Environmental and Social Impact Assessment for the African Development Bank's Climate Proof Water for Food (W4F) Project in Rubkona and Mayom Counties in Unity State, Republic of South Sudan

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NOMENCLATURE

ACRONYM	MEANING
AfDB	African Development Bank
ASARECA	The Association for Strengthening Agricultural Research in Eastern and Central Africa
CBOs	Community Based Organizations
CRGT	Climate-Resilient Gender Transformative
CSA	Climate-Smart Agriculture
CSGTA	Climate- Smart Gender Transformative Agriculture
ESOHS	Environmental, Social, Occupational Health and Safety
E&S	Environmental and Social
ESA	Environmental and Social Assessment
ESIA	Environmental and Social Impact Assessment
FSL	Food Security and Livelihood
GT	Gender Transformative
ISS	Integrated Safeguards Systems
NGO	Non-Governmental Organization
NDC	Nationally Determined Contributions
OHS	Occupational Health and Safety
SDG	Sustainable Development Goal
SME	Small and Medium Enterprise
VSLA	Village Savings and Loan Association
WASH	Water, Sanitation and Hygiene
W4F	Water for Food

EXECUTIVE SUMMARY

Overview of the Project

The Climate Proof Water 4 Food project consists of two key components:

i. Food Security and Livelihoods (FSL): focusing on climate-smart, gender-transformative agriculture and value chain development.

ii. Water, Sanitation, and Hygiene (WASH): to focus on climate-resilient, gender-transformative, and inclusive access to safe water, sanitation, and hygiene, including flood control.

The Project is the result of collaboration between Plan International South Sudan, Ethiopia, Denmark, and Spain along with the Ministry of Finance, Agriculture, Water, and Energy at all levels, as well as local NGOs and research institutions in South Sudan.

The Project development objective is to strengthen social and environmental resilience through climate-smart, innovative, inclusive, gender-transformative, system-strengthening agriculture and WASH services in Unity State, South Sudan.

The Climate Proof Water 4 Food Project has two components with sub-components under each. The tables below summarizes the Project components and sub-components.

ARABIC TRANSLATION OF THE EXECUTIVE SUMMARY

الملخص التنفيذ

نظرة عامة عن المشروع

يتكون مشروع المياه المقاومة للمناخ من أجل الغذاء من عنصرين أساسيين:

أ. الأمن الغذائي وسبل العيش (FSL) : يركز على الزراعة الذكية مناخياً، والتحويلية للنوع الاجتماعي، وتطوير سلسلة القيمة.

ب. المياة و الصرف الصحي و النظافة (WASH): يركز علي مقاومة التغير المناخي و المحول النوعي الاجتماعي مع شمولية الوصول الامن للمياة و الصرف الصحي والنظافة، بما في ذلك السيطرة على الفيضانات.

المشروع هو نتيجة تعاون بين بلان إنترناشيونال جنوب السودان، إثيوبيا، الدنمارك، وإسبانيا بالإضافة إلى وزارة المالية والزراعة والمياه والطاقة على جميع المستويات، فضلاً عن المنظمات غير الحكومية المحلية والمؤسسات البحثية في جنوب السودان.

الهدف من تطوير المشروع هو تعزيز الصمود الاجتماعي والبيئي من خلال خدمات الزراعة والمياه والصرف الصحي والنظافة الذكية مناخياً والمبتكرة والشاملة والمحوّلة للنوع والمعززة للنظام في ولاية الوحدة بجنوب السودان.

مشروع المياه المقاومة للمناخ من أجل الغذاء (Climate Proof Water 4 Food) يحتوي على مكونين، كل منهما له مكوناته الفرعية الخاصة.

COMPONENT 1: CLIMATE-SMART AGRICULTURE AND VALUE CHAIN	
SUB-COMPONENT	**DESCRIPTION**
Sub-component 1-1: Climate-resilient, strengthened value-chain, income generation and land recovery.	i. 42,400 young women and men (50% women) individuals will have new or strengthened livelihoods through value chain integrated approaches, including extension packages, that improve product-to-market access and manage afforested areas that address interlinked challenges of food and income security and the need for climate adaptation. Agricultural value chain development's effectiveness is contingent on addressing factors such as ethnicity and gender. The threats of climate change affect various aspects of food systems, where women often bear the brunt of structural inequalities which limit their adaptive capacities. Restrictive gender norms limits women's participation in value chains causing unfair distribution of resources, limited control over land and power imbalances. This subcomponent incorporates GT approaches that engage both men and women to reshape traditional gender roles and expectations. Thus, activities will facilitate an equal access to tools, inputs, knowledge and finance; develop farmer organisations' capacity to meaningfully include young women, seed companies and market climate resilient seeds at seed fairs; ii. Work with 'Seed Growers Initiative' and the research institution, ASERECA on strengthening the national value chain for climate resilient seeds. It will advocate for the development and implementation of climate-resilient agricultural and diversification policies, establish/strengthen linkages and facilitate transaction between rural producers, entrepreneurs and shopkeepers in markets for sales of produce. It will mobilise young women/men to strengthen/establish SMEs through material/financial support, access to credit and marketing; establish VSLA and support with seed capital; facilitate access to credit to agro-pastoral communities and entrepreneurs; train in agri-business/vocations, including agro-processing, for youth, particularly young women. iii. Facilitate Attitude and Behaviour Change community dialogues on women farming and economic empowerment; develop capacity of youth on business skills, financial management, marketing. iv. Support young women and men and vulnerable groups to carry out beekeeping in afforested areas. The goal is to recover 850 hectares of land (aligned to CAW outcome 1.5)

COMPONENT 1: CLIMATE-SMART AGRICULTURE AND VALUE CHAIN	
SUB-COMPONENT	**DESCRIPTION**
	through afforestation, CSA and communal pasture enclosure promotion. Activities like planting pulses will support nursery sites for seedling production and produce/plant 450,000 multi-purpose trees to protect against soil erosion, floodings and wind.
Sub-component 1-2: Climate-resilient improved agricultural inputs, training and system strengthening.	v. 53,000 farmers will practice improved, climate-smart agriculture (CAW indicator 1.3) and produce 1,345 metric tons of food. Activities will: train farmers and farmers organisations in research-based, low cost CRA practices codeveloped with CBOs, national and local government offices; work with pastoral and farmer field schools for training, including seasonal camps on CSA and agro-processing and value addition for income diversification. vi. Improve irrigation methods/access to water for agricultural production from Component 2 activities; provide climate-resilient crops/seeds locally developed and introduced by government (i.e. drought and flood resistant varieties of sorghum, sesame, millet, pulses, groundnut, amaranths, jute mallow, onion, tomato, eggplant) and other inputs/implements for CSA. vii. Provide capacity development training for government experts and extension agents on improved agronomic practice on climate resilient approaches to cascade to the community; and establish demonstration sites for CSA practice.

COMPONENT 2: INCLUSIVE, GENDER TRANSFORMATIVE, INTEGRATED FLOOD- AND DROUGHT-ADAPTED WATER RESOURCE MANAGEMENT AND ACCESS	
SUB-COMPONENT	**DESCRIPTION**
Sub-component 2-1: Improved inclusive access to and gender transformative management of safe water and climate-resilient floodwater-controlling systems	Four (4) solar-powered water supply and flood control systems will be constructed or rehabilitated, and their corresponding water governance systems will be strengthened to become Gender Transformative GT and well-functioning. Activities will construct water conservation structures for flood and drought mitigation (e.g. small dams, sand dikes); construct solar-panel driven surface water pump systems applied to move water from flooded areas; establish Solar Powered multi-user Water Supply Systems (SPWSS) – tTEM testing, drilling borehole/shallow well with raised platforms, supplying and installing the solar system, surface pumps; link water captured to new irrigation systems for agricultural production (Component 1). Establish, rehabilitate and solarise existing non-functional ground water systems; strengthen WASH governance systems to ensure

COMPONENT 2: INCLUSIVE, GENDER TRANSFORMATIVE, INTEGRATED FLOOD- AND DROUGHT-ADAPTED WATER RESOURCE MANAGEMENT AND ACCESS	
SUB-COMPONENT	**DESCRIPTION**
	female inclusion in decision making and improve gender attitudes and technical capacity for operations and management; set up multiple user systems to guarantee fair, inclusive water distribution and avoid conflict, advocate for increased investment in water resource management and infrastructure.
Sub-component 2-2: Improved access to climate-adapted, gender-transformative sanitation	a) 24,500 (50% women) will benefit from the construction of flood-resistant sanitation facilities reducing water pollution (elevated latrines, pit latrines with raised floors). b) Establish integrated proper drainage system around sanitation system; establish systems to make compost out of faecal and organic waste and biogas for clean cooking. c) Establish/strengthen youth Sanitation Marketing (SanMark) groups. System-strengthening/transforming interventions across the two components will include activities to: ○ Support establishment/strengthening of by-laws on water point and sanitation management, cattle, and farm management; engage national line ministries to decentralise policies. ○ Work with local authorities to strengthen their capacities to develop own policies and frameworks at their level; co-develop CSA training with CBOs and local/national government.

Project Alternatives

No Project Alternative

The local administration lacks the technological systems, irrigation, and water capture solutions necessary to restore flooded farmlands in a sustainable manner and boost agricultural productivity. The Climate Proof Water 4 Food Project aim to address these shortcomings through strengthening the adaptation and resilience to extreme weather events of people in climate-vulnerable, food insecure and water-scarce communities in Unity State. Without the implementation of the Project, the current problems of food insecurity, poor sanitation and hygiene and limited supply of clean water will persist, and the already dire situation and vulnerabilities will be compounded.

The No Project Alternative is therefore not in the interest of food security, water, sanitation, and hygiene (WASH) and climate resilience and has been discarded as not viable.

The following alternatives were considered as part of the Project design. However, they were rejected for varied reasons as detailed in the table below.

ALTERNATIVE	DESCRIPTION	REASON FOR REJECTION

Alternative 1	Early warning systems to predict extreme weather events.	Already in place coming out of Nairobi, and additional improvement is very technical. The focus on adaption in the project will ensure better preparedness for weather shocks.
Alternative 2	Fishing as a means to strengthen food security	This might still be included but more local knowledge is needed once the project's planned flood management systems are designed and put in place.
Alternative 3	Farmer insurance schemes against loss and damage to farmlands	Important solution, however, the focus is more on prevention of damage and building resilience through increased physical adaptation and economic resilience to shocks.

Project Site and Baseline Conditions

The Project areas are in Rubkona (i.e., Rotriak, Kaljak, Nhialdiu, Budang) and Mayom (i.e., Ruathnyibuol, Kurbona, Wangkei, Wurach) counties in Unity State, South Sudan.

Rubkona County, is in northern Unity State covering an area of 14,032.9 km², sharing borders with Panrieng County to the north, Koch County to the south, Mayom County to the west and Guit County to the south-east. It is the ninth county in Unity State, with B58 highway connecting it to Yirol East in Lakes state and extending to Sudan's Heglig area. Accessing Rubkona County can be achieved by air through flights from Juba to Bentiu, or by road through Juba – Rumbek - Wau Road and barges from Juba through Bor Shambe and Adok river port. However, extensive flooding in recent years has affected access roads. Rubkona County's strategic geographical location at the confluence of the White Nile and Bahr el Ghazal rivers leads to significant flooding.

Mayom County is located in Unity State covering an area of 5,795 km² (9°13′27″N latitude and 29°10′00″E). It borders Abiemnhom County to the north, Rubkona County to the east, and Koch County to the south-east. It also borders Warrap State (Twic, Gogrial East and Tonj North Counties) to the west. The Malual, Kiir (Naam) and Lol rivers run through the county, converging near Mayom Town, and the Jur River is also located at its southeast boundary. Mayom is access primarily by road from Robkona (Bentiu). However, road conditions vary significantly, especially during the rainy season when flooding may occur.

The study area is geographically positioned within a low-lying floodplain in the Nile Basin, which contributes to its vulnerability to seasonal inundation. The landscape is dominated by expansive wetlands and sluggish surface water flow, with elevated groundwater levels persisting even during the dry season. The hydrography of the region features a complex drainage network composed of dendritic, parallel, anastomosing, and braided channel systems. These interconnected drainage patterns eventually converge into major river channels, including the Bahr el Ghazal River, which runs adjacent to Rubkona town.

The Project area of influence (AoI) is characterized by open short grasslands with scattered trees and shrubs. The endangered white pelican (Pelecanus onocrotalus) was observed in the flooded area in

Robkona. The marabou stork (family Ciconiidae) and the hooded vulture, which is critically endangered, were observed in Bentiu town scavenging on household waste dumped in the open.

Populations exceed 390,000. Communities rely heavily on farming, fishing, and livestock. Food insecurity is widespread. Over 40% of water points are non-functional and open defecation is common. Health systems face recurrent outbreaks (cholera, malaria, and measles). Gender inequality remains high in the Project area of influence.

Institutional and Legal Framework

National Institutional Framework

SECTOR	INSTITUTION	MANDATE
Environment	Ministry of Environment and Forestry	• Develop and execute policies and programmes on Environmental protection and conservation throughout Southern Sudan. • Establish the GoSS Environmental policy and monitor its effectiveness and impact. • Develop programmes, in collaboration with other ministries for the control of Environmental hazards and pollution as a means of preventing Environmental degradation and control of desertification. • Develop Environmental Impact Assessments standard methodologies and procedures for GoSS Development polices and for private sector investments. • Advise and support State and Local Governments in their responsibilities for environment and build their capacity to assume functions vested by the ICSS and GoSS Policy. • Coordinate with Environmental liaison units in Lead Agencies, review and approve Environmental Impact Assessment reports of proposed projects and issue Environmental Impact Assessment Licenses. • Review and approve Environmental Audit Reports. • Monitor and evaluate.
	Ministry of Wildlife Conservation and Tourism	• Manages national parks and wildlife resources, which are critical for biodiversity and ecosystems.
	Ministry of Water Resources and Irrigation	• Manages water resources, a key environmental asset.
Agriculture	Ministry of Agriculture and Food Security (MAFS)	• The ministry is mandated to develop and implement policies, objectives and strategies for development of agricultural sector in the areas of Food Security, Agriculture, Forestry, Rural development and Cooperatives in South Sudan. • Plays the role of promoting productivity of agriculture and forestry for economic growth and development of South Sudan. • Promotes and enhances the formation of cooperative societies and community-based organizations as vehicles of community empowerment and poverty eradication.

SECTOR	INSTITUTION	MANDATE
	Ministry of Water Resources and Irrigation (MWRI)	• Implementing irrigation projects to support agriculture. • The ministry plays a crucial role in ensuring sustainable water management and supporting the agricultural sector in South Sudan.
WASH	Ministry of Water Resources and Irrigation (MWRI)	• Developing and managing water resources. • Addressing water-related challenges in the country.
	Ministry of Health (MoH)	• Leads on sanitation and hygiene promotion as a public health intervention. Its Environmental Health department is key.
Gender	Ministry of Gender, Child and Social Welfare	• Develop policies and programmes for the promotion of gender equality, women's empowerment, child protection as well as social protection and social welfare of other vulnerable groups. • Mainstreaming gender equality, and disability into national development process. • Ensure the welfare, promotion and respect of the rights of persons with disabilities, children and other vulnerable groups; • Manage programmes and institutions for children and social welfare. • Improve working environment by strengthening the structures, systems and procedures, human and administrative capacity for efficient service delivery. • Strengthen monitoring and evaluation, research, documentation, planning and budgeting.
	The Directorate of Gender	• Responsible for the formulation of gender-related policies and regulatory frameworks, gender mainstreaming in public and private institutions, gender-responsive, governance, socio-economic empowerment; promotion and protection of women's rights.

Policy and Legal Framework

LEGISLATION	DESCRIPTION
The Constitution of the Republic of South Sudan, 2011	The Constitution of the Republic of South Sudan of 2011 includes numerous provisions that have a bearing on the environment. Article 41 (1) provides that the people of South Sudan shall have a right to a clean and healthy environment and (2) that every person shall be obliged to protect the environment and (3) that future generations shall have the right to inherit an environment protected for the benefit of present and

LEGISLATION	DESCRIPTION
	future generations. Specific measures to ensure the objectives above include: The prevention of pollution and ecological degradation, the promotion of conservation and the securing of ecologically sustainable development and the use of natural resources while promoting rational economic and social development to protect the biodiversity of South Sudan. Furthermore, Article 166 (6) expects local governments to involve communities in decision-making in the promotion of a safe and healthy environment. Thus, the basis of undertaking ESIA for the project activities to comply with the spirit of the Constitution and the consequent policies and legislation that are either formulated or in the process of formulation. **Relation to the Project:** The project's construction, operation and decommissioning activities are associated with both positive and negative environmental and social impacts and will therefore need to be undertaken in a manner that: - Promotes sustainable development; and - Protects the right to a clean and healthy environment for communities and persons in the project host area(s).
The Forests and Renewable Natural Resources Act, 2002	The Forests and Renewable Natural Resources Act of 2002 is aimed at promoting the sustainable management and conservation of forests and other renewable natural resources in South Sudan. The Act establishes guidelines for the protection, utilization, and sustainable exploitation of forest resources, including measures to prevent illegal logging and deforestation. It outlines the roles and responsibilities of relevant government agencies, local communities, and stakeholders in managing and preserving forest ecosystems. **Relation to the Project:** There is need to safeguard natural resources such as trees during project implementation.
The Draft Environmental Protection Bill, 2015	This legislation aims to protect the Environment in South Sudan and to promote ecologically sustainable development that improves the quality of life. It grants the right to a decent environment to every person and the attendant right to bring an action to enforce that right if it is threatened because of an activity or an omission. Section 18 of the South Sudan Draft Environmental and Protection Bill introduces the requirement for Environmental Impact Assessments. Section 20 intends to introduce the requirement for Environmental Monitoring. Section 32 of the Draft Environment Protection Bill, 2015 introduces the requirement for Environmental Audits. The Bill empowers the Ministry of Environment and Forestry to supervise and coordinate all matters relating to the environment and to be the principal instrument of government in the implementation of all policies relating to the environment including biodiversity.

