protection. At the State Level, only few States have established State Environmental Councils and hence, the provisions of the Environmental Conservation Act (2001) are applied with modifications to suit local problems within the guidelines specified in the above Act.

Institutions at local level with environmental and social concerns

111. Beside the government institutions responsible for environmental management, there are also local traditional and ethnic institutions that play important roles in environmental management at local level. Native Administration (Nazir, Omda, Sheikh); the Native Administration implements both Traditional Customary Regulations as well as delegated by the authority to implement Forest and Range and Pasture Regulations. In this respect, they organize village land for agriculture and areas to be left for grazing. They also organize nomadic corridors, specify their grazing areas and mobilize local communities to: open fire lines to protect rangelands from bush fires; to fight locust attack; prohibit illegal tree felling; and, organize use of water resources. Despite changes introduced by the government in the structure of Native Administration, they still play very important roles in natural resource management and in mobilization of local communities. At the village level, there are a number of institutions with inputs in environmental management, the most important of which is the village Sheikh who controls land allotment and takes part in specifying grazing areas.
112. In the past years all villages have elected popular committees to administer the village affairs in coordination and collaboration with the Sheikh and it will be replaced by another one with the same TOR during the coming period. Any development activity at the village level starts with permits or requests issued by the Village Popular Committee to be raised to the Locality for approval. In the environmental field, such committees play important roles in sanitation and garbage collection beside taking part in mobilization of local communities and providing direct links to the locality for any issues related to village affairs.

World Bank Safeguard Requirements

113. The ESMF is required to comply not only with relevant national policy and legal frameworks but also with applicable environmental and social safeguard policies of the World Bank. The safeguard policies triggered by the SSNRMP (specifically by component 2) are described in Table (2) below.

Consultations and Public Disclosure

114. The World Bank procedures require that an ESMF (and PF) are prepared and publicly disclosed prior to project appraisal. This allows the public and other stakeholders to comment on the possible environmental and social impacts of the project, particularly measures and plans to prevent or mitigate any adverse environmental and social impacts.
115. Consultations were undertaken with communities, local government authorities and other stakeholders in the two new states, during January and February 2019. In Gadarif, the consultation (27-30 January 2019) included 53 officials of which 14 were females, while in Khartoum State the people participated in the consultation (7- 28 February 2019) were 44 officials and 3 are females. The consultation processes included orientation meetings with the senior officials from the state, locality, and State Ministry of Agriculture, Animal Resources, and Irrigation in Khartoum and State Ministry of Production & Economic Resources in Gadarif. In addition, another consultation was carried out with leaders from the targeted communities at the locality and prioritised administrative units. The discussion included feedback on the current development interventions, lessons learned from previous conflict or dispute resolution mechanisms, and recommendations for addressing grievance raised by the activities of the SSNRMP. A separate meeting was conducted with development actors (Donors Projects for instance IGAD – IFAD and INGOs) working in the area of natural resources to share the project objectives and exchange views on the lessons learned from their interventions in the NRM sector.
116. The ESMF and PF of the SSNRMP will be disclosed to project affected population and other stakeholders before project appraisal.

Table 2: World Bank Safeguard policies triggered by the project

Safeguard Policies Triggered	Yes	No	Why triggered?
Environmental Assessment OP/BP 4.01	X		The SSNRMP is a category B project. Rangeland and forest rehabilitation activities will have positive environmental and social impacts. However, this policy is triggered because the Project will finance establishment of nurseries, and small-scale irrigation, among others, that would have some adverse environmental and social impacts. This ESMF is prepared to ensure that negative impacts are avoided or reduced with appropriate mitigation measures. Further, the framework provides recommendations to ensure sustainability of rangeland and forest rehabilitation activities (Annex 3).
Natural Habitats OP/BP 4.04	X		The policy is triggered because sub-projects in SSNRMP may have minor adverse impacts on protected areas, conservation sites, and critical ecosystems. Sub-projects involving significant conversion of natural habitats will not be eligible for financing under SSNRMP

Safeguard Policies Triggered	Yes	No	Why triggered?
Forests OP/BP 4.36	X		Under SSNRMP, the forest related activities such as reforestation, rehabilitation of degraded forests will have positive environmental impacts. However, some livelihood improvement interventions like Haffir (pond) construction may pose some negative impacts if forests are found in those sub-project sites. The ESMF addresses the potential impacts and mitigation measures for forestry activities. Environmental management plans with appropriate mitigation measures will be prepared to avoid or reduce such impacts. If there are sub-projects likely to cause significant conversion of forests, they will not be financed under the SSNRMP.
Pest Management OP 4.09	X		This policy is triggered by the SSNRMP, particularly for those activities targeted to improve the livelihood of communities by investing on small-scale irrigation and nurseries. Such investment can encourage the use of agrochemicals (e.g. insecticides and herbicides). The project will promote Integrated Pest Management (IPM) and safe utilization of pesticides by the targeted communities. However, the project will not finance the procurement of any agrochemicals. Guidelines on the Implementation of Integrated Pest Management and World Bank Operational Policy for Pest Management (OP4.09) are attached as Annex 2a and 2b.
Physical Cultural Resources OP/BP 4.11		X	The project will mainly implement activities to rehabilitate rangeland and forests. In the process of project implementation, a chance finds procedures will be included in the ESMF to manage issues on physical cultural resources. (See annex 6)
Indigenous Peoples OP/BP 4.10		X	
Involuntary Resettlement OP/BP 4.12	X		Under SSNRMP, activities related to rehabilitation and reforestation sub-projects will not involve land acquisition leading to involuntary resettlement since they will be implemented in communal rangelands and forest reserves. However, such activities trigger this policy during enclosure of forest and other protected areas for rehabilitation and natural regeneration since it may restrict access to humans and livestock. A PF has been prepared and updated as part of the AF to provide principles that will guide the project's preparation of management plans for forest and range land and the identification and implementation of the different subproject activities related to rangeland, water resources, forest reserves and livelihood activities. The process will be used to ensure

Safeguard Policies Triggered	Yes	No	Why triggered?
			that marginalized and vulnerable people are consulted and engaged in sub-projects implementation which restricts access to and use of natural resources. Vulnerable and marginalized people would be identified during the social assessment, which would be conducted, before implementation of project activities.
Safety of Dams OP/BP 4.37	X		The project will support the construction of Haffirs (small ponds) which will help to capture and store water, particularly for irrigation. The construction of haffirs and their management requires skill and institutional arrangements. Haffirs' construction will be carried out by a qualified contractor, following the guidelines set out in Annex 5 of this ESMF. As haffirs do not involve construction of big dams, their potential impacts will be managed by the generic safety Guidelines for small dams provided in this ESMF, Annex 5.
Projects on International Waterways OP/BP 7.50		X	Activities under Component 2 of the project are aimed at rehabilitating the rangeland and reforestation and biodiversity conservation in Om Seraig and Sharg Elneel Forests in Gadarif & Khartoum States, respectively. Similarly, the intervention in Gadarif & Khartoum is away from waterways. None of the project activities will, therefore, adversely change the quality or quantity of water flows to the main Nile, White and Blue Nile and their tributaries. In addition, based on the fact that the small investments under the Project are unlikely to affect the overall hydrological balance of any of the international waterways or tributaries, this policy is not triggered under the SSNRM.
Projects in Disputed Areas OP/BP 7.60		X	The policy is not triggered, as the project will not be implemented in disputed areas.

4. GRIEVANCE REDRESS MECHANISM (GRM)

117. It is also important to note that the Project Appraisal Document and the Project Operations Manual provides for a Grievance Redress Mechanism (GRM) at the community, administrative unit, locality, and state levels, including Appeals' Committees at the latter two levels. A Management Information System will be developed, which in addition to collected necessary information on beneficiaries and projects to track progress, will also include a module to record complaints and the ways in which they were addressed. The intended GRM for this project will be specific to the project and various accountability tools will be used to track and evaluate effectiveness of interventions.
118. The GRM is an essential part of the safeguard instrument that intends to resolve complaints on the SSNRMP- subproject activities. It should address complainant concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the complainant persons. Generally, the Mechanism will ensure that (i) the public within SSNRMP- investment influence are aware of their rights to access, and shall have access to, the mechanism free of administrative and legal charges, and concerns arising from SSNRMP- activity in all phases are addressed effectively. Such kinds of approach are useful, among others, to improve outcomes of SSNRMP- implementation, help to prioritize supervisions, identify systematic implementation issues and trends, and promote accountability through creating more predictable, timely and results-oriented responses to citizen concerns.

Possible indicators may include, among others:

- Number and/or percentage of functional GRMs established;
- Number of GRM cases resolved
- Levels of GRM cases resolved at each level;
- Number of grievances cases registered;
- Average time and number of meetings conducted for resolution of grievances,
- Number of GRM awareness sessions;
- Number of complaints that have gone to mediation;
- Degree of involvement of women, youth, and disadvantaged/marginalized groups in discussions;
- Number of complaints received;
- Number of accidents/incidents related to project's activities; and

119. The GRM is a space for stakeholders to discuss and solve problems through an acceptable, independent and institutionalized mechanism for resolving conflict coming from SSNRMP implementation. Grievances can be submitted by email, written letter, telephone, SMS and a suggestion/complaint box placed at the State Forest and/or Range and Pasture Office, as appropriate. Support from NGOs, interest groups and other stakeholders is necessary for helping local natural resources' users submit their grievances. Grievances are assessed by subject-experts and project staff possessing substantial knowledge about natural resources management and conflict resolution. In relative difficult cases, an external expert can serve as

a mediator in trying to reach agreement between disputing parties. If parties are unable to reach a resolution, they may submit an appeal to the SSNRMP Technical Committee, who will decide on the case. As a last resort, SSNRMP stakeholders can submit a formal complaint through the State Project Implementation Unit or other formal Sudanese judicial system.