LEGISLATION	DESCRIPTION
	Relation to the Project: The Bill is key to addressing pollution prevention, control and waste management since activities associated with the implementation of the project will generate waste. It is the duty of the Ministry of Environment and Forestry to oversee aspects related to protection of the environment in which the project is being undertaken.
The Environmental Protection Act, 2001	This legislation was in force before South Sudan gained her independence. The Act is not legally binding in South Sudan although it remains an important piece of legislation that is used to give guidance in ensuring environmental conservation in the country. Its principal objectives are: (i) To protect the environment in its holistic definition for the realization of sustainable development; (ii) To improve the environment while ensuring sustainable exploitation of natural resources; (iii) To create a link between environmental and developmental issues, and to empower concerned national authorities and organs to assume an effective role in environmental protection. Section III of the Act outlines general policies and principles regarding the protection of the environment. Article 17 of the Act required that any individual who intends to implement any project that was likely to have a negative impact on the environment, should present an Environmental Impact Assessment (EIA) for approval by the Monitoring and Evaluation Committee of the Higher Commission for Environment and Natural Resources (HCENR) of the then Federal Government of Sudan. **Relation to the Project:** Environmental and Social impacts of the respective Climate Proof Water 4 Food Project should be addressed in a proactive manner by subjecting the respective projects to environmental and assessments prior to their commencement.
The Public Health (Water and Sanitation) Act, 2008	Emphasizes the prevention of the pollution of air and water and also encourages improvement in sanitation. Key provisions include the protection of the sanitation of the environment, and it encompasses the measure to address the pollution of water and air. The following are measures geared towards control of pollution of water: Measures to prevent pollution of water for consumption; Measures destined to prevent pollution of potable water; Anyone who offers the public water to drink or human food, and which includes frozen food should ensure that the water conforms to the portability regulations; Management and disposal of hazardous wastes and storage of wastes on the premises of waste generators. The Public Health Act (2008) also provides the need for the protection of pollution of water through the enforcement of regulations and measures necessary to combat all elements of pollution and protect the natural level of the environment and public health.

LEGISLATION	DESCRIPTION
	Relation to the Project: The project activities will cause air pollution and potentially also water contamination.
Land Act, 2009	The Land Act of 2009 is a comprehensive legislation that governs the management, administration, and use of land resources in South Sudan. The act establishes a framework for land tenure, defining the rights and responsibilities of individuals and communities regarding land ownership, acquisition, and transfer. It promotes customary land rights and recognizes the role of traditional authorities in land administration. The act also provides guidelines for land registration, dispute resolution, and land use planning. It aims to ensure equitable access to land, protect the rights of vulnerable groups, and promote sustainable land management practices for the social and economic development of South Sudan. **Relation to the Project:** The project should seek to fairly and promptly compensate persons/communities whose land will be earmarked to host project components/activities. Additionally, during the implementation of the project, local communities (affected communities) must be adequately consulted.
Labour Act No. 64, 2017	The Labour Act (2017) is the primary law protecting the employment rights of individual workers. The Labour Act covers the protection of wages, contracts, employment terms and conditions, and recruitment. It also classifies workers and special worker types. **Relation to the Project:** Several people will be engaged because of the implementation of the project; therefore health, safety, welfare, age of employment and appropriate training of persons employed in workplaces should be considered.
Water Bill, 2013	The Water Bill (2013) provides for the protection of water sources from pollution, erosion or any other adverse effects by creating Protected Zones within a catchment draining to, or above any water facility forming part of a water supply or any catchment, lake, reservoir, aquifer, wetland, spring, or any other source of water (section 34). The Bill aims to develop procedures for prioritizing allocation of water resources for different social, economic and environmental uses, efficiency, system reliability and environmental sustainability principles. It also aims to conserve available water resources, to manage water quality and to prevent pollution of ground and surface waters; manage floods and droughts and mitigate water-related disasters, and; establish appropriate management structures including mechanisms for inter-sectoral coordination and stakeholder participation. **Relation to the Project:** The project is expected to be implementation in some flooded areas and water bodies. The potential impact on swamps

LEGISLATION	DESCRIPTION
	or wet areas, if present along the line corridor, should be minimized or avoided.

Relevant National Policy Framework

POLICY	DESCRIPTION
South Sudan Vision 2040	The foundation document guiding the future development of South Sudan is the entitled "Towards Freedom, Equality, Justice, Peace and Prosperity for All". The overarching goals of Vision 2040 are to create a vibrant, competitive and diversified economy driven by agriculture, industry, mining, tourism and services that attracts investors. The Vision does also promise the Government of South Sudan's commitment to sustainable environmental management alongside limiting environmental pollution due to other development programs such as industrialization. The Vision emphasizes the need to minimize greenhouse gas emissions as a measure against climate change while building on traditional knowledge and supporting community-based resilience. The vision is well capture in the current project as implementation of the said project will lead towards freedom, equality, justice, peace and prosperity within the project's area of influence as well as create a vibrant, competitive and diversified economy driven by agriculture, industry and services. The medium-term development plan (Revised National Development Strategy for South Sudan - 2021-2024) includes; i. Establish and/or strengthening institutions for transparent, accountable, and inclusive governance. ii. Foster macroeconomic stability and lay foundations for the diversification of the economy. iii. Build critical infrastructure for sustainable development, including roads, public buildings and broadband capability iv. Increase support to the social sector for human capital development and protect the vulnerable population, to leave no one behind. v. Mainstream gender in all development policies and programs and empower women and youth as drivers of growth and nation-building. The project aims to break fragility, build lasting resilience, including to climate variations and shocks, and an inclusive agricultural economy, with robust engagement of women, youth and the private sector. This are the key elements in the project activities it is envisaged that to technology employed in the project will go a long way in enhancing climate change adaptation in the community and reduce economic shocks and develop an inclusive agricultural economy.

POLICY	DESCRIPTION
	Relation to the Project: The policy is to create a vibrant, competitive and diversified economy driven by agriculture, industry, mining, tourism and services that attracts investors. The building of critical infrastructure for sustainable development, that includes boreholes, sanitary facilities, energy, is cited among the key objectives that the project has to deliver as part of South Sudan's Vision 2040 aspirations. The proposed Climate Proof Water 4 Food project and its socio-economic transformation aspects tie in with this aspiration.
Environment Policy of South Sudan, 2016	The South Sudan National Environmental Policy provides guidelines on how to carry out environmental and social screening/assessment, including Initial Environmental Examinations (IEE), Environmental Impact Assessment (EIA), Social Impact Assessment (SIA) and preparing Environmental Management Plan (EMP) to mitigate project/program induced negative environmental/social impacts and to enhance positive environmental/social aspects. **Relation to the Project:** Implementation of the Climate Proof Water 4 Food project falls in the category of projects that require an ESIA. The Environment Policy will guide and direct all issues relating to environment matters for the Project.
The Draft National Land Policy 2023	The policy emphasizes a country in which land and land-based resources are managed efficiently and sustainably to promote urbanization and national economic development. The vision is underpinned sustainable utilization of land and land-based resources; development control to reconcile competing land uses in an equitable and sustainable manner; diversity of land use and land-based livelihoods; and planned human settlement in both urban and rural areas. The goal and overall objective of the National Land Policy is respectively to ensure that land and land-based resources are held, used, and managed efficiently, productively and sustainably for poverty reduction, wealth creations and overall socio-economic development to enhance the welfare of the people of South Sudan and to strengthen tenure security over land and land-based resources for individuals and communities in South Sudan. **Relation to the Project:** The project will only take place on government land/community land, and the project will be implemented within these areas/sites. It will be confirmed that the location of the projects specific sites is in fact on government land. If not, then proper compensation in accordance with national legislation and AfDB safeguards must be completed.
South Sudan National Women's	The South Sudan National Women's Strategy document is a tool that is designed to be used by women and men from different sector, institutions and organizations, which are committed to mainstream gender and

POLICY	DESCRIPTION
Strategy, 2016	provide for gender equality in different sectors of the society. Thorough this strategy, it shade more light on the existing opportunity for women based on the gender competence among the women and women's rights as equal citizens of South Sudan. **Relation to the Project:** Women related concerns such as Gender Based Violence, sexual harassment, gender discrimination among others that may be associated with the development of the project should be addressed in line with the policy to ensure that the project objectives/desired benefits are attained
Forest Policy, 2019	The Forestry policy addresses issues such as deforestation, reforestation, community participation, biodiversity conservation, and sustainable livelihoods. **Relation to the Project:** Implementation of the Climate Proof Water 4 Food project could affect sensitive ecosystems such as forests and swamps. Activities that involve removal or conversion of forests and other natural resources, that may cause long term, permanent and/or irreversible loss of major forest habitats including habitats of wildlife and significant loss of biodiversity are not eligible for financing.
National Biodiversity Strategy and Action Plan (2018 – 2027)	The National Biodiversity Strategy and Action Plan (2018-2027) is a comprehensive document that outlines the strategic framework and actions to conserve and sustainably manage biodiversity in the country. It sets out goals and targets to address the loss of biodiversity, protect ecosystems, and promote the sustainable use of natural resources. Overall, the National Biodiversity Strategy and Action Plan serves as a roadmap for guiding biodiversity conservation efforts and promoting sustainable development in the specified timeframe. **Relation to the Project:** Implementation of the Climate Proof Water 4 Food project could affect biodiversity. Projects that interfers or cause some ecological disturbances to biodiversity have to be avoided. Hence, the project be implemented sustainably to protect and conserve the biodiversity of the area.
The National Occupational Safety and Health Policy, 2022	The National Health Policy 2016-2025 aims to ensure improved health services by defining new paradigms for health service delivery, health financing, strategic information, leadership and governance, human resources for health, and access to essential medicines. The guiding principles include: (i) health and health services as a human right; (ii) primary health care approach; (iii) decentralization; (iv) partnerships; (v) international conventions and guidance; (vi) gender mainstreaming; (vii) community participation; (viii) efficiency and effectiveness; (ix) respect for values and cultures. The Climate Proof Water 4 Food project is

POLICY	DESCRIPTION
	aligned with the need and health priorities by improving service delivery needs for food and nutrition security as well as preventing any adverse impact due to phytosanitary requirements. **Relation to the Project**: This policy is particularly relevant for the OHS of the Project. Especially the construction crews and subsequently, the maintenance personnel. The policy will also have relevance in mitigation measures that protect the public from health and safety impacts because of project construction and subsequent operation and maintenance activities.
The National Gender Policy and Strategic Plan, 2013	The National Gender Policy (NGP) of South Sudan, along with its Strategic Plan (2023-2027), is the overarching framework that guides the government's commitment to achieving gender equality and women's empowerment across all sectors of society. Its primary purpose is to eliminate gender-based discrimination and inequality by mainstreaming gender perspectives into all national laws, policies, programs, and institutions. It is a foundational document that provides the "why" and "what" for gender equality, while the Strategic Plan outlines the "how," with specific, measurable actions over a five-year period. The policy is anchored in the Transitional Constitution of South Sudan (2011), which guarantees equal rights for men and women, and is aligned with regional and international commitments like the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the Sustainable Development Goals (SDGs). **Relation to the Project:** Gender related concerns such as Gender Based Violence, sexual harassment, gender discrimination among others that may be associated with the development of the project should be addressed in line with the policy to ensure that the project objectives/desired benefits are attained.
National Action Plan on Women Peace and Security (WPS) 2023-2027	The South Sudan National Action Plan (NAP) on Women, Peace, and Security (2023-2027) is a strategic framework adopted by the Revitalized Transitional Government of National Unity (R-TGoNU) to implement the United Nations Security Council Resolution (UNSCR) 1325 and subsequent related resolutions at the national level. Its primary goal is to ensure that women participate meaningfully in all phases of peacebuilding, conflict resolution, and governance, and that they are protected from the specific impacts of conflict. This NAP is a

POLICY	DESCRIPTION
	crucial instrument for translating South Sudan's commitments to gender equality and women's empowerment into concrete actions, especially within the ongoing peace process guided by the Revitalized Agreement on the Resolution of the Conflict in South Sudan (R-ARCSS). **Relation to the Project**: This plan is relevant as far as women, peace and security is concerned. As this project will involve women, their participation and security is paramount.
National Development Strategy (NDS)	The South Sudan National Development Strategy (NDS) 2018-2021 and its accompanying Strategic Action Plan (SAP) are the core documents outlining the government's vision for transforming the country from a state of fragility and conflict to one of resilience, stability, and prosperity. It's crucial to understand that these plans were developed during a critical period following the signing of the Revitalized Agreement on the Resolution of the Conflict in South Sudan (R-ARCSS) in 2018. Therefore, they are inherently focused on nation-building, peace consolidation, and laying the foundation for sustainable development. **Relation to the Project:** This strategy is relevant as far as the project is concerned. As this project is a sustainable development project for the communities.
Southern Sudan Water Policy of 2007	The formulation of Southern Sudan's water policy of 2007 was done through participation and wide consultation, including representation from of political, technical, managerial and other key stakeholders. The water policy presents a shared vision for water sector development and water management led by the Ministry of Water Resources and Irrigation (MWRI). It reflects broad consensus on the basic objectives and principles related to water management and services. It also represents an important first step towards the establishment of a regulatory framework for utilization and management of water resources; in addition to effective delivery of water services. The Government is committed to ensuring rapidly growing urban populations benefit from access to safe, affordable and reliable water supply and sanitation services. **Relation to the Project**: The policy is the guiding principle of managing water resources in the country. The overall objective of the policy is to ensure efficient development and management of urban water supply and sanitation. The Climate Proof Water 4 Food project is expected to be implemented in some water bodies or flooded areas. The potential impact on swamps or wet areas, if present along the project area of influence (AoI), should be minimized or avoided.

Stakeholder Engagement

Stakeholder engagement has been implemented as part of the ESIA preparation. Engagement undertaken to date included key informant interviews, small group meetings, and focus group discussions. Issues raised by stakeholders related to land, water and sanitation, flooding and physical displacement, and food insecurity. A Stakeholder Engagement Plan (SEP) will be prepared for the Project setting out the process for undertaking engagement and consultation with stakeholders.

Between 2nd September 2025 and 4th September 2025 and between 10th September 2025 and 12th September 2025. the ESIA Consultant carried out group meetings, key informant interviews, and focus group discussions in Rubkona and Mayom respectively. The following stakeholders were engaged in Rubkona: Relief & Rehabilitation Commission (RRC), County WASH Director, County Agriculture Director Representative, Unity State Ministry of Agriculture, Environment & Forestry, Unity State Director General – Ministry of Housing, Land & Public Utilities, Community members, Women and Youth, IOM, UN Food and Agriculture Organization (FAO) and Welthungerhilfe (WHH). The following stakeholders were engaged in Mayom: Local community members and Focus Group Discussions (FGD) with women.

Key concerns which have arisen during stakeholder engagement to date in Rubknona are summarized in Table 7-2 & Table 7-3. Most of the concerns centered of insufficient food, hygience/sanitation facilities, flood, water, scarcity of land as most of the areas are flooded, fishing to be considered in this project, water borne diseases are prevalent in these project areas and others.

ESIA Results

The significance of potential Project impacts has been assessed, taking into account embedded mitigations (including good international industry practices) that will be implemented by the Project. Where necessary, this ESIA also developed additional mitigation measures to reduce the potential impacts to as low as reasonably practicable.

Overall, the ESIA found that with implementation of the full suite of mitigation measures, the Climate Proof Water 4 Food Project will result in insignificant or low significance negative impacts.

The Climate Proof Water 4 Food Project is also predicted to result in beneficial socio-economic impacts associated with the provision of clean drinking water and sanitation facilities and improved food security and climate resilience.

The table below summarizes the findings of the impact assessment.

E&S MPACT	POTENTIAL IMPACT	RESIDUAL IMPACT SIGNIFICANCE
Project-relate labour influx	• Social conflicts within and between communities, which may be affected by cultural differences between the labor influx and the local communities, may arise or escalate, and there may be a potential for increased spread of communicable diseases, and increased drug and alcohol use, violence, rates of illicit behavior and crime. • Increased demand for local resources, such as health care, housing, clean water, food production, etc., will put a strain on already scarce resources leading to inadequate services for both locals and new employees as well as environmental degradation (e.g., poor waste management and pollution).	Moderate

E&S MPACT	POTENTIAL IMPACT	RESIDUAL IMPACT SIGNIFICANCE
	• Employment opportunities may favour skilled workers from outside the community, exacerbating local economic disparities and may result in conflict and disrupt local community cohesion. • New employment opportunities may lead to changes in traditional lifestyles and cultural practices, impacting community identity.	
Conflict over land	Conflict is emerging between communities over land that has been reclaimed from flooding.	Insignificant
Waste management	Construction and rehabilitation work will generate significant amount of waste. Unity State lacks facility for disposal of agrichemical waste.	Significant
Noise & vibration	Disturbance from powered construction machines and equipment will cause disturbance to residential homes near projects sites.	Insignificant
Occupational health and safety	Project construction/rehabilitation activities present OHS hazards and risk	Insignificant
Agrichemical/pesticide use	The use of banned or unregistered pesticides, unapproved uses, incorrect application methods, rates, and timing, occupational exposure from the lack of personal protective equipment, early re-entry by farmers in the fields, unsafe storage, onward sale of re-packaged or out of date pesticides, preparing/mixing chemicals in the inappropriate places (e.g. near water), pesticides in runoff from fields and from cleaning equipment near or in water; re-use of containers for water and food storage.	Significant
Community health and safety	Stagnant water in the small dams and dikes offer breeding ground for waterborne disease vector.	Moderate

Impact Mitigation Measures

Good international industry practices, additional mitigation and enhancement measures form the commitments register of this ESIA. Realization of these measures will be facilitated by the ESMP and a suite of management plans, which will be developed by Plan International, and their implementation will be regularly monitored.