120. Given the challenge where the GRM establishment and functionality in SSNRMP-2, the PIU assessed a realistic timeline, including assessing the available system, staffing, logistics and resources, and procedure for accepting, providing feedback and documentation. The Sudan portfolio including the SSNRMP-2 has been on hold after approval due to WB mission suspension and the resumption of portfolio disbursement. Although not particular to SSNRMP, this has affected the establishment and operationalization of the GRM in the parent project. Based on this assessment and the time required for institutionalization of the project implementation, the PCU has outlined an operational procedure with timeline. Operationalization of the GRM will take 9 months starting from the effectiveness of the project. In the first 3 months, several activities are undertaken such as staff training and administrative tasks to set up the grievance mechanism for the targeted states. Second level operationalization includes expanding to a nationwide GRM with case officers stationed in all eight state forest offices. The last three months of operationalization are dedicated to creating a digital modality for submission via email any other accessible modality for the aggrieved party based on context. The GRM will be introduced with a comprehensive communication plan for stakeholders, targeted to local communities, private holders, NGOs and other interest groups, state and locality level offices, experts in environmental and social sciences, SSNRMP related structures, and GRM clients.
121. The ESMF recommends that with the quasi-judicial structure proposed, the grievance redress mechanism can be seen as an “in-between” step stakeholders can take after informal or traditional dispute resolution fails. This step is crucial, given the high tension of existing land disputes, and the difficulty local forest users have accessing the formal system because of its complexity or anxiety to use the system. The ESMF recommends for the GRM to become institutionalized and effective in handling grievances in an impartial and timely manner, on the legal topic, the ESMF recommends creating legal provisions for GRM implementation, including amendment of state laws and regulations. To ensure adequate execution of the GRM, the ESMF recommends to gradually expand the GRM from locality, state to national focus. This will have to go together with expert guidance, raising awareness and providing incentives for stakeholders using the GRM.
122. In addition to the grievance mechanism itself, the SSNRMP developed a communication plan to inform the stakeholders about the existence of the GRM and instructions of operation. The communication plan includes aspects of stakeholder-targeted communication channels, facilitators, multipliers and timelines.
123. Such indicators are used to assess if a process is established to identify and resolve grievances and disputes related to the SSNRMP project. These include:
- national, local, regional, international and customary processes;

- grievances and disputes that arise during design, implementation and evaluation of the SSNRMP project;
- grievances and disputes over rights to lands, territories and resources and other rights relating to the SSNRMP project;
- grievances and disputes related to benefit sharing;
- grievances and disputes related to participation;
- The processes are transparent, impartial, safe and timely accessible, giving special attention to women, poor and marginalized and/or vulnerable groups;
- Grievances are heard, responded to and resolved within an agreed time period, leading to adequate redress and remedy;
- Grievances related to the operational procedures of relevant international agencies and/or international treaties, conventions or other instruments.

Proposed Grievance Redress Mechanism for SSNRMP:

GRM Principles, Structure and Function

124. This section explains how the GRM is designed based on the outcome of the analysis in previous ESMF. The section starts with setting out the scope and goal of the mechanism, after which the structure is discussed. The section continues with a set of procedures, followed by measures for successful operationalization and recommendations for institutional mainstreaming of the GRM. The section concludes with a framework for grievance monitoring and evaluation.

Goal and Objectives of the GRM

125. The goal of the GRM is to channel grievance into an acceptable, institutionalized mechanism for resolving conflict raised from implementation of SSNRMP activities. The GRM mechanism should focus on dialogue and problem solving as an intermediate way for stakeholders to discuss problems. The GRM is expected to primarily address interest based SSNRMP conflicts, meaning conflict in which groups with some form of interdependency have a difference in (perceived) interest, for example disputes between two forest users about land use. GRMs seek to complement the legal system, not replace it. In case SSNRMP stakeholders are unable to find resolution with the GRM, they may seek their right (win-lose resolution) by submitting their case to legally provided formal dispute resolution mechanism through the local court system.

126. Besides the overall goal of dialogue and problem solving, the GRM has several secondary objectives, as follows:

- The GRM will support the MANR /SSNRMP Implementation Unit to have better and improved outcomes on the implementation of SSNRMP by resolving SSNRMP related

disputes in a short time. Especially because SSNRMP is still a pilot in sustainable land and water management models and prefixed solutions to emerging problems are just not available. The GRM should therefore serve as the MANR /SSNRMP Implementation Unit's early warning system and capture grievances that expand into more complex (or even intractable) conflicts, thereby attracting more parties and dealing with a higher number of issues or expanding of conflict to a larger geographical region.

- Marginalized natural resources-dependent communities can be stimulated to get more voice in SSNRMP through the GRM. The mechanism provides an opportunity to these poor peoples, especially those living in remote locations, to submit complaints and argue for a better social situation, which is an important goal of the SSNRMP program. More importantly, marginalized groups will have the opportunity to engage in dialogues with other natural resources user groups, NGOs, Government officials of the MANR /SSNRMP Implementation Unit. It is this feature of the GRM that will give such marginalized groups (poor, women and indigenous groups) ownership of solutions found through dialogue- and problems solving activity.
- The GRM should become the first line of response (“face”) of SSNRMP for natural resources users. For example, natural resources users can acquire information about SSNRMP through the GRM in ways of putting forward a grievance on having limited information about SSNRMP. In that way, poor communities (especially women, landless and indigenous peoples) have a channel of communication to SSNRMP. This is rather important given the limited dissemination of information to the local level we have heard from stakeholders all over Sudan.
- From the consultations it is evident that natural resources users have problems trusting the GoS for bringing forward pragmatic solutions for resolving natural resources disputes. Through the GRM, there is an opportunity for these stakeholders to ask questions and the SSNRMP Implementation Unit is obliged to provide answers in the form of feedback. Natural resources users then can get more trust in the process and feel more accountable for its outcomes. Such efforts are expected to have an incremental effect in trust building and often is the most decisive factor in the success or failure of a project.

127. Principles for capturing feedback and grievances at the local, district and national level, the GRM is designed based on thirteen principles. These principles derive from relevant international laws and standards on rights and grievance redress, the team's social-and legal/regulatory and conflict analysis and views from stakeholders nationwide.

The common GRM principles include

Principle 1: The GRM should promote a personal communication culture.

Communication between Sudanese citizens is favoured by personal (face to face) contact. The GRM needs to be culturally sensitive to this customary trait to become functional. Personal interaction also should improve ongoing distrust between the parties.

Principle 2: The GRM should harbour and improve relationships given the existing distrust between natural resources users and the GoS.

Sudan's culture in the natural resources sector emphasizes harbouring relationships between various groups of users rather than seeking for solutions which may favour one group above the other. As such, numerous natural resources user groups are encouraged to find peaceful ways to resolve conflict through informal dispute resolution mechanisms.

Principle 3: The GRM should build on the reality in which local natural resources users live to become accessible. For example, a reality is the adult literacy rate of 57.4% (2012).

Most of the local natural resources users – poor groups, indigenous groups, and senior peoples - are illiterate and often afraid to visit Government offices and officials. Potential barriers for accessing the GRM need to be completely removed so these marginalized peoples can freely access the GRM.

Principle 4: The GRM should build on existing structures of informal and formal dispute resolution to enhance cost effectiveness.

Relying on and strengthening these structures is an approach taken in establishing overall safeguards for the SSNRMP program. The GRM will rely on two existing systems: informal dispute resolution practices and the current district system for forestry management under the MANR. By doing this, the mechanism can easily become acceptable as the majority of stakeholders are already familiar with it.

Principle 5: The GRM should build capacity of SSNRMP participants, such as information about obligations, policies and procedures.

In general, there is a low level of awareness¹⁸ about SSNRMP and many natural resources users are unclear about their own rights and the policies and procedures of the SSNRMP program. The GRM should include a strong component for strengthening awareness of local stakeholders so they can effectively engage in SSNRMP through deliberations and dialogues. The GRM will have to promote information sharing at the local level, in order to prevent unnecessary grievances to be submitted to the GRM.

Principle 6: The GRM should be flexible in design so it can facilitate the SSNRMP Implementation Unit and various natural resources stakeholders in a mutual learning process.

Current formal disputes resolution systems in forestry end with decision without a process to learn and adapt. Therefore, the GRM design should encourage monitoring and evaluating grievance redress to learn and subsequently adapt strategies as necessary during SSNRMP implementation.

Principle 7: The GRM should have simple and friendly procedures which are understandable for each natural resources user.

Stakeholders will be fully informed about the procedures, so their trust in the system is promoted. In this way, the GRM will function as a transparent mechanism for handling complaints.

Principle 8: The GRM should include specialists in SSNRMP with experience in conflict resolution.

These Sudanese specialists need to follow conflict resolution tools and techniques so they can mediate conflicts in forestry. They therefore need to have expertise on forestry, conflict resolution and international and national developments in the context of SSNRMP in order to mediate for workable solutions at the local level.

GRM Structure

128. The GRM is designed as a quasi-judicial body: a public administrative body which has defined procedures and powers in resembling those in a court of law, and is obliged to objectively determine facts and draw conclusions from them as to provide the basis of an official action. The outcome of the GRM is a contractual agreement in which parties have binding obligations under Sudanese law.

Stakeholders have three options to address conflicts in SSNRMP, as follows.

129. **Option 1:** As explained by the wide majority of stakeholders consulted, natural resources users prefer submitting grievance to the informal dispute resolution mechanism such as local leaders, and other natural resources networks and federations' informal dispute resolution mechanism in their village or community. The function of informal dispute resolution is to solve value and interest-based conflict based on traditional/customary systems, with the ultimate goal of finding a win-win resolution. During this type of resolution process, disputants are protected against face loss and are encouraged to maintain a workable relationship for the future.