Environmental and Social Management Plan (ESMP)

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT
Project-related labour influx	• Sourcing of local workforce. • Develop and implement a Labour Management Plan incorporating key components such as worker identification, labour risk assessment, labour procedure, occupational health and safety, grievance mechanism and contractor management. • Contractor to hire workers through recruitment offices and avoid hiring “at the gate” to discourage spontaneous influx of job seekers. • Communication on hiring criteria, minimum age, and applicable laws. • Introduction of sanctions (e.g., dismissal) for workers involved in criminal activities. • Provision of cultural sensitization training for workers regarding engagement with local community. • Establishment and operation of an effective grievance mechanism accessible to community members to facilitate early identification of problems and targeted mitigating interventions by the Project. • Code of Conduct to be developed, incorporated into workers’ contracts, and training and socialization on it provided to workers. • Provision of training and socialization of Code of Conduct for workers in local language(s). • Mandatory and regular training for workers on required lawful conduct in local community and legal consequences for failure to comply with laws. • Ensuring that children and minors are not employed directly or indirectly on the project.	Contract duration for civil works and borehole drilling and rehabilitation	Civil Works Contractor(s) Borehole Drilling and Rehabilitation Contractor	High
Conflict over land reclaimed from flooding	• Work in closely with the County Government and other stakeholders involved in the land allocation and the allocated families to minimize the risk of conflict. • Project participants to be selected after extensive engagement and consultation with the local community and leadership and their participation in the selection process. • Collaborate with IOM Migration during the implementation of the flood management system since they have extensive	Duration of the Project	Plan International and Coalition for Humanity	High

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT
	experience in the Project area and may support in overcoming the challenges of conflict over land by providing pointers on resolving the issue.			
Waste management	• Implement the waste hierarchy (avoid, source reduction & reuse, recycle, recover, treat, & dispose) as a strategy for waste management. • Sort waste into different streams or categories such biodegradable, recyclable and non-recyclable, and hazardous waste. • Provide waste collection bin at project site for proper collection of different waste streams. Ensure the bins are colour-coded or distinctively labeled. • Maintain records of waste types generated and how they were disposed off. • Keep hazardous waste (agricultural inputs containers or expired agrochemicals) in a designated store with restricted access as the Project explore appropriate disposal methods. • Prohibit open burning of waste as a waste disposal strategy. • Train workers on good waste management practices.	Contract duration for civil works and borehole drilling and rehabilitation Project Implementation Duration	Civil Works Contractor(s) Borehole Drilling and Rehabilitation Contractor Plan International and Coalition for Humanity	Moderate
Occupational health and safety	• Conduct a thorough risk assessment before commencing any work near water. Identify potential hazards and implement measures to control and mitigate risks. • Safeguard any machine part, function, or process that might cause injury when possible. • Develop and implement machine safety guidelines and train workers on machine safety for the machines they use. • Provide hydration stations, scheduling breaks in shaded areas, using appropriate clothing for weather conditions. • Maintain good housekeeping at the Project site to prevent trip and fall hazards. • Implement a routine inspection program to identify and address hazards, ensure compliance with safety standards and evaluate current practices for continuous improvement. • Foster a safety-first culture by encouraging open communication about hazards and providing a reporting system for workers to voice concerns. • Provide continuous safety training to keep workers informed about hazards and safe practices.	Contract duration for civil works and borehole drilling and rehabilitation	Civil Works Contractor(s) Borehole Drilling and Rehabilitation Contractor	High

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT
	• Develop emergency response plans tailored to common site hazards, including clear procedures, designated roles and regular drills. • Ensure proper grounding of electrical systems and conducting regular maintenance of electrical tools and equipment as well as training workers on electrical safety practices. • Erect barriers and use clear signage to communicate the hazards/risks. This helps to prevent unauthorized access and alerts workers to potential hazards.			
Noise and vibrations	• Limit hours of operation for certain high impact construction activities. • Control noise at source by building noise barriers such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receptors. • Avoid nighttime activities. Sensitivity to noise increases during the nighttime hours. • Site equipment on the construction site as far away from noise-sensitive sites as possible. • Combine noisy operations so they occur in the same time period. The total noise level produced will not be significantly greater than the level produced if the operations were performed separately • All workers involved with the construction works will be protected from excessive noise exposure by provision of personal protective equipment (PPE) such as earplugs and earmuffs.	Contract duration for civil works and borehole drilling and rehabilitation	Civil Works Contractor(s) Borehole Drilling and Rehabilitation Contractor	Low
Agrochemical/pesticide use and management	• Promote the use of organic fertilizers and biological pest control methods such as natural enemies and pathogens. • Establish and implement Integrated Pest Management (IPM). Train extension officers and farmer on IPM. • Develop and deliver appropriate extension service that include capacity building and training farmers of proper storage, handling and use agrochemicals.	Project Implementation Duration	Plan International and Coalition for Humanity	Moderate
Community health and safety	• Locate the small dams and sand dikes away from human settlements. • Create community awareness creation and education campaign to sensitize on the dangers of water-borne diseases in collaboration with partners in the health sector.	Project Implementation Duration	Plan International and Coalition for Humanity	Low

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT
	• Prohibit direct access of small dams and sand dikes by erecting fencing or growing trees around them, which will reduce the likelihood of accidents and help prevent contamination.			

Environmental and Social Monitoring Plan (ESMP)

ENVIRONMENTAL & SOCIAL ASPECT	MONITORING PARAMETER	METHOD / MEASUREMENT	LOCATION	FREQUENCY	RESPONSIBILITY	ESTIMATED COST (USD)
Labour	Number of employees; Employee grievances	Review of payroll/contracts; HR grievance register	Mayom & Rubkona	Bi-annually / Monthly	Plan Int'l & CH	USD 3k / year (minimal admin cost, mostly staff time)
Water Quality	Physical & chemical testing against WHO standards	Sample from boreholes + lab testing	New & rehabilitated boreholes	Bi-annually	Plan Int'l & CH	USD 2.5k / year (lab fees + transport)
Health & Safety Incidents	Reported incidents (fatalities, major, lost time, near misses)	Review of incident register	Mayom & Rubkona	Monthly	Plan Int'l & CH + Contractors	USD 5k / year (PPE refresher, reporting materials)
Food Security & Livelihood	Performance KPIs	Village assessment surveys	Mayom & Rubkona	Annually	Plan Int'l & CH + External Consultant	USD 15k / year (surveys + part-time consultant support)
Community Grievances	No. reported & resolved	External grievance register	Mayom & Rubkona	Monthly	Plan Int'l & CH	USD 2k / year (grievance boxes, meetings, staff facilitation)
Waste Management	Amount & type of waste generated	Waste management assessment	Mayom & Rubkona	Bi-annually / Monthly	Plan Int'l & CH	USD 5k / year (assessments, safe disposal support)

ENVIRONMENTAL & SOCIAL ASPECT	MONITORING PARAMETER	METHOD / MEASUREMENT	LOCATION	FREQUENCY	RESPONSIBILITY	ESTIMATED COST (USD)
Agrochemicals / Pesticides Use	Quantity & types used Storage, Handling & Use	Inventory review Training Logs	Mayom & Rubkona	Bi-annually / Monthly	Plan Int'l & CH	**USD 3k / year** (monitoring, training materials)
Total						**USD 35,000**

Environmental, Social, Occupational Health and Safety (ESOHS) Clauses in Contracts

The ESMP will form part of the contractual agreement with service providers for the Project especially civil works contractors. The following ESOHS Clauses will form part of the Environmental and Social Clause to be incorporated in the contracts:

1) The Contractor shall comply with all applicable Environmental Laws as well as is responsible for identifying, applying for, and maintaining all required environmental permits and licenses for the construction activities.
2) The Contractor shall, within 30 days of contract commencement, submit a detailed Construction Environmental and Social Management Plan (CESMP) for the Client's approval. The CESMP shall include procedures for waste management, pollution prevention (dust, noise, water), spill response, and erosion and sediment control.
3) The Contractor shall implement a waste management hierarchy (Reduce, Reuse, Recycle) and ensure all hazardous waste is identified, stored, labeled, and disposed of by licensed waste carriers. Records of waste transfers shall be made available for audit.
4) The Contractor shall provide clean, safe, and hygienic accommodation (if applicable), access to potable water, sanitation facilities, and nutritious food.
5) The Contractor shall not discriminate in hiring, compensation, access to training, promotion, termination, or retirement based on race, ethnicity, national origin, religion, disability, gender, etc.
6) The Contractor shall maintain a zero-tolerance policy for any form of harassment, abuse, or forced/child labor. All workers shall be employed voluntarily and provided with clear contracts.
7) The Contractor shall submit a comprehensive Project Health and Safety Plan for approval prior to mobilization. This plan shall include risk assessments, method statements (for high-risk activities), emergency procedures, and a site-specific induction process.
8) The Contractor shall immediately report all accidents, near-misses, and dangerous occurrences to the Client's Representative. A formal investigation shall be conducted for all lost-time incidents, and a report with corrective actions shall be submitted.
9) The Contractor shall, at its own expense, provide all necessary and certified Personal Protective Equipment to its employees and ensure its proper use.
10) The Contractor shall ensure that all personnel are competent, adequately trained, and, where required, certified for the work they are performing (e.g., crane operators, welders).
11) Create HIV/AIDS awareness among works and the local communities.

Contracts must include mechanisms to ensure compliance.

1. Right to Audit/Inspect: The client or their representative has the right to conduct scheduled and unscheduled ESOHS audits of the contractor's operations and records.
2. Performance Indicators: Setting specific, measurable targets (e.g., Lost Time Injury Frequency Rate - LTIFR, waste recycling rates).
3. Reporting Requirements: Mandating regular (e.g., monthly) ESOHS performance reports.
4. Non-Compliance and Remedies: Clearly defined consequences for failing to meet ESOHS obligations. This can range from:
    - Formal Notices: Requiring the contractor to rectify the issue within a specified time.
    - Financial Penalties (Liquidated Damages): Monetary deductions for specific failures.
    - Suspension of Work: Stopping work until the issue is resolved.
    - Termination for Cause: For serious or repeated breaches.

Conclusion and Recommendation

The Climate Proof Water 4 Food Project has tremendous potential to create positive environmental and social transformation. To maximize benefits and minimize risks, project design must tailor technologies and approaches to local ecological, social, and economic conditions, actively engage all stakeholders, especially women, youth, and the most vulnerable, in planning and governance.

This report highlights the positive and negative impact related to the Project on the environment and the local communities. Management and mitigation measures have been proposed for the negative impacts to minimize the impacts to negligible levels.

The negative environmental and social impacts on the implementation of this Project are minimal and will be addressed through implementation of the environmental and social management plans. These measures form part of the Project component and will bring minimal added cost in the implementation process. The advantages of implementing the Project are enormous and it will minimize food insecurity, water shortage and a lack of sanitary facilities in the Project area. The Project will also promote the food security and community resilience to climate shocks and gender mainstreaming.

1 INTRODUCTION

This document presents the findings of the Environmental and Social Impact Assessment (ESIA) of the Climate Proof Water 4 Food Project (the Project) in Mayom and Rubkona Counties of Unity State in South Sudan. The Project involves the implementation of climate-smart and gender-transformative agriculture and water, sanitation, and hygiene (WASH) components in Mayom and Rubkona Counties.

The Project is being promoted by Plan International acting as the consortium lead. Kontrakt Advisory Group has been appointed by Plan International to conduct the ESIA to meet the requirements of the African Development Bank (AfDB) (lenders/financial institution). The ESIA has therefore been prepared in accordance with the lenders' Applicable Standards (set out in Chapter 2: Legislative and Institutional Framework), including the applicable laws and regulations of South Sudan.

The main objectives of the ESIA are to predict and evaluate the potential environmental and social consequences or impact of the Climate Proof Water 4 Food program and to propose measures to mitigate any negative impacts. Additionally, it aims to integrate environmental and social concerns into the decision-making process to ensure responsible development.

2 PROJECT OVERVIEW

The Climate Proof Water 4 Food project consists of two key components:

iii. Food Security and Livelihoods (FSL): focusing on climate-smart, gender-transformative agriculture and value chain development.

iv. Water, Sanitation, and Hygiene (WASH): to focus on climate-resilient, gender-transformative, and inclusive access to safe water, sanitation, and hygiene, including flood control.

The Project is the result of collaboration between Plan International South Sudan, Ethiopia, Denmark, and Spain along with the Ministry of Finance, Agriculture, Water, and Energy at all levels, as well as local NGOs and research institutions in South Sudan.

2.1 PROJECT OBJECTIVES

The Project development objective is to strengthen social and environmental resilience through climate-smart, innovative, inclusive, gender-transformative, system-strengthening agriculture and WASH services in Unity State, South Sudan.

2.2 DEVELOPMENT OUTCOMES

Through climate-smart, gender-transformative agriculture and water sanitation and hygiene (WASH), the Project will:

a) Apply innovative, state-of-the-art technology to strengthen integrated water and flood management and to strengthen the availability of multipurpose water services for households, agriculture. The state-of-art technology such as: Advanced flood forecasting & early-warning systems, Satellite remote sensing & geospatial monitoring, Precision irrigation & variable-rate water delivery, Nature-based solutions (NbS) - constructed wetlands, retention basins, floodplain restoration and agro-forestry to slow runoff, store water, improve soil moisture and buffer floods, integrated dashboards that combine seasonal forecasts, market/ logistics info and SMS/voice alerts so farmers know when to plant, harvest, or move stock — directly protecting production and post-harvest assets, deploy a small network of river gauges + community alert channels integrated with a forecasting model and

invest in nature-based & recharge measures at landscape scale to increase storage and reduce flood peaks while improving dry-season water for crops.

b) Promote and support the implementation of climate-resilient agricultural practices, strengthen the agricultural value chains, and ensure access to climate-resilient agricultural inputs.

The project will contribute to the adoption of climate-smart agricultural (CSA) practices by 53,000 farmers, increased food production and strengthening the livelihoods of 42,400 young men and women. It will also establish or reconstruct 4 solar-power water systems coupled with integrated flood management, both supporting the transition to CSA by making 24,000 m^3 of additional water is available and giving 16,000 people access to clean and safe drinking water.

2.3 PROJECT JUSTIFICATION

Unity State faces recurring climate shocks, particularly devastating floods. Unity State's low-lying geography causes rivers to break their banks, causing flooding. The inundation of schools, homes, health facilities, and water sources impacts access to basic services and livelihoods and causes physical displacements.

The goal of the Project is to make the water and agriculture sectors more resilient to climate change and extreme weather events. It is anticipated that the project will double food output and improve food security while expanding access to water and sanitation, which will benefit people, animals, and crops.

2.4 PROJECT ENVIRONMENTAL AND SOCIAL RISK CLASSIFICATION

The AfDB Group's Integrated Safeguards System (2023) classifies projects into one of three E&S risk classifications: high risk (Category 1), moderate risk (Category 2) or low risk (Category 3). AfDB Group's ISS defines "***Moderate Risk*** (***Category 2 Project)***" *as operations likely to cause adverse E&S impacts that are lower than in Category 1 operations, medium-scale, easily reversible, and readily minimized by applying appropriate management and mitigation measures, or incorporating internationally recognized design criteria and standards. These include projects classified as moderate risk under national legislation, or low-risk projects financed by the Bank in a lack of E&S implementation capacity or fragile context."*

In undertaking the ESIA, Kontrakt considers the Project to meet the definition of Category 2 E&S classification given it's a moderate-risk project financed by the Bank in a low environmental and social (E&S) implementation capacity and fragile context, as well as the anticipated residual impacts (considering proposed mitigation measures) associated with the Project.

2.5 PROJECT TEAM

2.5.1 PROJECT PROPONENT

The Climate Proof Water 4 Food Project in Mayom and Rubkona Counties of Unity State in South Sudan is promoted by Plan International, the Consortium Lead during its implementation.

2.5.2 THE PROJECT LENDER

The African Development Bank (AfDB), through the African Development Fund (ADF), is the Project financier. The African Development Fund (ADF) established a Climate Action Window under its 16th replenishment cycle to help fill the significant climate finance gap in Africa. The Climate Action Window includes Mitigation and Adaptation Investment Sub-windows that support projects across six thematic sectors: agriculture and food security; water security; climate information and early warning; green

transport and infrastructure; green energy and energy efficiency; and green finance. The Climate Proof Water 4 Food (W4F) Project is eligible for funding under the Adaptation Sub-Window.

2.5.3 ESIA CONSULTANT

Kontrakt Advisory Group (herein referred to as “Kontrakt”) was appointed by Plan International to undertake the ESIA of the Climate Proof Water 4 Food Project. Kontrakt is responsible for project managing the assessment, carrying out primary data collection, stakeholder engagements and preparation of the ESIA report.

2.6 ESIA REPORT OUTLINE

The ESIA report is structured as shown below:

i. A non-technical executive summary in English. The summaries shall be short but clear. It should include a description of the proposed project, methodologies involved, resources required, outcomes/benefits, major significant impacts with their mitigation/enhancement measures, recommendations, and conclusion.

ii. Introduction including objectives of the study, rationale, outline of the report, description of methodologies and data sources used in the assessment.

iii. Description of the proposed activity including its location; size; components; scope of services and production; a rough quantification of resources used; emissions and wastes generated; analysis of alternatives; and decommissioning.

iv. Description of the baseline conditions at the site and affected area, including relevant socio-economic, biophysical, heritage and cultural aspects.

v. Stakeholder’s engagement in the process including perceptions about the proposed activity, views, concerns, and recommendations.

vi. Description of the Policies, Legal and Institutional context of the activity, including relevant environmental and socio-economic safeguards that apply and their implications for the activity.

vii. Assessment of potential impacts from socio-economic, biophysical, heritage and cultural perspective for different phases of development.

viii. Mitigation measures considered and an evaluation of their effectiveness in addressing impacts identified and rationale for proposing measures.

ix. The Environmental and Social Management Plan (ESMP), including institutional arrangements, responsibilities, and budgets is needed.

x. Conclusion and recommendations.

xi. Annexes, which shall include a reference list, list of the experts involved, maps, drawings, a list of stakeholders consulted (including photos during consultation with the public), and proceedings of stakeholders meetings, if any.

2.7 LIMITATIONS

- Mobility is restricted during the rainy season by impassable roads (unpaved and damaged). There are either few or no commercial flights to Mayom and Bentiu. There is only one weekly UN flight to the project area.

- All conclusions and recommendations made represent the professional opinions of Kontrakt's consultants involved with this assignment, and the results of this report should not be considered a legal interpretation of existing regulations.
- Kontrakt assumes no responsibility or liability for errors in the public data utilized, information provided by Plan International, or publicly available statements or developments rising from situations outside the scope of this project. We make no warranties, expressed or implied, including, without limitation, as to merchantability or fitness for a particular purpose.
- All data and information provided were assumed to be accurate and up-to-date.

3 PROJECT DESCRIPTION

3.1 CONTEXT AND BACKGROUND

In South Sudan, the institutional landscape regarding WASH and Food Security & Livelihoods (FSL) reveals that both government and NGO capacities to adapt to climate change, manage flooding and drought, and enhance agricultural output through a transition to climate-resilient/smart agriculture (CSA) are inadequate, with essential extension services largely absent. Agricultural value chains experience disruptions, and farmers' associations exhibit insufficient capacities to establish a robust market for agricultural products. Access to CSA inputs like robust seeds, renewable energy-based technology like solar-powered water solutions, and financial resources are all lacking. Extreme weather disasters, poor coping techniques that harm farming and water supplies, decades of violent warfare, and a lack of funds and expertise are the key causes. Floodings cause a greater area of land to be submerged, contaminating water sources and resulting in food insecurity and illnesses. There are only four NGOs working on FSL and seven NGOs working on WASH in the targeted areas. This is not enough to support the communities, especially considering the high influx of refugees entering the communities. The Ministry of Agriculture in Unity State states that almost no one is working on water infrastructure and CSA in the State, and that there is a desperate need for support to manage water from floodings and support a transition to climate resilient agriculture. Many initiatives in WASH do not focus enough on behaviour change and hygienic practices. For FSL, many initiatives fail to address climate adaptation and climate-smart solutions to agricultural production, which hinders long term food security. Connecting farmers to stable and profitable markets often remain a challenge and limits income opportunities and sustainable production.

3.2 PROJECT'S STRATEGIC OBJECTIVES

The proposed Water4Food Project has been designed to increase adaptation to extreme weather events and climate change within the agriculture and the water sectors leading to a doubling of food production, increased food security, and increased access to water and sanitation, benefitting people, agriculture, and livestock.

The Project has been designed for Climate- Smart Gender Transformative Agriculture (CSGTA) and Climate-Resilient Gender Transformative (CRGT) WASH. The Project strategically aligns with the developmental priorities and harmonizes with the National Adaptation Plan of Action (NAPA) and the Nationally Determined Contributions (NDC) that support the nation's ambition to attain middle-income status by 2030 by strengthening economic resilience and adaptation to climate change in key sectors.

The Project will contribute to SDG 1, 2, 3, 6, 8, 13 and 15 in that it seeks to increase climate resilient food security, access to safe water and (green) income opportunities. Using climate-smart, gender-transformative approaches in the project and facilitating a change in the status, economic empowerment, and access for women, this will in turn lead to increased income and gender equality, and climate smart solutions in both the agricultural and water sectors, thereby covering goal 5 and 10. Project progress will be measured with selected CAW indicators for these goals. As for the AU agenda 2063, the project will mainly contribute to goals 1, 5, 7, but also goals 17 and 18 through its focus on gender transformation and empowerment of marginalised groups.

3.3 PROJECT COMPONENTS

The Project is designed as a standalone project targeting specific areas because of the lack of similar ongoing programs as well as the urgent nature of the challenges that the Project intends to better.

Despite being heavily focused on building lasting change and accelerating a larger transition to climate resilient agriculture and WASH services, the project has very few activities on the ground to connect with. The Climate Proof Water 4 Food Project includes two components and sub-components under each.

Component 1: Climate-smart agriculture and value chain, (USD 8,845,000)

- *Goal: Improve food security for 73,000 (60% women) people based on a strengthened climate-adapted Making Markets Work for the Poor (M4P) approach with extension services that aim to enhance buying power and the employment position of vulnerable populations in Unity State, South Sudan.*

Table 3-1:Component 1-Project Sub-Components Descriptions

SUB-COMPONENT	DESCRIPTION
Sub-component 1-1: Climate-resilient, strengthened value-chain, income generation and land recovery.	viii. 42,400 young women and men (50% women) individuals will have new or strengthened livelihoods through value chain integrated approaches, including extension packages, that improve product-to-market access and manage afforested areas that address interlinked challenges of food and income security and the need for climate adaptation. Agricultural value chain development's effectiveness is contingent on addressing factors such as ethnicity and gender. The threats of climate change affect various aspects of food systems, where women often bear the brunt of structural inequalities which limit their adaptive capacities. Restrictive gender norms limits women's participation in value chains causing unfair distribution of resources, limited control over land and power imbalances. This subcomponent incorporates GT approaches that engage both men and women to reshape traditional gender roles and expectations. Thus, activities will facilitate an equal access to tools, inputs, knowledge and finance; develop farmer organisations' capacity to meaningfully include young women, seed companies and market climate resilient seeds at seed fairs; ix. Work with 'Seed Growers Initiative' and the research institution, ASERECA on strengthening the national value chain for climate resilient seeds. It will advocate for the development and implementation of climate-resilient agricultural and diversification policies, establish/strengthen linkages and facilitate transaction between rural producers, entrepreneurs and shopkeepers in markets for sales of produce. It will mobilise young women/men to strengthen/establish SMEs through material/financial support, access to credit and marketing; establish VSLA and support with seed capital; facilitate access to credit to agro-pastoral communities and entrepreneurs; train in agri-business/vocations, including agro-processing, for youth, particularly young women.

SUB-COMPONENT	DESCRIPTION
	x. Facilitate Attitude and Behaviour Change community dialogues on women farming and economic empowerment; develop capacity of youth on business skills, financial management, marketing. xi. Support young women and men and vulnerable groups to carry out beekeeping in afforested areas. The goal is to recover 850 hectares of land (aligned to CAW outcome 1.5) through afforestation, CSA and communal pasture enclosure promotion. Activities like planting pulses will support nursery sites for seedling production and produce/plant 450,000 multi-purpose trees to protect against soil erosion, floodings and wind.
Sub-component 1-2: Climate-resilient improved agricultural inputs, training and system strengthening.	xii. 53,000 farmers will practice improved, climate-smart agriculture (CAW indicator 1.3) and produce 1,345 metric tons of food. Activities will: train farmers and farmers organisations in research-based, low cost CRA practices codeveloped with CBOs, national and local government offices; work with pastoral and farmer field schools for training, including seasonal camps on CSA and agro-processing and value addition for income diversification. xiii. Improve irrigation methods/access to water for agricultural production from Component 2 activities; provide climate-resilient crops/seeds locally developed and introduced by government (i.e. drought and flood resistant varieties of sorghum, sesame, millet, pulses, groundnut, amaranths, jute mallow, onion, tomato, eggplant) and other inputs/implements for CSA. xiv. Provide capacity development training for government experts and extension agents on improved agronomic practice on climate resilient approaches to cascade to the community; and establish demonstration sites for CSA practice.

Component 2: Inclusive, gender transformative, integrated flood- and drought-adapted water resource management and access, (USD 5,283,750)

- *Goal: 32,250 (60% women) people will have improved and inclusive access to climate-resilient and gender-transformative water and sanitation services.*
-

Table 3-2: Component 2-Project Sub-Components Descriptions

SUB-COMPONENT	DESCRIPTION
Sub-component 2-1: Improved inclusive access to and gender transformative management of safe	Four (4) solar-powered water supply and flood control systems will be constructed or rehabilitated, and their corresponding water governance systems will be strengthened to become Gender Transformative GT and well-functioning. Activities will construct water

SUB-COMPONENT	DESCRIPTION
water and climate-resilient floodwater-controlling systems	conservation structures for flood and drought mitigation (e.g. small dams, sand dikes); construct solar-panel driven surface water pump systems applied to move water from flooded areas; establish Solar Powered multi-user Water Supply Systems (SPWSS) – tTEM testing, drilling borehole/shallow well with raised platforms, supplying and installing the solar system, surface pumps; link water captured to new irrigation systems for agricultural production (Component 1). Establish, rehabilitate and solarise existing non-functional ground water systems; strengthen WASH governance systems to ensure female inclusion in decision making and improve gender attitudes and technical capacity for operations and management; set up multiple user systems to guarantee fair, inclusive water distribution and avoid conflict, advocate for increased investment in water resource management and infrastructure.
Sub-component 2-2: Improved access to climate-adapted, gender-transformative sanitation	d) 24,500 (50% women) will benefit from the construction of flood-resistant sanitation facilities reducing water pollution (elevated latrines, pit latrines with raised floors). e) Establish integrated proper drainage system around sanitation system; establish systems to make compost out of faecal and organic waste and biogas for clean cooking. f) Establish/strengthen youth Sanitation Marketing (SanMark) groups. System-strengthening/transforming interventions across the two components will include activities to: ○ Support establishment/strengthening of by-laws on water point and sanitation management, cattle, and farm management; engage national line ministries to decentralise policies. ○ Work with local authorities to strengthen their capacities to develop own policies and frameworks at their level; co-develop CSA training with CBOs and local/national government.

3.4 PROJECT COST AND FINANCING ARRANGEMENTS

The total cost of the standalone project is 15,7 million USD. The Project is proposed financed by AfDB CAW funds amounting to 14,5 million USD and by co-financing from Plan International Denmark and Spain cash contributions of 871,000 USD.

Table 3-3: Project Financing

Source of financing	Cost (UA)	Total (USD)	% of Project Cost (USD)
AfDB's African Development Fund	11.128.824	14,800,000	70%
Co-financier (if applicable)	654,946	871,000	4%

Co-financier/Parallel Funding Sun WASH	4,149,247	3,518,000	26%
Total Project Costs	**15,933,017**	**21,189,000**	**100%**

Table 3-4: Estimate Cost per Project Component

Components	Currency: USD				
	PY1	PY2	PY3		Total / USD
Component 1	2.500.800	3.831.040	2.713.645		9.045.485
Component 2	1.482.963	2.295.668	1.619.413		5.398.044
Total Base Costs	**3.983.762**	**6.126.707**	**4.333.058**		**14.443.528**
Physical contingencies	0	0	0		
Price contingencies	326.493	532.737	368.242		1.227.472
Total Project Costs	**4.310.256**	**6.659.444**	**4.701.300**		**15.671.000**

Source: Project Concept Note

3.5 PROJECT'S TARGET AREAS AND BENEFICIARIES

The Project areas are in Rubkona (i.e., Rotriak, Kaljak, Nhialdiu, Budang) and Mayom (i.e., Ruathnyibuol, Kurbona, Wangkei, Wurach) counties in Unity State, South Sudan. Each if the Project target areas will benefit as follows:

- 50% of women will benefit from the construction of flood-resistant sanitation facilities (elevated latrines, pit latrines with raised floors) reducing water pollution.
- 50% of women will have new or strengthened livelihoods through value chain integrated approaches, including extension packages, that improve product-to-market access and manage afforested areas that address interlinked challenges of food and income security and the need for climate adaptation.
- Recover 850 hectares of land (aligned to CAW outcome) through afforestation, CSA and communal pasture enclosure promotion. Activities like planting pulses will support nursery sites for seedling production and produce/plant 450,000 multi-purpose trees to protect against soil erosion, floodings and wind.
- Support young women and men and vulnerable groups to carry out beekeeping in afforested areas.
- Improve irrigation methods/access to water for agricultural production and provide climate-resilient crops/seeds locally developed and introduced by government.
- Establish, rehabilitate and solarise existing non-functional ground water systems; strengthen WASH governance systems to ensure female inclusion in decision making and improve gender attitudes and technical capacity for operations and management.
- Construct or rehabilitated solar-powered water supply and flood control systemsand their corresponding water governance systems will be strengthened.

The main project-related outcomes per target group in the project areas include:

1. **Communities:** increased resilience, improved water infrastructure and economic resources, strengthened livelihoods, reduced food insecurity and risk of conflict related to WASH and FSL.

2. **Farmers**: increased adaptation to climate change and resilience to climate shocks, improved self-reliance through skills and inputs to climate-smart faming, increased yields/income potential and strengthened business skills.
3. **Women**: farmers' outcomes, reduced barriers to and increased inclusion in farming and agri-business value chains, strengthened business skills and market connection, reduced labour burden, increased access to resources and decision-making authority.
4. **Youth**: farmers' outcomes, increased inclusion in farming and agri-business value chains, strengthened skills to do business and connect to markets, increased access to economic opportunities, and strengthened decision-making authority.
5. **Government**: reduced costs of damage from extreme weather events, strengthened capacity to train and provide extension services for farmers within the transition to CRA and WASH, increased technological capacity in, e.g., TEM and solar powered water technology, scaling of climate resilient seed initiative with Asareca, accelerated transition to CRA, and strengthened national value chain for climate-resilient seeds and agri-business.

3.6 Institutional and Implementation Arrangements

The project consortium will be led by Plan International South Sudan (PISS) and Coalition for Humanity (a national NGO in South Sudan), who form a project implementation unit (PIU). At the government level, the main implementing partners are the National Ministry of Water Resources and Irrigation and the State Ministry of Agriculture, Environment and Forestry in Unity State, South Sudan.

The Project will partner with the regional inter-governmental organization, ASARECA, that coordinates agricultural research and interventions in the Eastern and Central Africa sub-region. The partnership entails both connecting the Project's intervention with ASARECA's 'climate resilient seed initiative' jointly done with Ministry of Agriculture in South Sudan and the piloting of locally grown climate resilient seeds (especially maize and sorghum), and the resource mobilisation of climate finances for scaling up the usage of such seeds and building a local value chain

Plan International South Sudan office will benefit from technical assistance on raising additional climate change finance for the project and linking with more climate-financed projects, compliance, climate change and agriculture from Plan International Denmark as well as Plan International Denmark's strategic framework agreements with Grundfos Foundation and other large private foundations. Plan International Denmark forms part of the Plan International federation and will also support the multi-country coordination mechanism, which will be set up and managed by PISS.

3.7 Other Cross-cutting Priorities

3.7.1 Poverty reduction, Inclusiveness and Job Creation

53,000 vulnerable community members will directly increase their livelihoods, while 12,000 will directly increase their income by gaining meaningful self-employment or starting own business. The project will contribute to poverty reduction and increased income of vulnerable farmers, especially female farmers and youth, by strengthening their capacity to improve climate smart production and increase harvest outcomes, strengthening the value chains and access to the markets, and targeted trainings for 16,000 youths on business skills in the agriculture and water sectors (such as producing and marketing seeds, sanitation marketing activities of existing enterprises or by setting up their own SMEs, providing seed money via establishment or strengthening of Village Savings and Loan Associations, and more).

3.7.2 Opportunities for Building Resilience

The Project will contribute to reducing the vulnerabilities, and especially the main drivers mentioned above, as the project increases livelihood opportunities, access to water and farmable land, and reduces damages to economic assets. The project will contribute to resilience in the communities by strengthening and installing climate adaptive and GT WASH infrastructure, introducing climate adaptive farming methods and seeds, taking necessary integrated water resource management measures by setting up flood and drought control mechanisms and structures.

3.7.3 Gender Equality and Women's Empowerment Promotion

Plan International will apply its signature GT Approach in the project by addressing root causes of discriminatory gender norms to ensure the human rights and needs of women and girls are met by and facilitate a supportive environment for sustainable economic development and improved access to resources, services, and decision making. This will involve working both with attitudes at community level and supporting governments and ministries in the process to structurally decrease gender gaps. The main focus will be on increasing women's possibility to legally own land or businesses related to both agriculture and WASH, have access to finance, and be able to work and make their own money in the two sectors. This involves improving the equal division of the workload at the household and community level, participation of women and girls in their communities and strengthening the level of female leadership, so that the total workload of women do not just expand.

3.8 Monitoring and Evaluation

The M&E system combines state-of-the-art methods for measurement and analysis with local capacity strengthening and CSA research. The interventions' process monitoring will assess the progress towards targets and the delivering of services and support in the quality and quantity planned for, while reflecting on the effects on women, who may face all sorts of obstacles in accessing the support provided. Data will be collected by partners responsible for implementation using appropriate project monitoring systems developed in accordance with internationally recognized methodologies for measuring key CAW-aligned outcome indicators, and aligned with Plan International's Monitoring system (PMERL).All outcome indicators are CAW-aligned, including indicators that look at higher level effects such as water use, food production and new/stronger livelihoods. The system will use leading software (Kobo Toolbox, Power BI) to digitally collect data and display progress towards outputs and outcomes.

Quarterly reviews will include output and cost per output dashboards for adaptive management, and findings from this ongoing monitoring will inform the intervention's governance. The intervention's outcome monitoring will assess results and changes in conditions and behaviours that are conducive to target groups' resilience, and which reflect the program's theory of change and results framework. This includes continuously evaluating the extent to which the intervention contributes to these changes and identifying the obstacles and drivers that the intervention must pay attention to, during the implementation. Key outcome indicators will be evaluated at baseline, mid-term and endline.

3.9 Project Alternatives

3.9.1 No Project Alternative

Measures to adapt to extreme weather events are desperately needed in Unity State, South Sudan. The local administration lacks the technological systems, irrigation, and water capture solutions necessary to restore flooded farmlands in a sustainable manner and boost agricultural productivity. The

Climate Proof Water 4 Food Project aim to address these shortcomings through strengthening the adaptation and resilience to extreme weather events of people in climate-vulnerable, food insecure and water-scarce communities in Unity State.

Without the implementation of the Project, the current problems of food insecurity, poor sanitation and hygiene and limited supply of clean water will persist, and the already dire situation and vulnerabilities will be compounded.

No project alternative is therefore not in the interest of food security, water, sanitation, and hygiene (WASH) and climate resilience and has been discarded as not viable.

The realization of the Climate Proof Water 4 Food Project will:

- Contribute to the adoption of climate-smart agriculture (CSA) practices of 53,000 farmers, doubling food production and strengthening the livelihood of 104,000 young women and men. It will
- Establish or reconstruct 4 solar-powered water systems coupled with integrated flood management both supporting the transition to CSA by making 24,000 m^3 of additional water available as well as ensuring access to drinking water for 16,000 people.

3.9.2 Alternative Technical Solutions Considered

The following alternatives were considered as part of the Project design. However, they were rejected for varied reasons as detailed in the table below.

Table 3-5: Project Alternatives Considered

ALTERNATIVE	DESCRIPTION	REASON FOR REJECTION
Alternative 1	Early warning systems to predict extreme weather events.	Already in place coming out of Nairobi, and additional improvement is very technical. The focus on adaptation in the project will ensure better preparedness for weather shocks.
Alternative 2	Fishing as a means to strengthen food security	This might still be included but more local knowledge is needed once the project's planned flood management systems are designed and put in place.
Alternative 3	Farmer insurance schemes against loss and damage to farmlands	Important solution, however, the focus is more on prevention of damage and building resilience through increased physical adaptation and economic resilience to shocks.

4 POLICY, LEGAL, AND INSTITUTIONAL FRAMEWORK

This chapter summarizes the key overarching legislation, standards, and guidelines applicable to the Project. The ESIA has been prepared in accordance with the requirements of applicable AfDB Group ISS and South Sudan laws and regulations. When host country laws and regulations differ from international standards, the Project will be expected to meet whichever is more stringent.