130. **Option 2:** When informal dispute resolution has insufficiently delivered a resolution, disputants may submit their NRM related grievance to the GRM. The GRM envisages seeking a win-win solution by using a set of conflict tools for mapping out the interests, improving communication between parties and finding creative ways to mutually discover and seek solutions. Selected conflicts on rights-based processes or user rights disputes can also be targeted. The GRM will build in a modality to bring disputants back into informal dispute resolution mechanisms, whenever appropriate.

131. **Option 3:** If the GRM is ineffective in transforming a particular conflict, the disputants are free to submit the grievance to the formal system local court. The formal system is rights-based and applies the law to decide who wins and who loses. Here a final decision will be made by the local court, after which the complainant has a possibility of appeal within the Locality Judiciary or State structures. In case that is not successful, the complainant can submit their grievance to the Court of Justice.

GRM in summary

132. Quasi-judicial structures are not new to Sudan and have earlier been used in grievance provisions (e.g. Village Development Council and Elders' Committees). The GRM makes a strong link with the widely used informal system for dispute resolution, which is deeply trusted by local natural resources stakeholders. And in case such informal dispute resolution is

ineffective, SSNRMP affected natural resources users can always find their way to the formal local grievance redress mechanism or the judicial court. Thus, the GRM can be seen as an “in-between” step stakeholders can take after informal dispute resolution fails. We expect this step to become crucial, given the high amount of (historically) existing local conflict and the difficulty local natural resources users have accessing the formal system because of its complexity or anxiety to use the system.

133. The GoS has proven ability to work together with local natural resources’ stakeholders in a wide range of NRM systems. Our design worked along laws and provisions of this so-called natural resources management. Our study shows that existing laws and natural resources management systems are not perfect: in all of these management types there is large amount of conflict between different users over natural resources, many of which the GoS is party. Sudan’s history teaches us that power disparity has been prevailing in natural resources management. We also heard similar remarks from forestry stakeholders in present time. So we crafted a system in which each stakeholder can function effectively without becoming bias when participating in the GRM. The GRM particularly promotes judgments by subject experts rather than by existing government structures from the SMO PER.

5. ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

134. The Republic of Sudan covers an area of about 1.87 million km², (UN and Partners Work Plan, 2012 and FCS, 2012), and in general terms, desert and semi desert conditions cover between 60-70 per cent of the country’s total area .The latest estimation of the land cover of Sudan (April 2012 by FAO) shows that some 51 per cent of area is bare rocks, bare soil and other unconsolidated materials (such as wind-blown sands free of vegetation in hyper-arid areas).A further 10% is classified as trees, 11.8% as shrubby vegetation, and 13.8% as herbaceous vegetation.
135. Sudan remains essentially rural with the majority of the population dependent on the country’s natural resources for their livelihoods. It is estimated that agriculture (crops, livestock and forestry) contributes 35-40% of Gross Domestic Product (with livestock accounting for 50% of the production) and employs more than 80% of the total population (Lee, et al, 2013). Traditional farming accounts for 60-70% of the agricultural output, and is largely subsistence production based on shifting cultivation and livestock rearing.
136. The 2013 United Nations Development Programme Human Development Index ranks Sudan at 171 out of 187 countries. Poverty estimates set the average rate of poverty incidence at 46 % (2009 National Baseline Household Survey), indicating that some 15 million people are poor. The poverty rate is significantly higher in rural areas (58%) than in urban areas (26%), and varies markedly across states.
137. Sudan faces environmental challenges due to its geographic location within the fragile Sudano-Sahelian and sub-Saharan African zones. Short variable erratic rainy seasons, arid lands, and poor sparse vegetative cover contribute to the country’s vulnerability. In addition,

the soils in the area are highly susceptible to wind and water erosion. The steady increase of both human and livestock populations puts pressure on natural resources, and has resulted in desertification, land degradation, water pollution, soil erosion and nutrient loss and deterioration of biodiversity across large tracts of the country.

138. The project area involves regions that are socially, economically and politically interconnected and share complementary environmental characteristics. There are some underlying factors that contribute to exacerbate the situation of poverty in the region. The continued deterioration of natural resources (water availability and soil) and the recurrence of natural disasters (drought and floods) have a marked negative impact on the productivity of the agricultural sector and animal husbandry, the main sources of income in the east. The weak capacity of the state institutions and limited entrepreneurial drive of the private sector constrain the ability of the region to develop alternative types of activity. The population in the project area is mainly rural (close to 75%), deriving their livelihood primarily from subsistence agriculture, animal husbandry and menial wage employment. The majority of the population in urban areas is engaged in small trade and services and wage employment, also at the subsistence level.

Background on the new states

Khartoum State

139. Khartoum State is the most densely populated state – according to some estimates constituting up to 1/3 of the 42 million population of Sudan. Khartoum, the national capital of Sudan, and Omdurman, the country's second largest city by population, are located in this state. The cities are located at the confluence of the White Nile and the Blue Nile, where the two rivers unite to form the River Nile. As these two cities form the most economically advanced areas of the country, the Khartoum state is the destination for internal economy driven migration and the displaced Sudanese. Consequently, according to the accounts from governmental institutions, the state contains vast pockets of impoverished population. Another factor that contributed to the selection of Khartoum is the need to support the establishment of the Green Belt in this state, initiated by the GoS.
140. The northern part of the state is mostly desert receiving barely any rainfall, while other regions have semi-desert climates. The weather is rainy in the fall, and cold and dry in the winter. During the rainy season, from July to September, Khartoum receives between 110 and 200 mm of rainfall on average. Dust storms are regular occurrences and river fluctuations threaten riverbank erosion and flooding.⁶ Rapid urban growth combined with rising temperatures, rainfall variability, and river fluctuations have placed serious pressure on Khartoum's resources.

⁶ Khartoum State NAP Committee 2013

141. This state has been selected by the client through an interactive and inclusive process to help scale-up the interventions for further replication. Khartoum State falls within the Great Green Wall of SSA and due to the climate induced displacement, many vulnerable communities took refuge and have voluntarily resettled in camps around the city's outskirts. The provision of safe and clean drinking water is a challenge. Even more challenging is the deterioration of the health environment that leads to disease outbreaks especially malaria. These issues are expected to further intensify in severity due to the impacts of climate change.
142. Major climate change adaptation initiatives needed in Khartoum, as per the country's official NAP, include:
- *Agriculture*: cultivation of early maturing crop varieties, research activities on drought-resistant seed varieties, and awareness-raising among farmers.
 - *Water*: capacity strengthening, adoption of water saving irrigation techniques, integrated water planning, awareness-raising among farmers about climate change.
 - *Public health*: ensuring adequate treatment supplies for vector-borne diseases and improving health awareness among rural communities.
 - *Urban areas*: development of a comprehensive strategy for mitigation of health impacts in urban areas, transportation planning, and community participation in addressing urban environmental issues.

Gadarif State

143. Gadarif has an area of 75,263 km² and an estimated population of approximately 1.4 million (2000). Following the agriculture, livestock rearing is the second most practiced economic activity. Livestock rearing carries different forms, namely, traditional seasonal transhumant, village livestock raising and, as a recent activity, livestock raising by large-scale mechanized merchant-farmers who are investing surplus wealth in sheep and cattle. Collecting and trading in forest products and charcoal burning are other traditional forms of economic activities. Thus, people derive their livelihood income from a mixture of combinations of the three main forms of land-use: agriculture, grazing, and forest utilization.
144. Gadarif state's vegetation cover types and distribution: trees and grasses are dependent on climatic factors particularly the rainfall. The seasonal short grasses and scattered thorn trees are available at the northern parts and increase in central parts with appearance of poor savanna plants further south of these areas. At the southern parts, tall grasses, Acacia, Balanites and Hashab are dominant representing rich savanna zone.
145. The area is characterized by a unimodal rainfall season most of which primarily occurs from June to September and controlled by the nature of the Inter-Tropical Convergence Zone. The annual rainfall in the area ranges between less than 300 mm in the North to more than 800 mm in the South. Increasing rainfall variability, rising temperatures, and decreasing average rainfall are already affecting Gadarif's agricultural economy, 90 percent of which is rain-fed, leading to serious implications for local food security. Crop data analysis indicates 25 percent decrease in sorghum production following 20 percent reduction in annual rainfall between

1981 and 2008. Also, significant vegetation cover over the past few decades severely reduced ability of Gadarif state to produce gum Arabic.⁷

146. Major adaptation initiatives needed in Gadarif, as per the country's official NAP (2016), include:

- *Agriculture*: introducing practices that reflect the ecological zones. In the northern part of the state, measures focus on land set-asides for grazing and animal production only. In the semi-arid southern part of the state, measures focus on the introduction of animals into agricultural rotations and the cultivation of sorghum alongside other crops for animal production. Across entire state, improved plant and animal breeds should be introduced, early warning systems should be put in place, as well as capacity building and awareness raising programs developed.
- *Forests*: implementing legislation, planting trees inside reserved forests, and cultivating courses of seasonal streams with trees and annuals to prevent soil deterioration.

6. POTENTIAL IMPACTS AND MITIGATION MEASURES

147. **Potential negative environmental impacts:** Activities under Component 1 and 3 will not have any negative environmental impacts. However, any strategy development to promote the protection and conservation of natural resources will consider potential environmental and social impacts. The TOR to be developed for this activity needs to explicitly indicate on how environmental and social implications will be addressed in the strategy.

148. Activities under component 2 such as reforestation and enrichment plantings, legal gazetting of reserves, developing a management plan, legally gazetting rangeland, stabilize sand dunes with appropriate grass species, establish and manage nursery for rehabilitating the rangeland, and develop rangeland management plans will have positive impacts on the environment by rehabilitating degraded environment and supporting biodiversity conservation. Some activities under component 2 aimed at improving livelihood, however, can cause some negative impacts. These adverse impacts will be addressed by ESMPs to be produced based on the guidance provided by this ESMF. Training and capacity building to local government staff on the preparation of simplified ESMP and supervision of its implementation would be provided.

149. **Potential negative social impacts** Sub-project activities including afforestation/reforestation, legal gazetting of reserves, and legally gazetting rangeland may temporarily restrict access for people using the land for grazing animals or for extracting non-timber forest products, such as honey. On the other hand, none of the sub-projects will result in the displacement of people. Mitigation measures for potential negative social impacts have been addressed in the PF, which will be used along with the ESMF.

150. The Environmental and Social Management Screening Form (Annex 2) and Environmental and Social Impact Mitigating Measures and Monitoring Checklist (Annex 3) will provide guidance in vetting subprojects for their environmental and social impacts. If there are AF

⁷ Gadarif State NAP Committee 2013

activities which are not explicitly indicated in the Screening Form, they should be included in the appropriate section of the Form and screened accordingly.

151. Project funds will not be used for the purchase of pesticides and subprojects are encouraged to use Integrated Pest Management (IPM). Annex 1a provides Guidelines on the Implementation of IPM for Small-Scale Irrigation and other Livelihood Activities under the project.

152. Small dams/Haffirs subprojects should be screened by indicating the activities to be undertaken and their potential impacts under irrigation section in the Screening Form. Furthermore, their construction should follow the guidelines set out in Annex 5.

7. SUBPROJECT PREPARATION, APPROVAL AND IMPLEMENTATION

Preparation and Application

153. Project teams at the local level will work with communities in identifying sub-projects. The Screening Form (Annex 2), together with information on typical sub-project impacts and mitigation measures (Annex 3) will be used in identifying potential negative impacts.

154. The use of SSNRMP funding will require the completion, by the relevant local government office, of a signed Screening Form and application of the Screening System for all sub-projects to be implemented. The completed and signed Screening Form will be submitted to the project SPIUs along with sub-project proposal for review and approval.

Appraisal and Approval

155. The SPIUs determines whether the sub-project application, along with the completed and signed screening form, can be cleared for approval. The first step is a desk appraisal to determine if all the relevant information has been provided, and if it is adequate. From an environmental and social point of view, the SPIUs needs to determine if it is satisfied that the community and local project team have thoroughly considered all potential negative effects of the subproject, and included measures in the subproject plan to adequately address them. If the desk appraisal indicates that the proposed sub-project may have environmental or social concerns that are not adequately addressed in the application, the SPIUs requires a field appraisal before the application can be considered further.

156. Based on the desk appraisal and, if needed, the field appraisal, the SPIUs will decide on the environmental and social concerns, if any. The SPIUs will be technically supported by an environmental and social safeguards specialist to recruited at the PIUs.

Preparing ESMP

Guidance for the SPIU

157. The SPIUs is responsible for ensuring that the required ESMP is prepared for those sub-projects with environmental and social concerns. Either an independent consultant or a team composed of local sector experts can prepare the ESMP. The cost of preparing the ESMP should be covered by the sub-project budget. A Template for a simplified ESMP is provided in Annex 4.
158. The ESMP will be reviewed by the SPIUs. The review should be conducted as quickly as possible, to avoid delay in sub-project implementation. The results of the review should be notified immediately to the local project team.

Monitoring the implementation of the ESMP

159. The SPIUs will be responsible for monitoring the implementation of the mitigation measures as specified in the ESMP. The monitoring exercise will also help to document best practices in environmental and social management of the sub-projects. The SPIUs may seek technical support from the Safeguards Specialist in the PCU.

Annual Reviews and Audits

160. The purpose of the reviews is two-fold and should be conducted by an independent local consultant, NGO or other service provider that is not otherwise involved in the Project:
- *to assess compliance with ESMF and PF procedures, learn lessons, and improve future ESMF performance; and*
 - *to assess the occurrence of, and potential for, cumulative impacts due to Project-funded and other development activities.*
161. An audit is necessary to indicate (i) to what extent environmental and social considerations are being incorporated into the sub-project planning process, (ii) that mitigation measures are being identified and implemented by proponents, and (iii) to check that sub-projects are being correctly screened. The audit will be able to identify any amendments in the ESMF approach that are required to improve its effectiveness.

Integrated Pest Management (See Annex 1a and 1b)

162. The Government of Sudan supports the use of biological or environmental controls and other measures to reduce reliance on agricultural chemicals. Integrated Pest Management (IPM) refers to a mix of farmer-driven, ecologically based pest control practices that seek to reduce reliance on synthetic chemical pesticides. It involves (a) managing pests (keeping them below economically damaging levels) rather than seeking to eradicate them, (b) relying, to the extent possible, on nonchemical measures to keep pest populations low; and (c) selecting and applying pesticides, when they have to be used, in a way that minimizes adverse effects on beneficial organisms, humans, and the environment.

163. The following strategy addresses the use of agricultural chemicals and to promote IPM in the SSNRMP

- Project funds will not be used for the purchase of pesticides or fertilizers.
- Information on acceptable and unacceptable pesticides will be provided to farmers and locality staff to encourage compliance with government policy and international standards.
- Training in agricultural activities on pest and fertilizer applications, safe chemical handling and IPM will be provided to communities as required.
- A basic Guide for IPM in the SSNRMP has been prepared by Government and disclosed (Annex 4), as a menu of practical methods for reducing the need for pesticides, covering techniques such as:
 - Pest-resistant crops varieties
 - Use of disease/weed-free planting stock
 - Farming practices that increase resistance to pests (proper soil preparation, spacing, planting, watering, etc.)
 - Farming practices that suppress pest populations (crop rotation, cover crops, intercropping, etc.)
 - Traditional manual control of pests (weeding, removing insect pods, etc.)
- Based on the Guide, an IPM Plan will be produced for each agricultural activity which likely utilize agrochemicals.

Sub-projects involving Dams/ Haffirs

164. Sub-projects requiring the construction of dams of 10 meters or more in height will not be financed under this project. Haffirs may be approved subject to a qualified engineer being responsible for the design and supervision of construction, and the construction being carried out by a qualified contractor, following the guidelines set out in Annex 5 of this ESMF.

8. TRAINING AND CAPACITY BUILDING REQUIREMENTS

165. Training to locality, and line ministry staff at the state level (in the three project states), and other stakeholders on issues of environmental and social considerations, is required. The training will largely focus on the processes and procedures of this ESMF.

Training will be required for the following:

- Relevant line ministries staff at state level;
- Relevant line ministries staff at locality level;
- Project Implementation Units at federal and state levels; and
- NGOs and Community Based Organizations
- Village Development Committees & Community Leaders.

Topics to be covered in these training sessions may include:

- Environmental and social safeguards
- Screening projects for environmental and social impacts
- Use of practical checklists

- Best environmental and social management practices in the design and implementation of projects
- Effective implementation of mitigation measures
- Community engagement techniques
- Participatory planning methodologies
- Grievance Redress Mechanism (GRM)
- Project supervision
- Monitoring and evaluation

9. MONITORING AND EVALUATION

166. Monitoring and supervision provides information for periodic review to ensure that potential negative environmental and social impacts are suitably mitigated and the benefits are retained as the project is implemented. To do this, arrangements should be made to:

- Provide information for periodic review (and possible modification) of the ESMP to help address environmental and social concerns at all stages of the sub-project process;
- Assess performance and monitoring compliance with regulatory requirements and agreed conditions; and
- Demonstrate to all parties (including the public) that the project activities comply with ESMP requirements and that mitigation measures are being implemented effectively.

10. PROPOSED BUDGET

167. The total estimated costs for facilitating the use of the ESMF by the SSNRMP project is USD 110,000 over the whole period (Table 3). Costs related to the required mitigation measures for sub-projects are not set out in the budget presented here. These will be assessed and internalized as part of the overall sub-project cost.

Table 3: Proposed budget (USD) for implementation of the ESMF and PF Procedures

Activity	Y2019	Y2020	Y2021	Y2022	Y2023	Total	Notes
Training on ESMF for implementing agencies	22,000	22,000				44,000	2 Local consultants at the rate of 300 USD per day x 5 days, plus 8000 USD in expenses for each state (19,000 USD)
Awareness raising of local government, NGOs, and community representatives, including Study tour	12,000	12,000	5,000	5,000		34,000	Awareness raising provided by state and local governments staff; 3000 USD in expenses per year

Annual Audit	8,000	8,000	8,000	8,000		32,000	Local consultant rate of 400 USD per day x 10 days, plus 4000 USD expenses
TOTAL	42,000	42,000	13,000	13,000		110,000	

Annexes

Annex 1a: Guidelines on the Implementation of Integrated Pest Management (IPM) for Small-Scale Irrigation and other Livelihood Activities in the Sudan Sustainable Natural Resources Management Project

Introduction

Pests cost thousands of millions of dollars annually in lost agricultural production, and at least 10 percent of the world's harvest is destroyed, mainly by rodents and insects, while in storage.⁸ Ways and means to protect crops from pests are many and varied. Numerous organisms have the capacity to become major pests but most of these are controllable by combinations of cultural measures, host plant resistance and biological control. Pesticides are used where these other control mechanisms do not keep pests below an acceptable level.

Pesticide use has, however, led to a number of new problems: biological control agents may also be eliminated, or the pests may become resistant to the pesticide. Furthermore, inappropriate and excessive use can cause contamination of both food and environment and, in some cases, damage the health of farmers. Biological controls, such as the use of pests' natural enemies, are useful.

Integrated pest management (IPM) combines a variety of controls, including the conservation of existing natural enemies, crop rotation, intercropping and the use of pest-resistant varieties. Pesticides may still continue to be used selectively but in much smaller quantities. Recognizing the intolerable magnitude of losses due to pests and the need to introduce ecologically preferable, socially acceptable, cost effective, rational and sustainable pest management technologies to farmers, IPM has been accepted as a strategy for tackling the problem.