4.1 INSTITUTIONAL FRAMEWORK

The Government of South Sudan (GOSS) has not gazetted the Draft Environmental Bill 2010 (updated 2013) that foresees the Ministry responsible for environmental issues to have a central role in the ESIA process, which is the National Ministry of Environment and Forestry as the Lead Agency mandated by the government. However, this notwithstanding, the GOSS has operationalized the proposals provided for in the Draft Environmental Bill 2010. Under Section 23 of the Draft Environmental Bill, functions of the Ministry of Environment are expounded. The table below summarizes the functions of the relevant institutions as related to the Project.

Table 4-1: Summary of functions of relevant institutions

SECTOR	INSTITUTION	MANDATE
Environment	Ministry of Environment and Forestry	• Develop and execute policies and programmes on Environmental protection and conservation throughout Southern Sudan. • Establish the GoSS Environmental policy and monitor its effectiveness and impact. • Develop programmes, in collaboration with other ministries for the control of Environmental hazards and pollution as a means of preventing Environmental degradation and control of desertification. • Develop Environmental Impact Assessments standard methodologies and procedures for GoSS Development polices and for private sector investments. • Advise and support State and Local Governments in their responsibilities for environment and build their capacity to assume functions vested by the ICSS and GoSS Policy. • Coordinate with Environmental liaison units in Lead Agencies, review and approve Environmental Impact Assessment reports of proposed projects and issue Environmental Impact Assessment Licenses. • Review and approve Environmental Audit Reports. • Monitor and evaluate.
	Ministry of Wildlife Conservation and Tourism	• Manages national parks and wildlife resources, which are critical for biodiversity and ecosystems.
	Ministry of Water Resources and Irrigation	• Manages water resources, a key environmental asset.
Agriculture	Ministry of Agriculture and Food Security (MAFS)	• The ministry is mandated to develop and implement policies, objectives and strategies for development of agricultural sector in the areas of Food Security,

SECTOR	INSTITUTION	MANDATE
		Agriculture, Forestry, Rural development and Cooperatives in South Sudan. • Plays the role of promoting productivity of agriculture and forestry for economic growth and development of South Sudan. • Promotes and enhances the formation of cooperative societies and community-based organizations as vehicles of community empowerment and poverty eradication.
	Ministry of Water Resources and Irrigation (MWRI)	• Implementing irrigation projects to support agriculture. • The ministry plays a crucial role in ensuring sustainable water management and supporting the agricultural sector in South Sudan.
WASH	Ministry of Water Resources and Irrigation (MWRI)	• Developing and managing water resources. • Addressing water-related challenges in the country.
	Ministry of Health (MoH)	• Leads on sanitation and hygiene promotion as a public health intervention. Its Environmental Health department is key.
Gender	Ministry of Gender, Child and Social Welfare	• Develop policies and programmes for the promotion of gender equality, women's empowerment, child protection as well as social protection and social welfare of other vulnerable groups. • Mainstreaming gender equality, and disability into national development process. • Ensure the welfare, promotion and respect of the rights of persons with disabilities, children and other vulnerable groups; • Manage programmes and institutions for children and social welfare. • Improve working environment by strengthening the structures, systems and procedures, human and administrative capacity for efficient service delivery. • Strengthen monitoring and evaluation, research, documentation, planning and budgeting.
	The Directorate of Gender	• Responsible for the formulation of gender-related policies and regulatory frameworks, gender mainstreaming in public and private institutions, gender-responsive, governance, socio-economic empowerment; promotion and protection of women's rights.

Unity State Government and Mayon and Rubkona Counties will play a vital role in providing oversight over the Project during its implementation.

4.2 NATIONAL POLICY FRAMEWORK

Table 4-2 presents the national policy framework relevant to the Project.

Table 4-2: National Policy Framework

POLICY	DESCRIPTION
South Sudan Vision 2040	The foundation document guiding the future development of South Sudan is the entitled "Towards Freedom, Equality, Justice, Peace and Prosperity for All". The overarching goals of Vision 2040 are to create a vibrant, competitive and diversified economy driven by agriculture, industry, mining, tourism and services that attracts investors. The Vision does also promise the Government of South Sudan's commitment to sustainable environmental management alongside limiting environmental pollution due to other development programs such as industrialization. The Vision emphasizes the need to minimize greenhouse gas emissions as a measure against climate change while building on traditional knowledge and supporting community-based resilience. The vision is well capture in the current project as implementation of the said project will lead towards freedom, equality, justice, peace and prosperity within the project's area of influence as well as create a vibrant, competitive and diversified economy driven by agriculture, industry and services. The medium-term development plan (Revised National Development Strategy for South Sudan - 2021-2024) includes; vi. Establish and/or strengthening institutions for transparent, accountable, and inclusive governance. vii. Foster macroeconomic stability and lay foundations for the diversification of the economy. viii. Build critical infrastructure for sustainable development, including roads, public buildings and broadband capability ix. Increase support to the social sector for human capital development and protect the vulnerable population, to leave no one behind. x. Mainstream gender in all development policies and programs and empower women and youth as drivers of growth and nation-building. The project aims to break fragility, build lasting resilience, including to climate variations and shocks, and an inclusive agricultural economy, with robust engagement of women, youth and the private sector. This are the key elements in the project activities it is envisaged that to technology employed in the project will go a long way in enhancing climate change adaptation in the community and reduce economic shocks and develop an inclusive agricultural economy. **Relation to the Project:** The policy is to create a vibrant, competitive and diversified economy driven by agriculture, industry, mining, tourism and services that attracts investors.

POLICY	DESCRIPTION
	The building of critical infrastructure for sustainable development, that includes boreholes, sanitary facilities, energy, is cited among the key objectives that the project has to deliver as part of South Sudan's Vision 2040 aspirations. The proposed Climate Proof Water 4 Food project and its socio-economic transformation aspects tie in with this aspiration.
Environment Policy of South Sudan, 2016	The South Sudan National Environmental Policy provides guidelines on how to carry out environmental and social screening/assessment, including Initial Environmental Examinations (IEE), Environmental Impact Assessment (EIA), Social Impact Assessment (SIA) and preparing Environmental Management Plan (EMP) to mitigate project/program induced negative environmental/social impacts and to enhance positive environmental/social aspects. **Relation to the Project:** Implementation of the Climate Proof Water 4 Food project falls in the category of projects that require an ESIA. The Environment Policy will guide and direct all issues relating to environment matters for the Project.
The Draft National Land Policy 2023	The policy emphasizes a country in which land and land-based resources are managed efficiently and sustainably to promote urbanization and national economic development. The vision is underpinned sustainable utilization of land and land-based resources; development control to reconcile competing land uses in an equitable and sustainable manner; diversity of land use and land-based livelihoods; and planned human settlement in both urban and rural areas. The goal and overall objective of the National Land Policy is respectively to ensure that land and land-based resources are held, used, and managed efficiently, productively and sustainably for poverty reduction, wealth creations and overall socio-economic development to enhance the welfare of the people of South Sudan and to strengthen tenure security over land and land-based resources for individuals and communities in South Sudan. **Relation to the Project:** The project will only take place on government land/community land, and the project will be implemented within these areas/sites. It will be confirmed that the location of the projects specific sites is in fact on government land. If not, then proper compensation in accordance with national legislation and AfDB safeguards must be completed.
South Sudan National Women's Strategy, 2016	The South Sudan National Women's Strategy document is a tool that is designed to be used by women and men from different sector, institutions and organizations, which are committed to mainstream gender and provide for gender equality in different sectors of the society. Thorough this strategy, it shade more light on the existing opportunity for women

POLICY	DESCRIPTION
	based on the gender competence among the women and women's rights as equal citizens of South Sudan. **Relation to the Project:** Women related concerns such as Gender Based Violence, sexual harassment, gender discrimination among others that may be associated with the development of the project should be addressed in line with the policy to ensure that the project objectives/desired benefits are attained
Forest Policy, 2019	The Forestry policy addresses issues such as deforestation, reforestation, community participation, biodiversity conservation, and sustainable livelihoods. **Relation to the Project:** Implementation of the Climate Proof Water 4 Food project could affect sensitive ecosystems such as forests and swamps. Activities that involve removal or conversion of forests and other natural resources, that may cause long term, permanent and/or irreversible loss of major forest habitats including habitats of wildlife and significant loss of biodiversity are not eligible for financing.
National Biodiversity Strategy and Action Plan (2018 – 2027)	The National Biodiversity Strategy and Action Plan (2018-2027) is a comprehensive document that outlines the strategic framework and actions to conserve and sustainably manage biodiversity in the country. It sets out goals and targets to address the loss of biodiversity, protect ecosystems, and promote the sustainable use of natural resources. Overall, the National Biodiversity Strategy and Action Plan serves as a roadmap for guiding biodiversity conservation efforts and promoting sustainable development in the specified timeframe. **Relation to the Project:** Implementation of the Climate Proof Water 4 Food project could affect biodiversity. Projects that interfers or cause some ecological disturbances to biodiversity have to be avoided. Hence, the project be implemented sustainably to protect and conserve the biodiversity of the area.
The National Occupational Safety and Health Policy, 2022	The National Health Policy 2016-2025 aims to ensure improved health services by defining new paradigms for health service delivery, health financing, strategic information, leadership and governance, human resources for health, and access to essential medicines. The guiding principles include: (i) health and health services as a human right; (ii) primary health care approach; (iii) decentralization; (iv) partnerships; (v) international conventions and guidance; (vi) gender mainstreaming; (vii) community participation; (viii) efficiency and effectiveness; (ix) respect for values and cultures. The Climate Proof Water 4 Food project is aligned with the need and health priorities by improving service delivery

POLICY	DESCRIPTION
	needs for food and nutrition security as well as preventing any adverse impact due to phytosanitary requirements. **Relation to the Project:** This policy is particularly relevant for the OHS of the Project. Especially the construction crews and subsequently, the maintenance personnel. The policy will also have relevance in mitigation measures that protect the public from health and safety impacts because of project construction and subsequent operation and maintenance activities.
The National Gender Policy and Strategic Plan, 2013	The **National Gender Policy (NGP)** of South Sudan, along with its **Strategic Plan (2023-2027)**, is the overarching framework that guides the government's commitment to achieving gender equality and women's empowerment across all sectors of society. Its primary purpose is to eliminate gender-based discrimination and inequality by mainstreaming gender perspectives into all national laws, policies, programs, and institutions. It is a foundational document that provides the "why" and "what" for gender equality, while the Strategic Plan outlines the "how," with specific, measurable actions over a five-year period. The policy is anchored in the **Transitional Constitution of South Sudan (2011)**, which guarantees equal rights for men and women, and is aligned with regional and international commitments like the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the Sustainable Development Goals (SDGs). **Relation to the Project:** Gender related concerns such as Gender Based Violence, sexual harassment, gender discrimination among others that may be associated with the development of the project should be addressed in line with the policy to ensure that the project objectives/desired benefits are attained.
National Action Plan on Women Peace and Security (WPS) 2023-2027	The South Sudan National Action Plan (NAP) on Women, Peace, and Security (2023-2027) is a strategic framework adopted by the Revitalized Transitional Government of National Unity (R-TGoNU) to implement the United Nations Security Council Resolution (UNSCR) 1325 and subsequent related resolutions at the national level. Its primary goal is to ensure that women participate meaningfully in all phases of peacebuilding, conflict resolution, and governance, and that they are protected from the specific impacts of conflict. This NAP is a crucial instrument for translating South Sudan's commitments to gender

POLICY	DESCRIPTION
	equality and women's empowerment into concrete actions, especially within the ongoing peace process guided by the Revitalized Agreement on the Resolution of the Conflict in South Sudan (R-ARCSS). **Relation to the Project: T**his plan is relevant as far as women, peace and security is concerned. As this project will involve women, their participation and security is paramount.
National Development Strategy (NDS)	The South Sudan National Development Strategy (NDS) 2018-2021 and its accompanying Strategic Action Plan (SAP) are the core documents outlining the government's vision for transforming the country from a state of fragility and conflict to one of resilience, stability, and prosperity. It's crucial to understand that these plans were developed during a critical period following the signing of the Revitalized Agreement on the Resolution of the Conflict in South Sudan (R-ARCSS) in 2018. Therefore, they are inherently focused on nation-building, peace consolidation, and laying the foundation for sustainable development. **Relation to the Project: T**his strategy is relevant as far as the project is concerned. As this project is a sustainable development project for the communities.
Southern Sudan Water Policy of 2007	The formulation of Southern Sudan's water policy of 2007 was done through participation and wide consultation, including representation from of political, technical, managerial and other key stakeholders. The water policy presents a shared vision for water sector development and water management led by the Ministry of Water Resources and Irrigation (MWRI). It reflects broad consensus on the basic objectives and principles related to water management and services. It also represents an important first step towards the establishment of a regulatory framework for utilization and management of water resources; in addition to effective delivery of water services. The Government is committed to ensuring rapidly growing urban populations benefit from access to safe, affordable and reliable water supply and sanitation services. **Relation to the Project:** The policy is the guiding principle of managing water resources in the country. The overall objective of the policy is to ensure efficient development and management of urban water supply and sanitation. The Climate Proof Water 4 Food project is expected to be implemented in some water bodies or flooded areas. The potential impact on swamps or wet areas, if present along the project area of influence (AoI), should be minimized or avoided.

4.3 NATIONAL LEGAL FRAMEWORK

Table 4-2 outlines the national legislation relevant to the Project.

Table 4-3: National Legal Framework

LEGISLATION	DESCRIPTION
The Constitution of the Republic of South Sudan, 2011	The Constitution of the Republic of South Sudan of 2011 includes numerous provisions that have a bearing on the environment. Article 41 (1) provides that the people of South Sudan shall have a right to a clean and healthy environment and (2) that every person shall be obliged to protect the environment and (3) that future generations shall have the right to inherit an environment protected for the benefit of present and future generations. Specific measures to ensure the objectives above include: The prevention of pollution and ecological degradation, the promotion of conservation and the securing of ecologically sustainable development and the use of natural resources while promoting rational economic and social development to protect the biodiversity of South Sudan. Furthermore, Article 166 (6) expects local governments to involve communities in decision-making in the promotion of a safe and healthy environment. Thus, the basis of undertaking ESIA for the project activities to comply with the spirit of the Constitution and the consequent policies and legislation that are either formulated or in the process of formulation. **Relation to the Project:** The project's construction, operation and decommissioning activities are associated with both positive and negative environmental and social impacts and will therefore need to be undertaken in a manner that: - Promotes sustainable development; and - Protects the right to a clean and healthy environment for communities and persons in the project host area(s).
The Forests and Renewable Natural Resources Act, 2002	The Forests and Renewable Natural Resources Act of 2002 is aimed at promoting the sustainable management and conservation of forests and other renewable natural resources in South Sudan. The Act establishes guidelines for the protection, utilization, and sustainable exploitation of forest resources, including measures to prevent illegal logging and deforestation. It outlines the roles and responsibilities of relevant government agencies, local communities, and stakeholders in managing and preserving forest ecosystems. **Relation to the Project:** There is need to safeguard natural resources such as trees during project implementation.
The Draft Environmental Protection Bill, 2015	This legislation aims to protect the Environment in South Sudan and to promote ecologically sustainable development that improves the quality

LEGISLATION	DESCRIPTION
	of life. It grants the right to a decent environment to every person and the attendant right to bring an action to enforce that right if it is threatened because of an activity or an omission. Section 18 of the South Sudan Draft Environmental and Protection Bill introduces the requirement for Environmental Impact Assessments. Section 20 intends to introduce the requirement for Environmental Monitoring. Section 32 of the Draft Environment Protection Bill, 2015 introduces the requirement for Environmental Audits. The Bill empowers the Ministry of Environment and Forestry to supervise and coordinate all matters relating to the environment and to be the principal instrument of government in the implementation of all policies relating to the environment including biodiversity. **Relation to the Project:** The Bill is key to addressing pollution prevention, control and waste management since activities associated with the implementation of the project will generate waste. It is the duty of the Ministry of Environment and Forestry to oversee aspects related to protection of the environment in which the project is being undertaken.
The Environmental Protection Act, 2001	This legislation was in force before South Sudan gained her independence. The Act is not legally binding in South Sudan although it remains an important piece of legislation that is used to give guidance in ensuring environmental conservation in the country. Its principal objectives are: (i) To protect the environment in its holistic definition for the realization of sustainable development; (ii) To improve the environment while ensuring sustainable exploitation of natural resources; (iii) To create a link between environmental and developmental issues, and to empower concerned national authorities and organs to assume an effective role in environmental protection. Section III of the Act outlines general policies and principles regarding the protection of the environment. Article 17 of the Act required that any individual who intends to implement any project that was likely to have a negative impact on the environment, should present an Environmental Impact Assessment (EIA) for approval by the Monitoring and Evaluation Committee of the Higher Commission for Environment and Natural Resources (HCENR) of the then Federal Government of Sudan. **Relation to the Project:** Environmental and Social impacts of the respective Climate Proof Water 4 Food Project should be addressed in a proactive manner by subjecting the respective projects to environmental and assessments prior to their commencement.
The Public Health (Water and Sanitation) Act, 2008	Emphasizes the prevention of the pollution of air and water and also encourages improvement in sanitation. Key provisions include the protection of the sanitation of the environment, and it encompasses the measure to address the pollution of water and air. The following are

LEGISLATION	DESCRIPTION
	measures geared towards control of pollution of water: Measures to prevent pollution of water for consumption; Measures destined to prevent pollution of potable water; Anyone who offers the public water to drink or human food, and which includes frozen food should ensure that the water conforms to the portability regulations; Management and disposal of hazardous wastes and storage of wastes on the premises of waste generators. The Public Health Act (2008) also provides the need for the protection of pollution of water through the enforcement of regulations and measures necessary to combat all elements of pollution and protect the natural level of the environment and public health. **Relation to the Project:**The project activities will cause air pollution and potentially also water contamination.
Land Act, 2009	The Land Act of 2009 is a comprehensive legislation that governs the management, administration, and use of land resources in South Sudan. The act establishes a framework for land tenure, defining the rights and responsibilities of individuals and communities regarding land ownership, acquisition, and transfer. It promotes customary land rights and recognizes the role of traditional authorities in land administration. The act also provides guidelines for land registration, dispute resolution, and land use planning. It aims to ensure equitable access to land, protect the rights of vulnerable groups, and promote sustainable land management practices for the social and economic development of South Sudan. **Relation to the Project:** The project should seek to fairly and promptly compensate persons/communities whose land will be earmarked to host project components/activities. Additionally, during the implementation of the project, local communities (affected communities) must be adequately consulted.
Labour Act No. 64, 2017	The Labour Act (2017) is the primary law protecting the employment rights of individual workers. The Labour Act covers the protection of wages, contracts, employment terms and conditions, and recruitment. It also classifies workers and special worker types. **Relation to the Project:** Several people will be engaged because of the implementation of the project; therefore health, safety, welfare, age of employment and appropriate training of persons employed in workplaces should be considered.
Water Bill, 2013	The Water Bill (2013) provides for the protection of water sources from pollution, erosion or any other adverse effects by creating Protected Zones within a catchment draining to, or above any water facility forming part of a water supply or any catchment, lake, reservoir, aquifer, wetland, spring, or any other source of water (section 34). The Bill aims to develop procedures for prioritizing allocation of water resources for different

LEGISLATION	DESCRIPTION
	social, economic and environmental uses, efficiency, system reliability and environmental sustainability principles. It also aims to conserve available water resources, to manage water quality and to prevent pollution of ground and surface waters; manage floods and droughts and mitigate water-related disasters, and; establish appropriate management structures including mechanisms for inter-sectoral coordination and stakeholder participation. **Relation to the Project:** The project is expected to be implementation in some flooded areas and water bodies. The potential impact on swamps or wet areas, if present along the line corridor, should be minimized or avoided.