In 1993, Sudan became the first African country to apply the IPM- farmers field schools (FFSs) system, modify it to suit the socio-economic structure of the rural community, evaluate it and present it as a model that can easily be assimilated and adopted by small farmers in the rest of the Sudan and other parts of Africa. The IPM- FFS is group of 20-30 farmers meeting once a week under a tree, next to their fields to be trained in knowledge, skills and attitudes so as to become more effective communicators who depend on themselves to solve their problems.⁹

Principles of IPM Implementation in SSNRM

- The basic need for IPM implementation is to increase yields in a sustainable manner, and attain clean environment, safe food and healthy citizens.

⁸ FAO, Controlling Pests, 2013

⁹ Ahmed M. Abdel Rahman and Mohamed E. Hamid, Impact of FFS on Farmer's Adoption of IPM Options for Onion: A Case Study from Gezira State, Sudan, 2013

- The emphasis of IPM is on the reduction of or wherever possible, the elimination of the use of pesticides to avoid the misuse of pesticides and to prevent or at least to delay the breakdown of the agro-ecosystem through good crop management decisions.
- The basis of good crop management decisions is a better understanding of the crop ecosystem including that of pests, their natural enemies and the surrounding environment.
- Traditional and indigenous crop protection methods that encourage the building up of natural enemies, such as crop rotation, intercropping, host plant resistance, appropriate planting time and planting density, use of local botanicals are highly encouraged.
- Pesticides should be used only as a last resort.
- Where pesticide use is unavoidable, it is desirable to select locally registered pesticides which are both effective at controlling pests and cause minimal damage to the environment.
- Farmer should use pesticide safety gear whenever they apply pesticides.
- Farmers should get training on safe use, handling and proper storage of pesticides.
- Creating awareness among the general public about the potential risks associated with pesticide use is highly essential

IPM Plan for SSNRMP

In order to ensure that the above principles are followed, each small-scale irrigation scheme should have an IPM Plan. The IPM Plan should, at a minimum, contain the following components and activities:

- a) *Technical Assistance:* SPIU contacts the State Ministry of Agriculture for technical assistance;
- b) *Training and Awareness-Creation:* The SPIU, in collaboration with the State Ministry of Agriculture, arranges an IPM Training and Awareness-Creation workshop for the project affected people, incorporating the above-mentioned principles;
- c) The SPIU encourages farmers to organize Farmers Field School to exchange experience on successful IPM practices;
- d) *Pest-Resistant Varieties:* The SPIU makes the necessary arrangement to provide advice to the beneficiaries on pest-resistant crop varieties;
- e) *Technical Information:* The SPIU ensures that information is made available to the members regarding the management of pests expected in the location concerned.
- f) *Safety and Storage of Pesticides:* The SPIU, in collaboration with the State Ministry of Agriculture, will develop and implement arrangements for the safe use, handling and storage of pesticides, and the proper use, maintenance and storage of pesticide spraying equipment. Pesticides should be kept separately, away from humans and animals in a closed, dry and secure place;

- g) *Supervision:* The SPIU arranges regular visits by technical experts to monitor the presence or absence of pests and provide advice on the management options. Management should be in accordance with the IPM components favouring traditional and indigenous pest management practices; and
- h) *Reporting:* The SPIU will report to the State Ministry of Agriculture, which will take action, if required, to rectify any shortcomings arising from the use of pesticides.

Annex 1b: World Bank Operational Policy for Pest Management (OP4.09)

These policies were prepared for use by World Bank staff and are not OP 4.09 necessarily a complete treatment of the subject. December, 1998

This Operational Policy statement was revised in August 2004 to ensure consistency with the requirements of [OP/BP 8.60](#), issued in August 2004.

Note: This OP 4.09 replaces the version dated July 1996. Changes in wording have been made in paras. 1 and 3 and footnotes 2, 3, and 4. Further guidance for implementing the Bank's pest management policy is in the [Environmental Assessment Sourcebook](#) (World Bank: Washington, D.C., 1991). Questions regarding agricultural pest management may be addressed to the Director, Rural Development. Questions regarding pesticide use in public health projects may be directed to the Director, Health Services.

1. In assisting borrowers to manage pests that affect either agriculture or public health, the Bank¹⁰ supports a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides. In Bank-financed projects, the borrower addresses pest management issues in the context of the project's environmental assessment¹¹.
2. In appraising a project that will involve pest management, the Bank assesses the capacity of the country's regulatory framework and institutions to promote and support safe, effective, and environmentally sound pest management. As necessary, the Bank and the borrower incorporate in the project components to strengthen such capacity.

Agricultural Pest Management¹²

3. The Bank uses various means to assess pest management in the country and support integrated pest management (IPM)¹³ and the safe use of agricultural pesticides: economic and sector work, sectoral or project-specific environmental assessments, participatory IPM assessments, and investment projects and components aimed specifically at supporting the adoption and use of IPM.
4. In Bank-financed agriculture operations, pest populations are normally controlled through IPM approaches, such as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pest. The Bank may finance the purchase of pesticides when their use is justified under an IPM approach.

Pest Management in Public Health

5. In Bank-financed public health projects, the Bank supports controlling pests primarily through environmental methods. Where environmental methods alone are not effective, the Bank may finance the use of pesticides for control of disease vectors.

¹⁰ "Bank" includes IBRD and IDA, and "loans" includes IDA credits and IDA grants.

¹¹ See [OP/BP 4.01](#), *Environmental Assessment*.

¹² OP 4.09 applies to all Bank lending, whether or not the loan finances pesticides. Even if Bank lending for pesticides is not involved, an agricultural development project may lead to substantially increased pesticide use and subsequent environmental problems.

¹³ IPM refers to a mix of farmer-driven, ecologically based pest control practices that seeks to reduce reliance on synthetic chemical pesticides. It involves (a) managing pests (keeping them below economically damaging levels) rather than seeking to eradicate them; (b) relying, to the extent possible, on nonchemical measures to keep pest populations low; and (c) selecting and applying pesticides, when they have to be used, in a way that minimizes adverse effects on beneficial organisms, humans, and the environment.

Criteria for Pesticide Selection and Use

6. The procurement of any pesticide in a Bank-financed project is contingent on an assessment of the nature and degree of associated risks, taking into account the proposed use and the intended users.¹⁴ With respect to the classification of pesticides and their specific formulations, the Bank refers to the World Health Organization's *Recommended Classification of Pesticides by Hazard and Guidelines to Classification* (Geneva: WHO 1994-95).¹⁵ The following criteria apply to the selection and use of pesticides in Bank-financed projects:

- (a) They must have negligible adverse human health effects.
- (b) They must be shown to be effective against the target species.
- (c) They must have minimal effect on none targeted species and the natural environment. The methods, timing, and frequency of pesticide application are aimed to minimize damage to natural enemies. Pesticides used in public health programs must be demonstrated to be safe for inhabitants and domestic animals in the treated areas, as well as for personnel applying them.
- (d) Their use must take into account the need to prevent the development of resistance in pests.

7. The Bank requires that any pesticides it finances be manufactured, packaged, labelled, handled, stored, disposed of, and applied according to standards acceptable to the Bank^{16,7}. The Bank does not finance formulated products that fall in WHO classes IA and IB, or formulations of products in Class II, if (a) the country lacks restrictions on their distribution and use; or (b) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply these products properly.

¹⁴ This assessment is made in the context of the project's environmental assessment and is recorded in the project documents. The project documents also include (in the text or in an annex) a list of pesticide products authorized for procurement under the project, or an indication of when and how this list will be developed and agreed on. This authorized list is included by reference in legal documents relating to the project, with provisions for adding or deleting materials.

¹⁵ Copies of the classification, which is updated annually, are available in the Sectoral Library. A draft Standard Bidding Document for Procurement of Pesticides is available from OPCPR.

¹⁶ The FAO's *Guidelines for Packaging and Storage of Pesticides* (Rome, 1985), *Guidelines on Good Labelling Practice for Pesticides* (Rome, 1985), and *Guidelines for the Disposal of Waste Pesticide and Pesticide Containers on the Farm* (Rome, 1985) are used as minimum standards.

Annex 2: Environmental and Social Management Screening Form

Subproject name/Description:

Location (include map/sketch):

Type of subproject activity:

Estimated Cost:

Proposed Date of Commencement of Work:

This report is to be kept short and concise.

1. Site Selection:

Physical data:	Yes/No answers and bullet lists preferred except where descriptive detail is essential.
Site area in ha	

Refer to the sub-project activity application for this information.

2. Impact identification and classification:

When considering the location of a sub-project activity, rate the sensitivity of the proposed site in the following table according to the given criteria. Higher ratings do not necessarily mean that a site is unsuitable. They do indicate a real risk of causing undesirable adverse environmental and social effects, and that more substantial environmental and/or social planning may be required to adequately avoid, mitigate or manage potential effects. In the following Table the implementing agency local government office should tick the appropriate box (low, medium or high) for each issue.

Issues	Site Sensitivity		
	Low	Medium	High
Natural habitats	No natural habitats present of any kind	No critical natural habitats; other natural habitats occur	Critical natural habitats present
Water quality and water resource availability and use	Water flows exceed any existing demand; low intensity of water use; potential water use conflicts expected to be low; no potential water quality issues	Medium intensity of water use; multiple water users; water quality issues are important	Intensive water use; multiple water users; potential for conflicts is high; water quality issues are important

Issues	Site Sensitivity		
	Low	Medium	High
Natural hazards vulnerability, floods, soil stability/ erosion	Flat terrain; no potential stability/erosion problems; no known volcanic/seismic/ flood risks	Medium slopes; some erosion potential; medium risks from volcanic/seismic/ flood/ hurricanes	Mountainous terrain; steep slopes; unstable soils; high erosion potential; volcanic, seismic or flood risks
Cultural property	No known or suspected cultural heritage sites	Suspected cultural heritage sites; known heritage sites in broader area of influence	Known heritage sites in project area

3. Checklist of impacts

Irrigation	Potential for Adverse Impacts				
	None	Low	Med	High	Unknown
Existing water sources supply/yield depletion					
Existing water users disrupted					
Downstream water users disrupted					
Water storage requirement and viability (soil permeability)					
Vulnerability to water logging (poor drainage)					
Vulnerability to soil and water salinization					
Sensitive downstream habitats and water bodies					
Environmentally sensitive areas disturbed					
Cultural or religious sites disturbed					
Increased social tensions over water allocation					
Irrigation	Potential for Adverse Impacts				
	None	Low	Med	High	Unknown
Local incapacity/inexperience to manage facilities					
Local incapacity/inexperience with irrigated agriculture					
Other (specify):					

Watershed catchment, Forestry, Rangelands	Potential for Adverse Impacts				
	None	Low	Med	High	Unknown
Wet season soil disturbance					
Potential for debris flows or landslides					
Sensitive downstream ecosystems					

Watershed catchment, Forestry, Rangelands	Potential for Adverse Impacts				
	None	Low	Med	High	Unknown
Removal of native plant/tree species					
Introduced plant/tree species					
Invasion of native species					
Wildlife habitats or populations disturbed					
Environmentally sensitive areas disturbed					
Insufficient capacity to manage catchment ponds					
Insufficient capacity to prohibit or control open grazing					
Insufficient capacity to manage new plantations/pastures					

Water development projects	Potential for Adverse Impacts				
	None	Low	Med	High	Unknown
Existing water sources supply/yield depletion					
Existing water users disrupted					
Downstream water users disrupted					
Increased numbers of water users due to improvements					
Increased social tensions/conflict over water					
Allocation					
Sensitive ecosystems downstream disrupted					
Local incapacity/inexperience to manage					

Public participation/information requirements:	Yes/No answers and bullet lists preferred except where descriptive detail is essential.
Does the proposal require, under national or local laws, the public to be informed, consulted or involved?	
Has consultation been completed?	
Indicate the time frame of any outstanding consultation process.	

Approval/rejection	Yes/No answers and bullet lists preferred except where descriptive detail is essential.
If proposal is rejected for environmental reasons, should the proposal be reconsidered, and what additional data would be required for reconsideration?	

Recommendations:

Requires ESMP

Does not require further environmental or social studies

Completed by implementing agency local Officer.....

Signature.....

Date.....

Annex 3: Environmental and Social Impact Mitigating Measures and Monitoring Checklists

Table 1: Agricultural Development

	Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Land Management	Erosion	<ul style="list-style-type: none"> • Design and layout of furrows appropriately • Avoid unsuitable gradients • Avoid over-irrigation • Install sediment traps in fields and canals to capture sediment for return to fields • Minimum tillage, contour cropping, terracing and other methods of conserving soil moisture • Plant the cleared area immediately following clearance with an appropriate vegetation cover • Establishment of shelterbelts and windbreaks. 	<ul style="list-style-type: none"> • Soil quality and depths • Levels of soil productivity; • Shelterbelts size and coverage; • Application of windbreaks in field 	State Agriculture office/SPIU
	Destruction of wildlife habitats and biodiversity and reduction in numbers, diversity and productivity of plant and animal species	<ul style="list-style-type: none"> • Avoid infringing on protected areas, critical habitats or areas with significant biodiversity (e.g. wetlands) • Alternative siting • Establish buffer zones around wilderness or forest areas • Rehabilitate or create ecosystems to offset wilderness or forest conversion or add to existing stock 	<ul style="list-style-type: none"> • Species and number of each type of species • Productivity of plant and animal species 	State Agriculture office/FNC/SPIU
	Loss of vegetative cover leading to decreased soil quality, waste absorption capacity, groundwater control and groundwater recharge	<ul style="list-style-type: none"> • Retain certain vegetation such as tree stumps and shrubs to help preserve soil structure and prevent soil erosion • Require a clearing method/cover crop/cropping plan before clearing approved 	<ul style="list-style-type: none"> • Levels of soil productivity 	State Agriculture office/FNC/SPIU
	Wetland reduction and drainage	<ul style="list-style-type: none"> • Design features to prevent disturbance of the flow patterns and hydrologic regimes critical to conservation of the wetland (e.g. flow regulating works, road crossings on trestles or pilings, rather than on embankments) • Enhancement and/or protection of other wetland in substandard conditions to offset losses at the site 	<ul style="list-style-type: none"> • Area of wetland and levels of water in wetland 	State Agriculture office/SPIU

	Decrease in soil fertility and leaching of nutrients	Leave residual vegetation to be returned to the soil for nutrient/organic matter value	<ul style="list-style-type: none"> • Soil acidity • Levels of soil productivity 	State Agriculture office/SPIU
	Overgrazing	<ul style="list-style-type: none"> • Development of range management specialists • Training/supervision of herders in range management 	<ul style="list-style-type: none"> • Involve community in local planning of range management • Practices of local herders 	State Agriculture office/SPIU
Social	Conflict between locals and agricultural settlers	<ul style="list-style-type: none"> • Apply the GRM steps; • Give priority to employment of local people where possible • Identify and support the welfare and cultural identity of affected tribal and local peoples. • Undertake conflict sensitivity assessment. 	<ul style="list-style-type: none"> • GRM steps applied • Number of local people employed directly, and indirectly throughout grower projects and secondary services • Number of beneficiaries from social investment schemes 	Community/NGO/Local Government/SPIU
	Upsetting existing social and economic community management relationships, land tenure systems, security of livelihoods, and gender division of labour	<p>Apply GRM steps and avoid sites that require:</p> <ul style="list-style-type: none"> • Resettlement • Displacement of other important land uses • Encroachment on historical, cultural, or traditional use areas. • Undertake complementary social assessment to understand the context and identify site specific mitigation measures. 	<ul style="list-style-type: none"> • Encroachment onto historical, cultural or protected areas 	Local government/SPIU/NGO/ Community

Damage to sites of cultural and heritage value	<ul style="list-style-type: none"> • Apply GRM steps; • Alternative project siting • Create buffer zones around sites of cultural and heritage value • If necessary and where possible, move site in consultation with local community and appropriate ministry and according to international best practice. • A chance find procedure will be applied when required. 	<ul style="list-style-type: none"> • GRM Steps applied; • Number and quality of cultural and heritage sites 	Local government/SPIU/ NGO/ Community
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Table 2: Small-scale Irrigation

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Loss of vegetative cover, decrease in soil fertility	Avoid infringing on protected areas, critical habitats or areas with significant biodiversity (e.g. wetlands)	Decreased productivity	State Agriculture office/FNC /SPIU Community/NGO
Fertilizer runoff leading to degradation of aquatic environments in nearby ponds, streams and other water bodies	<ul style="list-style-type: none"> • Use manure to help fertilize crops and build soil quality • Do not apply agro-chemicals too close to streams, ponds and drinking water sources • Do no wash fertilizer bags in streams or ponds 	<ul style="list-style-type: none"> • Quality of liquid effluent and receiving waters • Decreased productivity 	State Agriculture /local government/SPIU/NGO
Illness or disease due to pollution of water sources from food processing wastes	<ul style="list-style-type: none"> • Ensure thorough training in safe storage, handling, use and disposal of agro-chemicals • Do not apply agro-chemicals too close to streams, ponds and drinking water sources • Do no wash fertilizer bags in streams or ponds 	Occurrence of human (or livestock) illness or disease	State Agriculture /local government/SPIU/NGO
Health effects on workers	<ul style="list-style-type: none"> • Ensure thorough training in safe storage, handling, use and disposal of pesticides • Wear protective clothing • Consider training and use of integrated pest management (IPM) 	Incidence of worker disease or illness	State Agriculture /local government/SPIU/NGO

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Degradation of groundwater, streams, and rivers from solid and liquid wastes, and consequent	<ul style="list-style-type: none"> Locate waste disposal sites away from surface and groundwater sources, watercourses, housing and town centers Install grease traps and skim tanks Ensure receiving waters for liquid wastes are able to absorb and naturally decompose the effluent Screen waste liquids to remove coarse solids Ensure waste that is stored before transport to treatment facility or landfill cannot leak into the ground 	<ul style="list-style-type: none"> Occurrence of illness in livestock or community Surface water flows and ground table levels in project area 	State Agriculture /local government/SPIU/NGO
Upsetting existing social and economic community management relationships, land tenure systems, security of livelihoods, and gender division labour	<p>Avoid sites that require:</p> <ul style="list-style-type: none"> Resettlement Displacement of other important land uses Encroachment on historical, cultural, or traditional use areas 	<ul style="list-style-type: none"> Number of people displaced and compensated Encroachment onto historical, cultural or protected areas 	State Agriculture /local Government / SPIU/NGO
Conflicting demands on surface or groundwater supplies	<p>Locate and size irrigation schemes:</p> <ul style="list-style-type: none"> Where water supplies are adequate and the scheme will not conflict with existing human, livestock, wildlife or aquatic water uses, especially during dry seasons Withdrawals should not exceed “safe yield” from groundwater resources 	<ul style="list-style-type: none"> Involve community in local planning Complaints from community about water use GRM applied 	State Agriculture /local Government / SPIU/NGO/CBO
Creating habitats in canals and ditches for disease carriers such as mosquitoes and snails	<p>Assess ecology of disease carriers in the project area, and employ suitable prevention and mitigation measures, e.g.:</p> <ul style="list-style-type: none"> Site and orient water works, fields and furrows to ensure adequate natural drainage of surface water Avoid unsuitable gradients, and creating stagnant or slowly moving water Construct straight or only slightly curved canals Install gates at canal ends to allow complete flushing Ensure adequate sub-surface drainage of fields Avoid over-irrigation Maintain water works, and clear sediment and weeds, regularly. 	Occurrence of higher numbers of disease carriers such as mosquitoes and snails, as documented by community survey/complaints	State Agriculture /local government/SPIU/NGO