4.4 INTERNATIONAL AGREEMENT AND COVENANTS

South Sudan is party to several international environmental and social management agreements that are applicable to the preparation of the ESIA (see Table below).

Table 4-4: International Treaties Applicable

INTERNATIONAL AGREEMENT AND CONVENTION	DATE RATIFIED	DESCRIPTION
African Convention on the Conservation of Nature and Natural Resources	15 September 2016	The Algiers Convention is a continent-wide agreement that supersedes the Convention Relative to the Preservation of Fauna and Flora in their Natural State.
Ramsar Convention on Wetlands	10 October 2013	The Convention on Wetlands is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.
Paris Agreement, 2015	23rd February 2021	Its goal is to limit global warming to well below 2 degrees Celsius, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.
Convention for the Safeguarding of the Intangible Cultural Heritage, 2003	23rd October 2017	The objectives include to: safeguard the intangible cultural heritage, ensure respect for the intangible cultural heritage of the communities, groups and individuals concerned

INTERNATIONAL AGREEMENT AND CONVENTION	DATE RATIFIED	DESCRIPTION
		and raise awareness at the local, national and international levels regarding the importance of the intangible cultural heritage, and of ensuring mutual appreciation thereof.
The Treaty of the East African Community, 1999	15th April 2016	Articles 111 and 112 of the EAC Treaty provide for conservation and management of environmental and natural resources. They require member states to take measures to control trans-boundary air, land and water pollution arising from development activities and take necessary disaster preparedness, management, protection and mitigation measures especially for the control of natural and man-made disasters.

4.5 INTERNATIONAL INDUSTRY STANDARDS AND GUIDELINES

4.5.1 AFDB GROUP INTEGRATED SAFEGUARDS SYSTEM

The Climate Proof Water 4 Food Project in Unity State, South Sudan will be developed and implemented in accordance with the requirements of the AfDB Group's Integrated Safeguards System and comply with the requirements of applicable Environmental and Social (E&S) Operational Safeguards. E&S Operational Safeguards (OSs), which are designed to maximize positive impacts and to avoid, minimize, reduce, mitigate, or compensate for the adverse E&S risks and impacts of projects, including those related to climate change.

Applicable E&S Operational Safeguards for the Climate Proof Water 4 Food Project are summarized in the table below.

Table 4-5: Summary of Applicable E&S Operational Safeguards

S/N	APPLICABLE E&S OPERATIONAL SAFEGUARD	REQUIREMENT	APPLICABILITY
1.	E&S OS 1 (OS1): Assessment and Management of Environmental and Social Risks and Impacts	• Conduct an ESA of the proposed project, including stakeholder engagement. • Undertake stakeholder engagement and disclose appropriate information in accordance with OS10. • Develop an Environmental and Social Plan (ESMP) and implement all measures and actions set out in the financing agreement, including the ESMP. • Conduct monitoring and reporting on the E&S performance of the project against the OSs.	This OS is applicable to the project as the development activities have environmental and social aspects throughout the Project cycles, Thus, there is a need to carry out environmental and social assessment to assess and manage the potential risks and impacts associated with the Project. An ESMP is embedded in the ESIA.
2.	E&S OS 2 (OS2): Labour and Working Conditions	• Develop and implement written Labour Management Procedures (LMPs) applicable • to the Project. These procedures will set out the way in which project workers will be managed, as a minimum, in accordance with the requirements of national law and this OS.	This OS applies to the management of labour and working conditions (work hours, remuneration, overtime, grievance management, safe working environment, etc.) at the Project sites.
3.	E&S OS 3 (OS3): Resource Efficiency and Pollution Prevention and Management	• Resource-efficiency and pollution-prevention principles to be the project activities or initiatives in accordance with the principles of cleaner production. • Consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention measures in accordance with the mitigation hierarchy. The measures will be proportionate to the risks and impacts associated with the project and consistent with GIIP.	The OS applies the Project component designed to combat the effects of climate change on target communities such as proposed climate adaptation measures to be implemented (e.g., climate-smart agriculture, and WASH interventions).

S/N	APPLICABLE E&S OPERATIONAL SAFEGUARD	REQUIREMENT	APPLICABILITY
4.	E&S OS 4 (OS4): Community Health, Safety, and Security	• Evaluate the risks and impacts of the project on the health and safety of the affected communities during the project life cycle, including those who, due to their particular circumstances, may be vulnerable.	The OS focuses on the potential health and safety risks and impacts the Project activities are likely on the target communities during the Project cycle. It also assess the security arrangement for the Project and the likely risks and impact it may have on the target communities.
5.	E&S Operational Safeguard 7 (OS7): Vulnerable Groups	• Take the necessary measures to appropriately manage the risks and adverse impacts of the project on vulnerable individuals and groups, including on women and girls, minorities and HVRM. In so doing, the Borrower shall avoid, minimize, or otherwise mitigate or remedy the exposure of vulnerable populations to project-related risks and adverse impacts.	The target counties (Mayom and Robkona) in Unity State have experience armed conflicts resulting in loss of lives and displacement making the local communities vulnerable. In Rubkona, armed conflict coupled with flooding of settlements and farmland has acerbated vulnerability in an already vulnerable community and groups such as women, elderly and children - headed households.
6.	E&S Operational Safeguard 10 (OS10): Stakeholder Engagement and Information Disclosure.	• Engage with stakeholders throughout the project life cycle, commencing as early as possible in the project development process and in a time frame that enables meaningful consultations with stakeholders on project design. The nature, scope, and frequency of stakeholder engagement will be proportionate to the nature and scale of the project, and its potential risks and impacts.	Stakeholder engagement and consultation to be undertaken throughout the Project cycle at all levels (village, payam, county, state and federal levels). Stakeholder engagement to be carried out during the environmental and social impact assessment (ESIA) and the feedback from the engagement to be included the ESIA report (standalone chapter).

4.5.2 PLAN INTERNATIONAL GUIDELINES

The following Plan International policies and guidelines will be applicable to the Project:

- Plan International's Gender Transformative Approach (GTA), encompassing the six elements of gender transformative programming.
- Plan International's Child and Youth Safeguarding Policy.
- Plan International's ethical monitoring, evaluation, reporting, and learning (MERL) framework.

5 DESCRIPTION OF BASELINE CONDITIONS

This chapter presents the environmental and social baseline compiled from desktop research and field survey. The baseline information describes the environmental and social conditions in the Project areas in Mayom and Robkona counties in Unity State.

5.1 PROJECT LOCATION

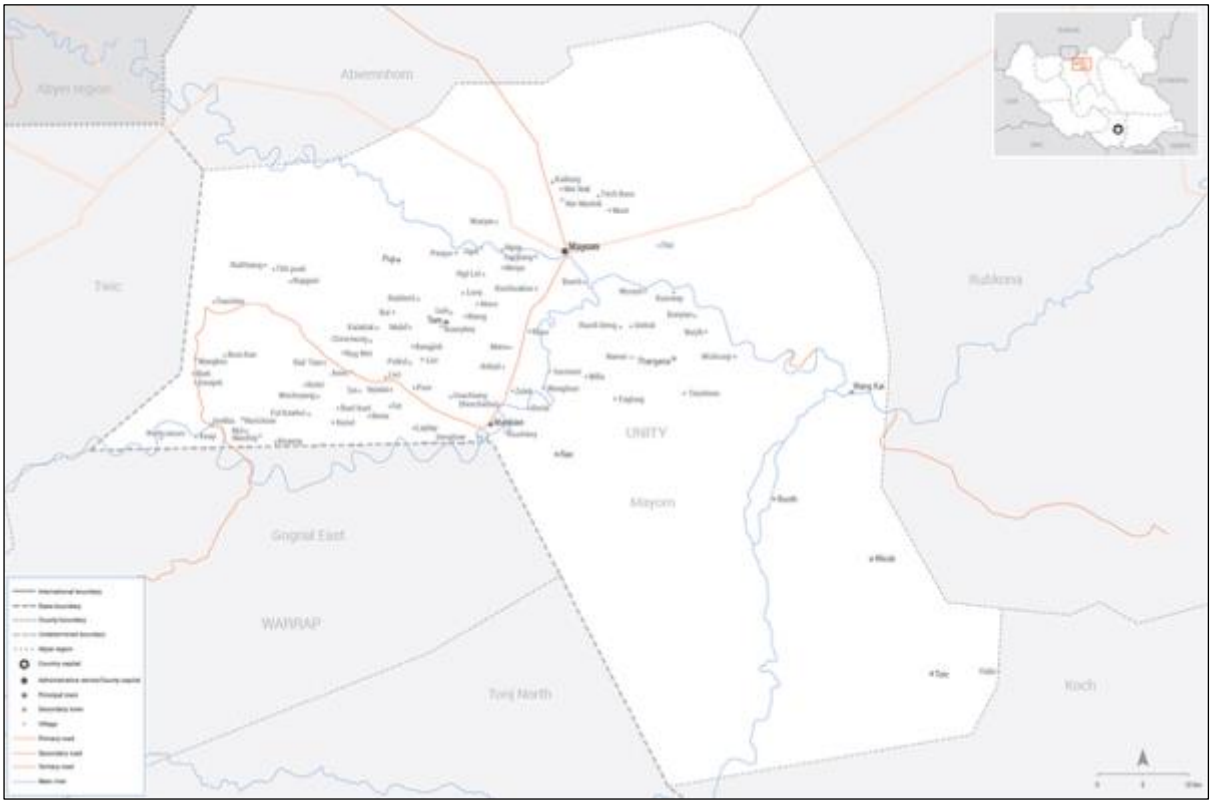
5.1.1 MAYOM COUNTY

Mayom County is located in Unity State covering an area of 5,795 km² (9°13′27″N latitude and 29°10′00″E). It borders Abiemnhom County to the north, Rubkona County to the east, and Koch County to the south-east. It also borders Warrap State (Twic, Gogrial East and Tonj North Counties) to the west. The Malual, Kiir (Naam) and Lol rivers run through the county, converging near Mayom Town, and the Jur River is also located at its southeast boundary.

The Project areas in Mayom are in: Ruathnyibuol, Kurbona, Wangkei, Wurach payam in Unity State, South Sudan.

Mayom is access primarily by road from Robkona (Bentiu). However, road conditions vary significantly, especially during the rainy season when flooding may occur.

Figure 5-1: Map of Mayon County



Source: UN OCHA

5.1.2 ROBKONA COUNTY

Rubkona County, known as Rubkona and Bentiu, is in northern Unity State covering an area of 14,032.9 km², sharing borders Panrieng County to the north, Koch County to the south, Mayom County to the west and Guit County to the south-east. It is the ninth county in Unity State, with B58 highway connecting it to Yirol East in Lakes state and extending to Sudan's Heglig area. Accessing Rubkona County can be achieved by air through flights from Juba to Bentiu, or by road through Juba – Rumbek - Wau Road and barges from Juba through Bor Shambe and Adok river port. However, extensive flooding in recent years has affected access roads.

The Project areas in Rubkona are in Rotriak, Kaljak, Nhialdiu, Budang payam in Unity State, South Sudan.

Rubkona County's strategic geographical location at the confluence of the White Nile and Bahr el Ghazal rivers leads to significant flooding.

Figure 5-2: Map of Robkona County

Source: UNICEF Robkona County Social Map

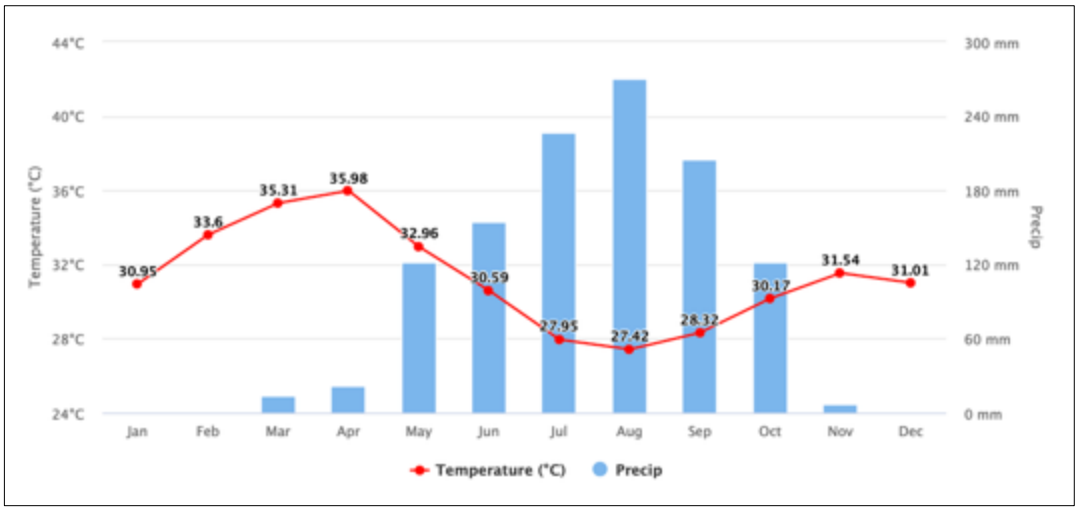
5.2 PHYSICAL ENVIRONMENT

5.2.1 CLIMATE AND METEOROLOGY

The climate of Southern Sudan is generally seasonal with considerable annual variations and is characterised by a single rainfall season. The northern parts fall under the Sudano-Sahelian zone, which is predominantly dry, sub-humid and semi-arid with extensive grazing. This zone is characterised by dry spells especially in the first months of the rainy season, while the second half of the rainy season is marked by heavy and stormy rains of short duration as illustrated in figure 5-1 below

Table 5-1 below summarizes the monthly average temperature, precipitation, relative humidity and sunshine hours in Unity State.

Figure 5-3: Mean monthly temperature and precipitation in Unity State



Source: weatherandclimate.com

Table 5-1: Monthly average climatic condition in Unity State

Month	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Daily mean temp (°C)	30.95	33.6	35.31	35.98	32.96	30.59	27.95	27.42	28.32	30.17	31.54	31.01
Average high temp (°C)	37.65	40.21	41.5	41.51	37.39	34.83	31.81	31.23	32.82	35.44	37.53	37.3
Average low temp (°C)	22.45	24.99	26.86	28.51	27.33	25.12	22.92	22.21	22.4	22.39	23.34	22.79
Average precipitation mm	0.06	0.35	13.6	21.55	122.05	154.34	226.34	269.99	205.07	6.46	0.82	95.17
Average precipitation days (≥ 1.0 mm)	0.0	0.18	2.91	4.55	14.64	16.64	22.45	24.0	22.18	16.73	1.55	0.18

Month	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Average relative humidity (%)	16.96	14.59	17.3	26.18	47.45	59.25	72.07	76.65	73.54	62.12	34.79	22.18
Mean monthly sunshine hours	10.35	11.59	11.56	12.53	12.61	12.65	12.33	12.19	11.66	11.37	11.57	8.73

5.2.2 Topography and Drainage

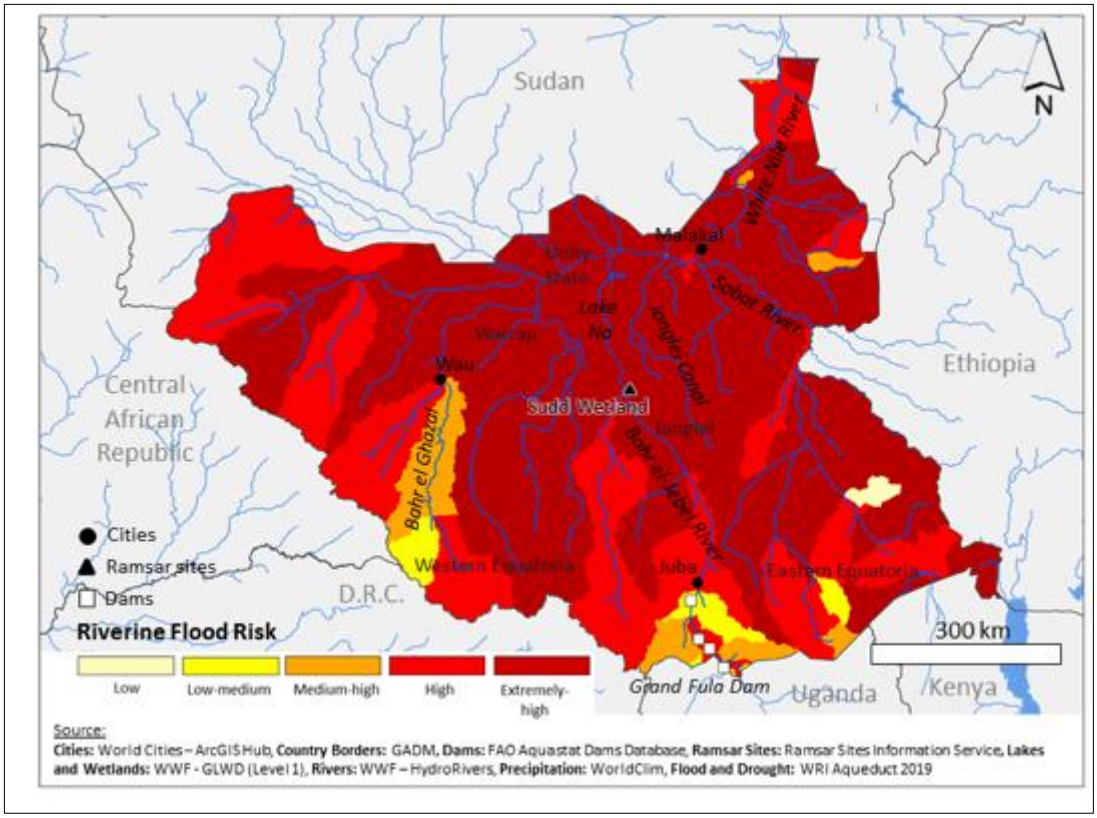
The study area is geographically positioned within a low-lying floodplain in the Nile Basin, which contributes to its vulnerability to seasonal inundation. The landscape is dominated by expansive wetlands and sluggish surface water flow, with elevated groundwater levels persisting even during the dry season. The hydrography of the region features a complex drainage network composed of dendritic, parallel, anastomosing, and braided channel systems. These interconnected drainage patterns eventually converge into major river channels, including the Bahr el Ghazal River, which runs adjacent to Rubkona town.