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
	<ul style="list-style-type: none"> Collaborate with offices of health at different level for supporting research in Malaria prevention and mitigation measures. 		
Spreading infection and disease through the inappropriate use of irrigation canals for water supply, bathing or human waste disposal	Provide/ensure alternate facilities for domestic water supply, bathing and human waste disposal	<ul style="list-style-type: none"> Involve community in local planning Periodic survey of community about which facilities they use for which activity 	Local government/ community /NGO
Health effects from improper storage, handling, use or disposal of agrochemicals (pesticides, herbicides)	<ul style="list-style-type: none"> Training/supervision of farm workers on use of agrochemicals to protect worker health and safety along with the environment Training of Integrated Pest Management (IPM) scouts for early recognition of pest outbreaks and the most environmentally sound methods to combat outbreaks 	<ul style="list-style-type: none"> Pest outbreaks Occurrence of illness or disease among workers 	State Agriculture /local Government / SPIU/NGO
Waterlogging	<ul style="list-style-type: none"> Thoroughly assess project soils and their management needs under irrigated agriculture Apply water efficiently (consider drip or dawn/evening sprinkler system) Install and maintain adequate surface and subsurface draining Use lined canals or pipes to prevent seepage 	<ul style="list-style-type: none"> Incidences of gathering water from improper drainage Soil erosion Dampening of surrounding area due to seepage 	State Agriculture /local government/ community/NGO
Salinization	<ul style="list-style-type: none"> Avoid waterlogging (above) Mulch exposed soil surfaces to reduce evaporation Flush irrigated land regularly Cultivate crops having high tolerance to salinity 	Maintain log of hours/water used for irrigation	Community/local government

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Erosion	<ul style="list-style-type: none"> • Design and layout of furrows appropriately • Avoid unsuitable gradients • Avoid over-irrigation • Install sediment traps in fields and canals to capture sediment for return to fields • Minimum tillage, contour cropping, terracing and other methods of conserving soil moisture 	Involve community in local planning of sites	Local government/ community/NGO
Reduced quality of surface and groundwater receiving excess irrigation water or drainage (nutrients, agrochemicals, salts and minerals)	<ul style="list-style-type: none"> • Minimize risks of waterlogging and salinization (see above) • Use agro-chemicals appropriately (see above) • Prevent surface drainage of fields into nearby water bodies (streams, ponds, etc.) 	<ul style="list-style-type: none"> • Involve community in local planning of sites • Training/practices of local farmers 	Community/Village committee
Overgrazing	<ul style="list-style-type: none"> • Development of range management specialists in Agricultural Ministry • Training/supervision of herders in range management 	<ul style="list-style-type: none"> • Involve community in local planning of range management • Practices of local herders 	State Agriculture /local government/ community/NGO

Table 3: Water Supply and Sanitation

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Potential land use conflicts	Avoid locating works that require: <ul style="list-style-type: none"> Resettlement Displacement of other important land uses Encroachment on historical, cultural, traditional use areas, or protected areas 	<ul style="list-style-type: none"> Number of people displaced and compensated Encroachment onto historical, cultural or protected areas 	Local government/ Community
Conflicting demands on surface or groundwater supplies	<ul style="list-style-type: none"> Ensure sufficient community participation and organization for effective planning and management of water supply system, and for equitable water distribution Develop water supply sources: <ol style="list-style-type: none"> Where water quantities are adequate and the project will not conflict with existing human, livestock, wildlife or aquatic water uses, especially during dry seasons So that withdrawals do not exceed “safe yield” from groundwater resources 	<ul style="list-style-type: none"> Level of community participation (number of individuals involved and allocated responsibilities) in management of water supply structures 	Local government/ Community
Contamination of water source supply	<ul style="list-style-type: none"> Protect groundwater sources from surface runoff (e.g. rainwater, spillage around wells, wastewater from latrines or homes) that may enter as drainage from above or as seepage from below Locate source well away from latrines, septic systems, traditional defecating areas, and animal pens Protect surface water sources from contamination from: <ul style="list-style-type: none"> Runoff from nearby agricultural areas (e.g. silt, agro-chemicals, animal waste) <ul style="list-style-type: none"> Other uses such as bathing, laundering, and animal watering Garbage and vegetative debris 	<ul style="list-style-type: none"> Occurrence of illness or disease Decrease in production due to water contamination (e.g. stunted growth, no growth) Complaints/problems documented from local community 	Local government/ Community
Groundwater contamination	<ul style="list-style-type: none"> Ensure adequate design, installation, and maintenance of latrines, holding tanks, septic systems and wastewater soak-away Ensure adequate spacing between latrines and soak-away 	<ul style="list-style-type: none"> Occurrence of illness or disease Decrease in production due to water contamination (e.g. 	Local government/ Community

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
		stunted growth, no growth)	
Surface water contamination	<ul style="list-style-type: none"> • Ensure proper maintenance of latrines, holding tanks, septic systems and wastewater soak-away • Locate latrines, septic systems and soak-away at least 30 meters from any water body (e.g. stream, lake, river) 	<ul style="list-style-type: none"> • Occurrence of illness or disease • Decrease in production due to water contamination (e.g. stunted growth, no growth) 	Local government/ Community

Table 4: Waste Management

Potential Impacts	Generic Mitigation Measures	Monitoring Indicators	Responsibility
Containment of water sources	<ul style="list-style-type: none"> • Ensure site layout and management practices, including working training, are adequate • Install adequate surface drainage control measures • Maintain erosion and surface drainage control measures during operations 	<ul style="list-style-type: none"> • Incidences of illness or disease • Decrease in agricultural production 	Local government
Creation of stagnant water sources	<ul style="list-style-type: none"> • Ensure site layout is adequate for drainage • Install adequate surface drainage control measures • Maintain erosion and surface drainage control measures during operations 	Periodic check for pooling water due to inadequate drainage	Local government
Loss of natural area, important habitats, biodiversity	Avoid infringing on: <ul style="list-style-type: none"> • Protected natural areas and wilderness areas • Critical habitats or areas with significant biodiversity (e.g. wetlands) 	Survey land area and community for environmentally sensitive areas/habitats	Local government / FNC/Community

Soil erosion	<ul style="list-style-type: none"> • Minimize time of exposure of areas cleared, graded or excavated • Stabilize and revegetate disturbed areas • Install adequate surface drainage control measures • Maintain erosion and surface drainage control measures during operations 	□ Degree of erosion	Agriculture office/Local government / Community
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Annex 4: Template for Environmental and Social Management Plan (ESMP)

S/N Item	Information to be completed
1	Description of the possible adverse effects that the ESMP is intended to address
2	Design alternatives that would meet similar objectives,
3	Description of why the alternative designs are not viable, especially if they have lesser potential environmental and social impacts
4	Description of planned mitigating measures, and how and when they should be implemented
5	Program for monitoring the Environmental and social impacts
6	Description of who will be responsible for implementing the ESMP

Cost estimate and source of funds Cost.....

Source.....

Annex 5: Safety Guidelines for Small Dams

1. Introduction

The overarching dam safety objective is to protect people, property and the environment from the harmful effects of mis-operation or failure of dams and reservoirs. To ensure that dams and reservoirs are operated and that activities are conducted so as to achieve the highest standards of safety that can reasonably be achieved, measures have to be taken to achieve the following three fundamental safety objectives:

- To control the release of damaging discharges downstream of the dam,
- To restrict the likelihood of events that might lead to a loss of control over the stored volume and the spillway and other discharges,
- To mitigate through onsite accident management and/or emergency planning the consequences of such events if they were to occur.

These fundamental safety objectives apply to dam and activities in all stages over the lifetime of a dam, including planning, design, manufacturing, construction, commissioning and operation, as well as decommissioning and closure.

2. Planning of Small Dams

There are some fundamental principles which should be applied through the investigation, design, construction and commissioning stages to achieve an adequate level of safety. The principles are:

- i. the competence and experience of the owner's agents relative to the nature and dam hazard category of the dam, must be appropriate in all areas;
- ii. there must be a cooperative and trusting relationship between the owner and technical advisers, and the designers must be given full control over decision making in critical areas;
- iii. the owner must agree to apply the appropriate level of funding for investigations, design and construction to reduce the chances of critically important issues (particularly related to foundations) being not sufficiently well assessed or under protected;
- iv. the designer/technical adviser has a duty not to compromise unduly due to financial pressures from the owner, developer or contractor;
- v. continuity of key technical advice should be maintained throughout all stages of the dam from development, through design, construction and commissioning, to reduce chances of critical points of design philosophy and intent being misinterpreted during construction or commissioning.

Dam site investigation

Selecting the Dam Site

When choosing the location and size, the dam owner should also consider what would happen if the dam failed suddenly and whether it would result in loss of life, injury to persons or livestock, damage to houses, buildings, roads, highways or railroads. The owner of the dam should ensure to avoid locating the dam where run-off from houses, dairies or septic systems can pollute the water.

Considerations at Investigation Stage

Technical Consideration

Site selection and site investigations are critical components to the success or failure of a dam. Regarding the technical consideration the following important aspects should be considered:

- a. The catchment is the area of land from which run-off is to be collected. If it is the main source of water supply, make sure that it can yield enough water to maintain both, the supply in the dam and the required releases over all periods of intended use. The catchment area however should not be too large, as it will then require a big and expensive overflow system (or spillway) to safely pass excess run-off from heavy rainfall without overtopping the dam.
- b. Topographical features such as slope, width and height of dam, as well as reservoir capacity will influence construction costs.
- c. Conducting site tests to establish the material properties for the embankment and foundation.
- d. A good location for a spillway that will effectively handle runoff and minimize erosion.
- e. Watershed activities that can affect the water quality or quantity of runoff.