5.2.3 Hydrology and Hydrogeology

The White Nile is on the eastern border of Unity State. Bahr el Ghazal River (comprising three sub-basins of Kiir, Loll, and Jur) is one of the main tributaries of the White Nile that discharges to the Sudd wetlands. Nahm River, Abuk River, Tarquer River and Khor Malual River in the state.

Slow river flow brought on by aquatic vegetation and sediment overload, as well as high river discharges that cause water to overflow the banks and flood vast tracts of land as is the case in Rubkona and Mayom Counties where the riverine flood risk flood is extremely high risk as illustrated Figure 5-1 below.

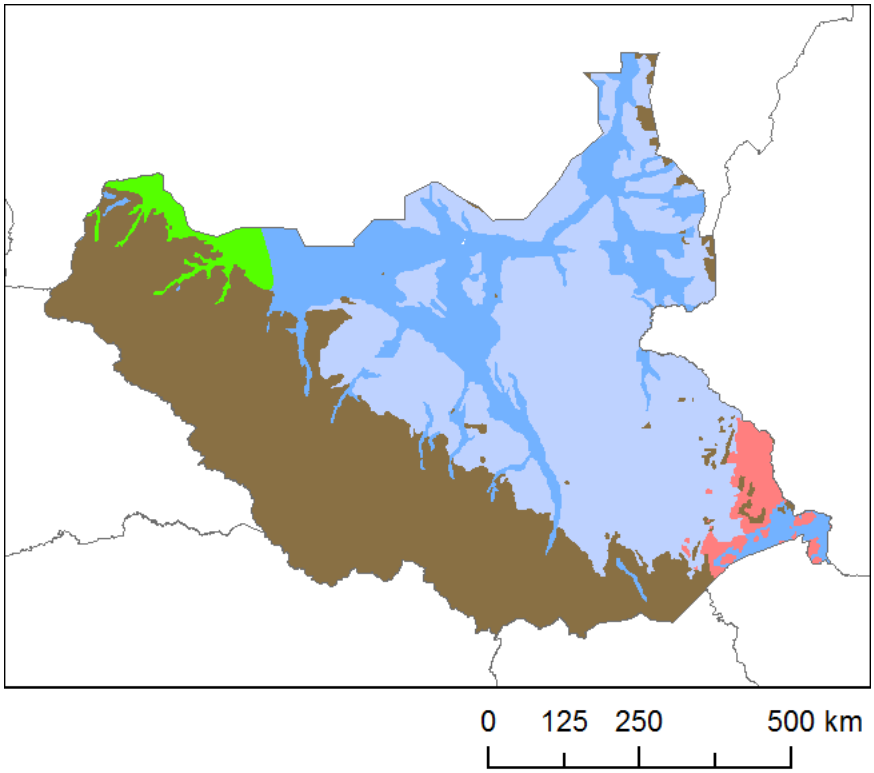
Figure 5-4: Riverine Flood Risk in South Sudan



Source: USAID South Sudan Water Resource Profile Overview

The hydrogeology map below shows a simplified overview of the type and productivity of the main aquifers at a national scale.

Figure 5-5: Hydrogeological Map of South Sudan



Of interest to the Project are the Unconsolidated (Low to High Productivity) and Unconsolidated (Low to Low Productivity) aquifer types.

Unconsolidated (Low to High Productivity)

These unconsolidated sedimentary deposits consist of alluvial sands, silts, gravels and clays. Aquifer properties are variable, depending largely on lithology, but where the alluvium is dominated by coarser grained deposits, transmissivity can be high. Aquifers are usually unconfined with a shallow water table (<15mbgl). In the Sudd region groundwater levels are often above the land surface forming large swamp (wetland) areas.

Groundwater flow patterns usually follow surface water features. Estimates of transmissivity and storage of 200-1500 m2/d and 0.13-0.25, respectively. Collapsing sands is a significant problem for drilling in this formation, and boreholes can become heavily silted if not installed and constructed appropriately.

Aquifers receive direct recharge from rainfall during the wet season, however, this can be restricted where thick clay-rich soils (vertisols) are present. Aquifers may receive recharge from rivers during

periods of high flow, but aquifers may discharge to rivers during the dry season. Evaporation is high, particularly in the large swamp/wetland areas in the Sudd basin in the north.

Unconsolidated (Low to High Productivity)

The Umm Ruwaba Formation forms an unconsolidated aquifer that covers a large area, and is generally of low to moderate productivity. The properties of the aquifer vary depending largely on lithology, with lenticular sand and pebble horizons being the most productive. The aquifer can be unconfined, or locally semi-confined where permeable layers occur below clay strata at depth.

The estimates of transmissivity and storage yields of 2.5-10 m3/hr (0.7-2.8 l/s) is reported for boreholes in the Bentiu area in northern South Sudan, which are drilled to depths of 100-220 m, although higher yields may be possible in some boreholes. Aquifer thickness may be several hundreds of metres, but boreholes are typically drilled to depths of <250m.

Collapsing sands can be a significant problem for drilling in this formation, and boreholes can become heavily silted if not installed and constructed appropriately.

Water quality is usually good, but high salinity is an issue, particularly where hydraulic gradients are low and stagnation occurs. Recharge is dominantly from rainfall infiltration and is relatively small.

5.2.4 GEOLOGY

The geology of South Sudan is primarily composed of Precambrian igneous and metamorphic rocks, which cover about 40% of the country's surface. Unity State's geology is characterized by Meso-Cenozoic sedimentary sequences, particularly the Sudd Basin's extensive Umm Ruwaba Formation, which contains vital aquifer zones and was formed within the Mesozoic Sudanese Rift System. These unconsolidated sediments, deposited by the Nile River and its tributaries, overlie Precambrian basement rocks.

The Project areas fall within the following geological formations:

Quaternary-Tertiary Unconsolidated Sedimentary

It is characterized by ancient and recent terrace deposits consisting of well-sorted silts and clays with occasional sandy strata and can be up to 60 m thick widely deposited along the Nile River and its tributaries. Alluvial fill consists of medium to coarse, poorly sorted sands with gravel and lenses of clay in places. Clays and silts up to 30-50 m thick can be found around smaller tributaries and in deltaic environments.

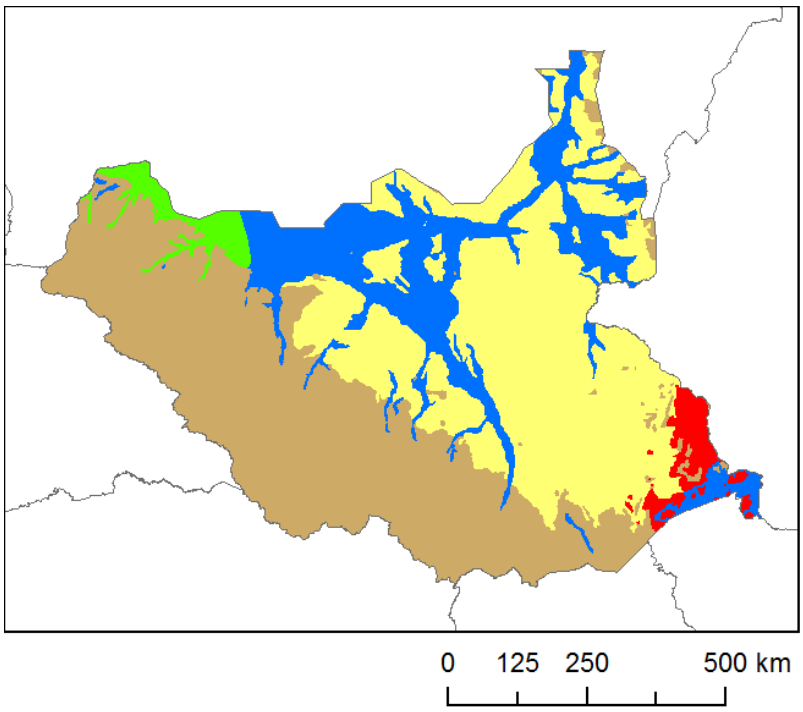
Tertiary Quaternary- Um Ruwaba Formation

The lithology consists of unconsolidated superficial sediments (sands, gravels, clays) with little stratification. Pebble layers can occur at the base where it is in contact with the basement. The Umm Ruwaba contains lenticular sand and clay units which vary significantly vertically and horizontally.

Thickness varies depending on position within the basin; minimum thickness is around 50m at the edge of the basin; maximum thickness is around 1400m along the main axis of the basin. The Umm Ruwaba is thought to overlie older Tertiary and Cretaceous deposits, which may reach a maximum thickness of around 10,000 m.

Figure 5-2 below is the geological map of South Sudan illustrating the geological formation in northern South Sudan where the Project is located.

Figure 5-6: Geological Map of South Sudan

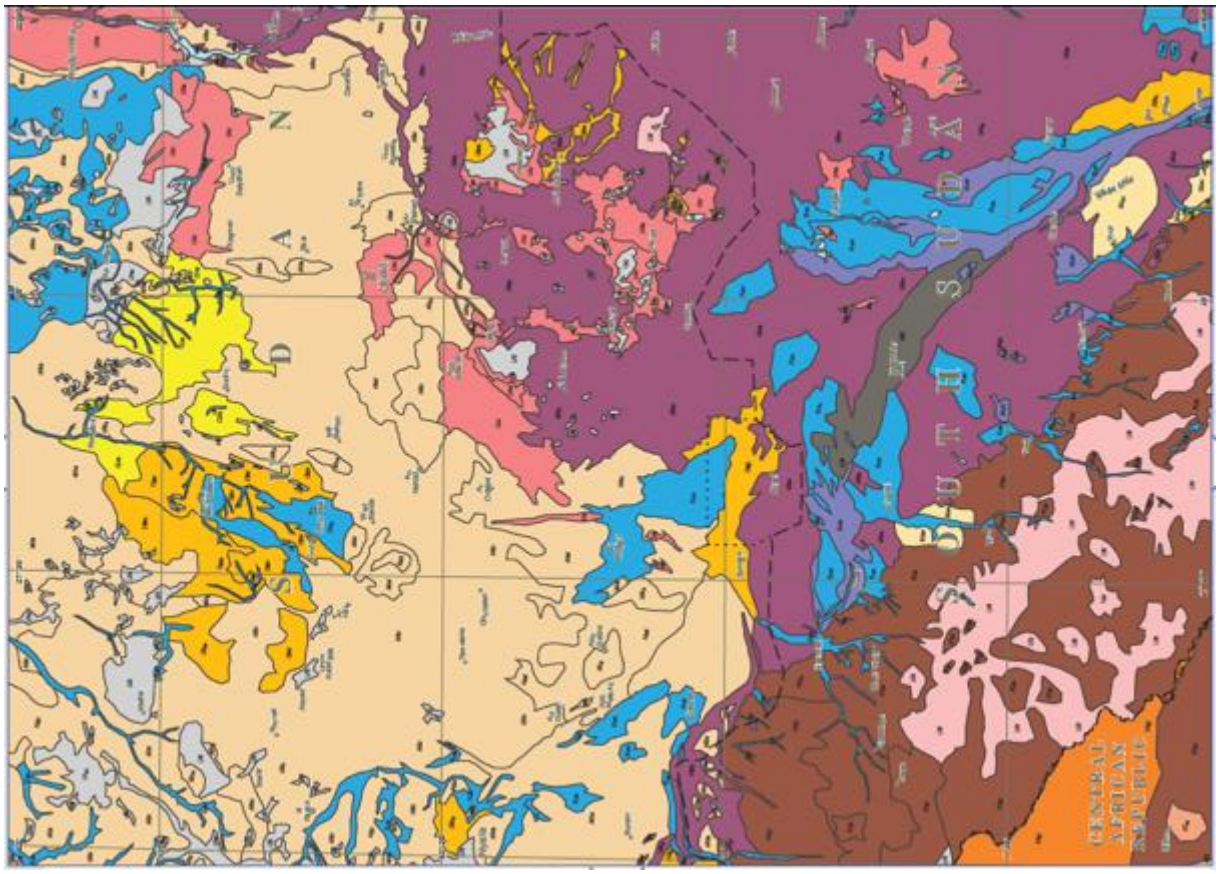


5.2.5 SOILS

Soil characteristics in South Sudan vary by region, with key zones including the Nile and Sobat Corridor, Central Clay Plain, Flood Plains/Southern Clay Plain, Green Belt/Equatorial Plains, Iron Plateau, and South-Eastern Hills/Mountains. These soils differ in their chemical and physical properties, influencing agricultural potential, nutrient availability, water retention, and drainage.

According to the Soil Map of Africa, soils in northern South Sudan is characterized by expanses of dark, cracking Vertisols of the Central and Southern Clay Plains of Sudan and South Sudan. These heavy, alkaline soils, containing a high proportion of swelling clays, reflect the long-term flooding of the area by the Nile over thousands of years. When dry, deep cracks appear in the soil which close on subsequent rewetting. The high clay content makes Vertisols sticky when wet and difficult to work. However, Vertisols account for almost all of the cultivated land in South Sudan and about one third in Sudan. Organic-rich Histosols and Gleysols indicate marshy conditions in the floodplains of the Blue and White Nile, grading into stratified Fluvisols.

Figure 5-7: Soil Map of North South Sudan, West Ethiopia & South Eritrea



Source: Soil Atlas of Africa

5.3 BIOLOGICAL ENVIRONMENT

The country has a wide range of habitats, including lowland forest, montane forest, savannah woodland, savannah grassland, wetlands and floodplains, the Sudd Wetland and the semi-arid region in the north, which support a very rich diversity of animal and plant species.

5.3.1 FLORA

The Project AOI This area is characterized by open short grasslands with scattered trees and shrubs. Dominant woody vegetation here includes species of Acacia, Balanites and Combretum. Dominant perennial grasses include Hyperrhenia, Andropogon, Panicum and several other species.

Cyperus papyrus (papyrus) and *Typha dominguensis* are the dominant vegetation that covers the flooded plains.Water hyacinth (*Eichornia crassipes*), an invasive alien species, forms an almost ubiquitous floating fringe to river channels. Flooding of the plains has …

5.3.2 FAUNA

The endangered white pelican (*Pelecanus onocrotalus*) was observed in the flooded area in Robkona. The marabou stork (family Ciconiidae) and the hooded vulture, which is critically endangered, were observed in Bentiu town scavenging on household waste dumped in the open.

5.3.3 PROTECTED AREAS

Zeraf game reserves is within the Sudd wetland. It is an IUCN Category VI site with mostly seasonally flooded grassland and woodland landscape. Sudd wetland is a Ramsar site, under the Ramsar

Convention on Wetlands of International Importance. These protected areas are not within the Project AOI and will not have direct or indirect impact on them.

5.4 SOCIO-ECONOMIC

5.4.1 POPULATION AND DEMOGRAPHICS

Mayom County

The table below indicates the population in Mayom County as per IOM DTM's Mobility Tracking Village Assessment Survey, 2025.

Table 5-2: Mayom Country Population as of 2025

PAYAM	POPULATION	PAYAM	POPULATION
Bieh	131,442	Wangkei	5,924
Kueryiek	29,151	Kuerbona	56,737
Ngop	17,022	Mankien	4,080
Riak	4,902	Pub	8,050
Wangbour	170	Riathnyibol	27,400
Wangbour	5,094		
Total	**289,972**		

Source: IOM DTM's Mobility Tracking Round 16

Nuer, Dinka and Shilluk are the top ethnic groups in the county.

Rubkona County

Table 5-3: Rubkona Population

PAYAM	VILLAGES	TOTAL POPULATION (2015)
Bentiu	Bilnyang, Bimruok, Hai-Ingass, Kalbalek, Kordapdap and Nyuenypiu.	41,328
Budaang	Chotchare, Mathiang, Riaydeng and Rotriak.	6,287
Dhorbor	Mathoyo and Ngapngoap	1,951
Kaljak	Bielchier, Diem and Kaljak	4,191
Ngop	Koat	1,753
Nhialdiu	Chanlual, Chuor, Manwalbar, Ngopthoan, Nhialdiu, Nyaromne, Thiet, Toch-luak, Tongedol and Waak	18,581
Norlamweal		

Panhiany	Dhorbuor, Panhiany and Riaw	2,525
Rubkotne Kurkal	Bany, Barmalual, Nying, Pakur, Tong and Yoanyang.	20,003
Wathjaak	Rubnyagai	3,617
TOTAL		**100,236**

Source: UNICEF South Sudan Social Map, May 2016

4% of the population is below 1 year, 21% is below 5 years and rest is above 5 years. Rubkona County is primarily home to the Leek Nuer ethnic group.

5.4.2 LIVELIHOODS

R*obkona County*

Rubkona County exhibits diverse livelihood practices with farmers, herders, fishermen, and daily laborers engaged in various economic activities. Farming is a prominent livelihood in Rubkona, with 90% of bomas relying heavily on agriculture.

All the bomas in Rubkona engage in farming activities. 56% practice one-season cropping, while 44% engage in two-season farming. The households surveyed predominantly rely on farming as their primary livelihood. IOM DTM Rubkona's village assessment survey (October 2023) reported that eight bomas, including Luor, Bimruok, Kordapdap, Hai Ingass, Pakur, Koat, Riaideng, and Nyaromne, predominantly rely on farming as their primary livelihood.

Farming bomas rely on rainfed water, and some bomas have access to river water for irrigation. The main crops cultivated is maize (cultivated by >90% of farming bomas), followed by sorghum, vegetables and groundnuts respectively.