Environmental Considerations

Dams with their associated reservoirs can have substantial environmental effects and they must comply with the country's environmental legislations and the World Bank Safety of Dam Operational Policy (OP/BP. 4.37). It should be recognized at the outset that dam developments have effects extending beyond the immediate confines of the dam and inundated areas. For example;

- a. Reservoir slope stability may become a dam safety issue due to the risk of overtopping caused by large volumes of reservoir water being displaced by slope failures.

- b. Sitting of the dam/reservoir must take into consideration the local earthquake and faulting activity which may cause breaching of the dam
- c. Groundwater level changes may affect stability and land use around the reservoir margins and possibly adjacent to the downstream river, because of changed water levels.
- d. Trapping of sediments in the reservoir can result in loss of reservoir storage.
- e. Flora/fauna effects may occur in storage basin, downstream, and in passage around and through the dam.
- f. Minimum flow maintenance downstream of the dam to ensure the survival of flora and fauna, and to reduce causes of stream bed deterioration.
- g. Social development/changes to downstream use given the changed flood situation.

Dam Design

Embankment dams Design

The single most common cause of earthen dam failures is overtopping of the embankment. An undersized spillway will lead to overtopping; therefore, spillway design is critical to reservoirs. The spillway must be located such that discharge will not erode or undermine the toe of the dam. If the banks of the spillway are made of erosive material, provision must be made for their protection. Consideration must be given to the hazard to human life and potential property damage that may result from the failure of the dam or excessive flow rates through the spillway. Further consideration must be given to the likelihood of downstream development that may result in an elevation of the hazard classification.

Extreme Events

Large earthquakes, storm/flood activity and failure of upstream dams can be considered extreme events. The risk of failure from these events is minimized by using engineering design standards and relevant guidelines incorporating adequate margins of safety. Emergency preparedness set up well in advance is the only available measure of reducing the impact when a dam failure is about to happen.

Sedimentation

The effective life of many of small dams is reduced by excessive siltation – some small dams silt up after only a few years. This issue is poorly covered in the many small dam design manuals that are available, as they mostly focus on the civil engineering design and construction aspects. Appropriate methods/tools should be chosen to predict, and where possible reduce, siltation rates in small dams.

3. Construction of a Dam

The quality of construction is all-important to dam safety. As far as construction is concerned, the following requirements are necessary from the dam safety viewpoint:

- the contractors must be suitably experienced and committed to achieving the standards of work specified;
- the level of supervision of the works, quality assurance procedures and designer continuity, must be appropriate to the scale and complexity of the dam;
- the owner must recognize that inherent uncertainties may remain after design investigations and only be revealed during construction, and have funding in place to deal with costs arising from additional requirements identified during construction;
- any area identified in the design process as requiring confirmation by the designer during construction, must be totally under the designer's control, and no design change, however small, shall be made without the designer's review and formal approval;
- a suitably detailed design report and drawings showing the as-built structure of all components of the dam and foundation shall be developed as an on-going and integral part of the construction supervision process and be prepared after completion of each component so that there is a reliable record to refer to at all times in the future.

Therefore, the dam owner should ensure all the above mentioned requirements are fulfilled and complied.

Selecting the contractor

The use of inexperienced contractors and/or inadequate supervision can develop into an expensive liability. Nothing can take the place of a reputable contractor, using appropriate equipment and experienced machine operators and working under supervision of an experienced engineer.

Construction Supervision

Construction supervision is an important phase of dam construction. Supervision is meant to ensure that the design factors and specification requirements have been included in the final product.

If foundation preparation, material selection, outlet/spillway installation and embankment compaction are not properly carried out then the safety of the dam will be compromised. So, for all small dam types (both earthen and rock fill) expected to be constructed, all the dam safety requirements applicable should be considered accordingly.

4. Safety Surveillance

Purpose of Regular Inspection

The purpose of a dam safety surveillance program is to avoid failure of the dam, by giving early warning of any kind of symptom of trouble as early as possible. It is the most economical and

effective means an owner has of maximizing the long-term safety and survival of the dam. Its primary purpose is to monitor the condition and performance of the dam and its surroundings.

Frequency of Inspections

The frequency of inspection required for an effective program of surveillance depends on a variety of factors including:

- Size or capacity of the dam;
- Condition of the dam; and
- Potential for damage resulting from failure of the dam (represented by the hazard category).

Adoption of the inspection frequency for a dam is the responsibility of the owner, though professional advice should be sought for large dams or those categorized under significant and high hazard dams.

Special Inspections

Special inspections will be required after unusual events such as earthquakes, major floods, rapid drawdown or volcanic activity. Special inspections should enable the dam owner to become aware of faults before partial or total failure occurs. Times when inspections are recommended are:

- before a predicted major rainstorm (check embankment, spillway and outlet pipe);
- during and after severe rainstorms (check embankment, spillway and outlet pipe);
- after any earthquake, whether directly felt on the owner's property or reported by local news media (check all aspects of the dam).

Inspections should be made during and after construction and also during and immediately after the first filling of the storage.

Dealing with Problems

A systematic program of safety surveillance should maximize the likelihood that any developing conditions likely to cause failure would be found before it is too late. Surveillance will also help early detection of problems before they become major repair bills. As identified earlier typical problems (many of which are treatable if found early enough) are most likely to fall into one of the following categories: seepage/leakage; erosion; cracking; deformation/movement; concrete structure defects; and spillway blockage.

Instrumentation and Monitoring

Instrumentation at a dam furnishes data to determine if the completed structure is functioning as intended, provides a continuing surveillance of the structure, and is an indicator of developments which may endanger its safety. Typical items instrumented or monitored include:

- profiles and condition, deformations, seepages or damp areas (visual)
- reservoir water levels which relate to dam loads and flood behavior
- local rainfall which relates to background seepages

- drainage and distinguishable seepages which relate to control of leakage water flow
- Clarity of seepage flow which relates to potential erosion of embankment or foundation material.
- water pressures within the dam and foundations which relate to structural behavior
- movement or deformation of the dam surface and internal structure which relates to structural behavior
- stresses within the dam which relate to structural behavior
- seismic acceleration which relates to structural behavior

5. Operation and Maintenance of Dams

Effective and ongoing operation, maintenance and surveillance procedures are essential to ensure the continued viability and safety of a dam and its structures. Poor operation, maintenance and surveillance will invariably result in abnormal deterioration, reduced life expectancy and possibility of failure. The proper operation, maintenance and surveillance of a dam provide protection for the owner and the general public. Furthermore, the cost of good operation, maintenance and surveillance procedures is small compared with the cost and consequences of a dam failure which could include major repairs, loss of life, property damage and litigation.

Because many small dams fail through lack of maintenance, it is prudent to have a definite and systematic maintenance plan.

The maintenance plan should be decided upon when the construction work on the dam is completed, and it will affect the life of the storage if not maintained properly. A good plan should include the practices to be used, as well as the approximate time of the year when they are applicable.

Annex 6: Physical Cultural Resources: Chance-Find Procedure

(A) Individual Small Artefact

If SSNRMP subproject excavation or construction encounters an individual small item of movable physical cultural resource (PCR) such as a coin, work can proceed but the artefact should be handed to the Community Mobilizer (CM). The CM will then perform the following tasks:

1. The CM will take the artefact to the Locality/State Office of Tourism and Archaeological Administration together with a brief written *Chance Finds Report* (copied to the PCU Safeguards Specialist) containing:
 - a. The date and time of discovery
 - b. Location of the discovery
 - c. Description of the PCR
 - d. Estimated weight and dimensions
2. The CM will then arrange for the work force to resume work as before.
3. If further artefacts are found in the same or similar location, the CM will follow procedure (B) below.

(B) PCR Site or Cluster of Artefacts

If SSNRMP subproject excavation or construction encounters substantial PCR such as an archaeological site, a historical site, a group of cultural or historic artefacts, a graveyards or individual grave(s) or any apparently human remains, the CM will perform the following tasks:

4. The CM will stop the construction activities in the immediate area of the chance find, and proceed with alternative works elsewhere within the subproject;
5. The CM will delineate the discovered site or area;
6. The CM will secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, the CM will arrange for day and night guards until the Locality/State Office of Tourism and Archaeological Administration can take over;
7. The CM will submit to the Locality/State Office of Tourism and Archaeological Administration and the PCU Safeguards Specialist a brief written *Chance Find Report*, containing:
 - a. The date and time of discovery
 - b. Location of the discovery
 - c. Description of the PCR
 - d. Estimated weight and dimensions
 - e. Temporary protection measures implemented.
8. The Locality/State Office of Tourism and Archaeological Administration and the PCU Safeguards Specialist will notify other concerned Federal / State / local authorities if necessary (e.g. traditional leader, police, etc.);
9. The Locality/State Office of Tourism and Archaeological Administration will be in charge of protecting and preserving the site before deciding on the appropriate procedures. This may require a preliminary evaluation of the findings to be performed by the archaeologists

or other experts of the state or national offices Tourism and Archaeological Administration, who will ascertain the significance and importance of the findings, according to the various criteria relevant to cultural heritage;

10. As soon as possible the Locality/State Office of Tourism and Archaeological Administration should notify the CM what measures are being taken to safeguard or remove the PCR, and whether, and when, work can resume in the concerned area. This notification may require the CM to change the design or layout of the subproject.
11. Implementation for this decision shall be communicated in writing to the PCU Safeguards Specialist and CM by the relevant local authorities. Construction or excavation work in the concerned area may be resumed only after such permission is received.