Farmers get seeds from various sources, including previous harvests, family members, markets, the Ministry of Agriculture, and UN/FAO/NGO distributions. The households surveyed reported selling excess harvest, with maize being the primary crop sold.

Land is identified as the most crucial input in seven bomas, followed by seeds, training, and tools. Flooding, conflict and crop diseases are identified as significant problems affecting crop production.

All the households surveyed have access to fish, with vegetables, legumes, and cattle meat being the least accessible.

Livestock rearing, fishing, and market activities play crucial roles in sustaining the communities across the County. All the households survey experience periodic food scarcity during different seasons. Coping mechanisms during food shortages include food aid (WFP), loans, reduced meals, temporary migration, and extended family support.

Fishing is a widespread livelihood practice in the County, providing sustenance for communities. Most household engage in fish sales and challenges such as lack of equipment, droughts, floods, storage, and market facilities impact fishermen.

Access to markets varies across the population, with challenges consisting of transportation, limited storage facilities, safety measures, and road conditions

Mayom County

When compared to other northern Unity State counties, Mayom's livelihood profile is unique and quite varied. Agriculture, cattle husbandry, and fishing were the traditional means of subsistence in Mayom County prior to the 2013 crisis. Sorghum and maize were the primary crops cultivated, and they were harvested between August and October. On a smaller scale, vegetables such as okra, pumpkin, and cowpeas were grown, with harvests beginning in late January. The maize harvests in impoverished homes often lasted until February, at which point they had to buy vegetables and other staple foods from the market[1].

Sheep, goats, and cattle are the primary animals raised in Mayom Country. Cattle are relocated to the Nile River between February and April of a typical year, and they are returned to their homesteads between May and June. Families may keep three or four cows at home all year round for milk. For a variety of reasons, such as raising funds for trading or as a coping strategy during hard times, cattle may be sold on occasion throughout the year.

Supplemental sources of income included the sale of firewood, charcoal, fish, and wild foods. Mayom town hosts one of Unity State's two main markets, benefiting from its proximity to Sudan. Access to markets from rural areas, however, is periodically limited due to poor roads, flooding, and insecurity.

5.4.3 LAND OWNERSHIP

In Mayom County, the most common form of land ownership is ancestral land, followed by community granted tenure, Individual ownership/privately purchased land and property and leased land respectively.

In Rubkona County, "individual ownership" is the most prevalent type of land ownership, while "ancestral land" is the second most prevalent type.

5.4.4 HEALTH

Mayom County

There are eight primary health care units, two primary health care centres and one hospital in the County. Only one facility is non-operational. The majority are primarily government-supported. Services available at these facilities include outpatient, feeding centre, health education, inpatient and maternity. There are 22 doctors and 26 nurses supporting these facilities.

Rubkona County

According to the Rubkona Village Assessment Survey (dated October 2023) prepared by IOM Displacement Tracking Unit South Sudan, out of the 15 healthcare facilities present in 11 bomas, 13 are operational. However, two facilities, one in Mathoyoh and another in Nhialdiu boma, are non-operational due to infrastructural damage and flooding, respectively. The operational facilities primarily rely on support from NGOs (10 facilities) and the government (3 facilities). Nearly half of the operational facilities (45.2%) reported inadequate, unsafe, or insecure buildings. The nature of health facility structures varies, with one operating in open air/under trees, four in temporary shade/Tukul, six in semi-permanent buildings, and only two in permanent structures.

Staffing levels in Rubkona County, include 11 doctors, 45 medical assistants, 82 nurses, and various other roles. However, one facility lacks trained staff, pointing to a potential gap in expertise. Insufficient availability of medical supplies and essential drugs hampers the effective delivery of healthcare

[1] Fewsnet, South Sudan Livelihood Zone and Description, August 2013.

services. As per the survey, the health facilities expressed needs for refrigerators for storing vaccines, training, referrals, public awareness, and other unspecified needs.

12 out of 14 operational facilities surveyed reported disease outbreaks in the past year, including cholera, measles, meningitis, malaria upsurge, and other skin rashes. Coping mechanisms employed during disease outbreaks include, setting up camps, increasing staff and beds, referrals to other hospitals, vaccination, and stocking medicines.

5.4.5 EDUCATION

Mayon County

There are 114 educational facilities in Mayom with the majority (107) a government-owned and managed. Most use English as the main language for teaching and implement the new South Sudan curriculum. Table below provide a high level summary of the education baseline in Mayom County.

Table 5-4: Summary of Education Situation in Mayom County

PAYAM	OPERATIONAL SCHOOLS	NON-OPERATIONAL SCHOOLS	TRAINED TEACHERS	UN-TRAINED TEACHERS	MALE STUDENTS	FEMALE STUDENTS	TOTAL STUDENTS	TOTAL DROPOUTS
Bieh	11	0	50	44	2,345	1,636	3,981	567
Kuerbona	12	2	47	63	2,868	1,986	4,854	497
Kueryiek	16	1	49	43	2,252	1,658	3,910	377
Mankien	9	1	24	43	2,222	1,052	3,274	380
Ngop	6	5	21	9	825	616	1,441	124
Pub	13	1	288	35	1,322	1,229	2,551	370
Riak	6	0	28	26	982	721	1,703	126
Ruathnyibol	11	5	52	30	1,735	1,294	3,029	289
Wangbuor	1	0	0	0	30	27	57	9
Wang-buor_3_03	9	0	15	21	504	634	1,138	164
Wangkei	5	0	23	24	686	527	1,213	108
Total	99	15	337	338	15,771	11,380	27,151	3,011

Source: IOM DTM Village Assessment Survey, Jan 2025

Robkona County

Schools in Rubkona County are categorized into primary and secondary institutions. Of the 41 schools, 32 are primary schools, addressing the foundational educational needs of the community, while the remaining 9 cater to secondary education. As of October 2023, a total of 28,799 students were enrolled, comprising 16,129 males and 12,670 females, distributed across primary (26,678) and secondary (2,121) education. Gender disparities exist in student enrolment. This highlights a trend where a significant number of students do not progress to higher education. Factors contributing to non-attendance include subpar education standards, migration, inadequate facilities, disinterest, distance, and space constraints. The annual student dropout rate stands at 4%, accounting for 1,255 students. Notably, most dropouts are male, totaling 656, while 599 are female. In primary education, the dropout rate is 4%, and in secondary education, it rises to 5%, with 77 males and 39 females discontinuing their studies. The top five reasons preventing boys from attending school are family decision, educational expenses, poor education standards, migration and lack of interest. As for girls the reasons for not attending school are family decision, lack of interest, early marriage, culture and migration.

Bentiu Town and Rubkona payam account for the highest student enrolment but face challenges in maintaining an optimal student-teacher ratio, indicating potential difficulties in providing individual attention. Male teachers significantly outnumber female teachers, contributing to gender imbalances in the education workforce.

Schools in Robkona lack basic amenities such as non-drinking water, school furniture and classrooms. According to South Sudan village assessment survey by (dated September 2019), a relatively low proportion of facilities reported inadequate latrines or insufficient drinking water. Most of the surveyed schools have a safe and secure building (8 out of 13 facilities) and are housed in permanent building structures (6 out of 13 facilities) or semi-permanent buildings (2 out of 13 facilities). A significant proportion of schools are also located in temporary tukul like structures. No facility was found to operate in open air.

5.4.6 GENDER

Although there are many different cultures and social norms that exist, the reality remains that in much of South Sudan the position of women and girls is in no way equal to men, and this is inter-generational. Female and maternal education is low. Women are responsible for most child raising tasks, home duties such as gathering, cooking, water fetching, etc., as well as production tasks such as cultivation, milking, etc. They have little to no role in decision making of matters that affect them. Although only reluctantly discussed, it is not uncommon for daughters to be exchanged for livestock in marriage arrangements often made whilst they are still children. This is especially the case when cattle are lost through raiding or bad year droughts as this is the quickest recovery strategy. As a result, women often have minimal to no asset, leaving them and their children particularly vulnerable to natural and man-made shocks. Furthermore, the practice of rape is widespread, especially so in times of civil war.

In Unity State, no gender disparities, but like in many other states where majority are pastoral communities, traditional belief plays an important role in women's rights of participation in keeping and possession of livestock. According to the traditional norms and belief of communities in Unity State, women participate effectively in daily livestock keeping activities and have great roles. The tradition does not recognize women having full ownership of livestock. They may keep livestock but it still belongs to their husbands who are the head of the families. Women cannot act or take decision on the utilisation of those resources unless agreed by their husbands. It is believed that women have rights to do with poultry or sometimes small ruminants. Women can also possess livestock and have full right of decisions only if the husband is dead. This custom changes recently. With an increase in the number of widows, women tend to own livestock.

5.4.7 HOUSING

82% of South Sudanese people reside in tukuls (grass thatched huts), according to the National Bureau of Statistics' (NBS) 2009 National Baseline Survey. Of this figure, 86% of people in rural areas and 67% of people in urban areas reside in tukuls. In contrast to just 1% of people in rural areas, 11% of people in metropolitan areas live in one-story brick or concrete buildings.

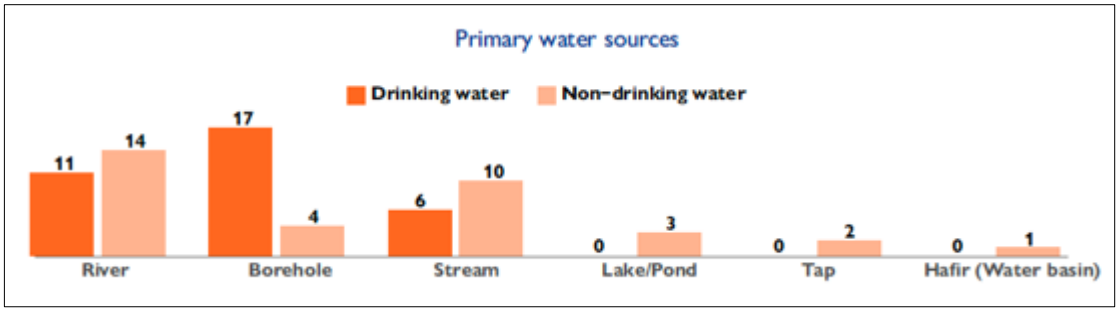
In Mayom and Rubkona, a tukul (mud walls with thatched roofing) is the most common type of shelter. Residents rely on obtaining materials from adjoining forests or wetland for shelter construction.

5.4.8 WASH

Mayom County

According to IOM DTM Village Assessment Survey (dated January 2025), community boreholes are the most common waterpoint type for drinking water in Mayom County. Other sources are rivers, streams, lake/pond, tap and water basin as illustrated in figure 5-8 below.

Figure 5-8: Water Sources in Mayom County



Source: IOM DTM Village Assessment Survey, Jan 2025

Water sources are accessible to all households in 56% of the 34 bomas. 19 bomas have water use committees and 29% of the bomas reported water use conflict. The maintenance of water points is supported by the government in 15 bomas, the community in 15 bomas, and UN/NGOs in 4 bomas.

As per the survey, 94% of bomas practice open defecation and 3% use household latrines.

Robkona County

The majority of households rely on rivers as their main water source for drinking and non-drinking water, while others depend on streams. In Bentiu town households rely on boreholes and public water taps for drinking water needs. Respondents reported consistently access water throughout the year. Access to water challenge attributed the lack of accessibility to non-functioning infrastructure, distance (>1km), insecurity, water quality (contaminated water from the rivers), and insufficient clean water supply as contributing factors. Maintenance of water point is mostly performed by the Government and UN/NGOs.

Water conflicts are prevalent in Rubkona County, notably, Yoanyang and Barmalual boma are affected by these conflicts. According to IOM DMT Village Assessment Survey (2023), the presence of 48 non-operational water points indicates a significant gap in access. These areas require immediate attention to restore functionality and ensure an uninterrupted water supply.

Women and children are responsible for fetching water. Water fetched from the river is boiled and then left to stand and settle. Water is stored in clean containers with covers. Some of the respondent reported they were provided clean containers for fetching water by NGOs during the cholera outbreak. Cholera outbreaks are caused by drinking contaminated water (from open defecation) from the rivers and flooded area.

Sanitation practices include open-air/bush defecation (80%), public latrines (15%) and household latrines (5%). Concerningly, human feces were observed openly during the visits, emphasizing the urgent need for improved sanitation infrastructure. All respondent reported lack of soap for handwashing and handwashing with soap is not practice always.

60% of those surveyed reported receiving sanitation and hygiene training during the cholera outbreak. Handwashing, clean drinking water, good hygiene, and waste disposal are among the topics discussed in the most inhabited payams in Bentiu and Rubkona. The hygiene training was given by UN/NGOs in partnership with the County WASH Department.

6 ESIA STUDY METHODOLOGY

This chapter summarizes the methodology adopted to identify and characterize the environmental and socio-economic impacts associated with the Project.

The methodology has been developed to meet the reference framework, including the African Development Bank Group's Environmental and Social Operational Safeguards and international commonly employed guidance in relation to the undertaking of impact assessments. The approach also considers South Sudan's national legislation and guidelines

6.1 ESIA PROCESS

Environmental and Social Impact Assessment (ESIA) is a systematic approach to identifying the potential impacts of a project and describing the mitigation, management, and monitoring measures that need to be implemented to address these impacts. Beneficial impacts are also identified.

This ESIA has been prepared to meet the requirements of the African Development Bank Group's Integrated Safeguards System. Ultimately, the results of this ESIA will allow the lender to make informed decisions about the development proposals and allow potentially affected stakeholders to participate in the process.

An initial step in assessing potential changes to the baseline conditions resulting from the Project will be to identify environmental aspects. Environmental aspects are defined in International Standard for Environmental Management (ISO 14001:2015) as:

"An element of an organization's activities, products or services which can interact with the environment."

In the above definition, environment can be applicable to both natural and socio economic environment. Identification of aspects requires good understanding of the Project design and activities. Project alternatives, including not implementing the project, are also considered.

As part of this process, potential receptors within the study area that might be affected by project activities are identified. A receptor can be defined as:

"An entity that receives a contaminant or pollutant and which can be subject to an environmental impact. It can be a body of water, air, parcel of land, community, ecosystem or individual organism, human being or property."

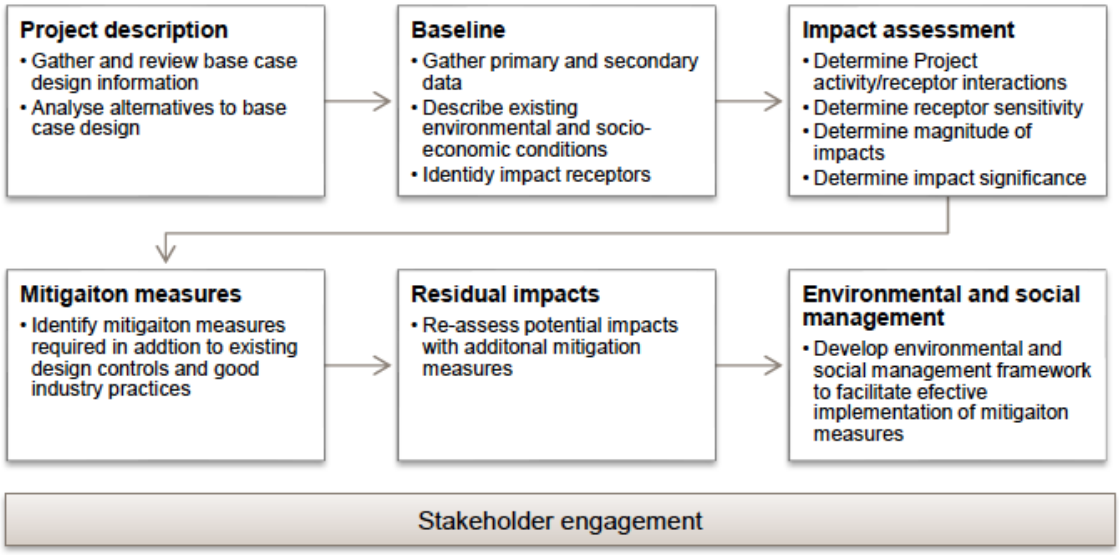
Once the aspects and receptors are identified, the interactions that might lead to potential impacts from the proposed activities are considered and evaluated.

For the purpose of this ESIA, an environmental or social impact is defined as:

"Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities or services."

The impact assessment process is summarised within Figure 5-1. Key components of the ESIA are described in further detail in sections below.

Figure 6-1: Impact Assessment Steps



6.2 STAKEHOLDER ENGAGEMENT

Getting feedback on the proposed activities from a range of stakeholders, such as local community representatives, interest groups, NGOs, government agencies, and any other stakeholder who may be pertinent to the Project, is a crucial component of any ESIA process. AfDB E&S OS 10 (AfDB ISS, 2023, pg. 114) defines stakeholder engagement as follows:

"An open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Stakeholder engagement is an inclusive process conducted throughout the project life cycle. When properly designed and implemented, it supports the development of strong, constructive, and responsive relationships that are important for successful management of a project's E&S risks."

To allow for early identification of key stakeholders and to help guide stakeholder engagement, a preliminary engagement plan was prepared at the beginning of the ESIA process. The approach to stakeholder engagement for the Project is described in detail in **Chapter VII Stakeholder Engagement**.

6.3 BASELINE

A crucial step in the ESIA process is gathering baseline (pre-project) data that is accurate and trustworthy within the Project Area of Influence (AOI). This will serve as a benchmark for evaluating and tracking potential impacts.

The initial step in the baseline characterization is the definition of the Project AOI and the Study Area. The Project AOI is defined as the area likely to be affected by:

- Project activities and facilities that are directly owned, operated, or managed (including by contractors) by the Project Proponent and that are a component of the Project.
- Impacts from unplanned but predictable developments caused by the Project that may occur later or at a different location.

The Study Area is the geographical extent of the area for which baseline conditions will be characterized.

6.3.1 Data Collection and Baseline Characterization

The baseline characterization of the physical, biological, social, and health environment is based on secondary (desktop research) data, supplemented by primary (field surveys) data where necessary.

A desktop study was undertaken to collate available baseline data from published sources. The information was evaluated by the ESIA Consultant and data gaps were identified. The desktop study was supplemented by field surveys undertaken in September 2025 at selected locations in Rubkona and Mayom counties.

Primary and secondary baseline data were evaluated. Potential receptors were identified and their sensitivity assessed. Baseline study methods and receptor sensitivities are presented in Chapter XX of this report.

6.4 Impact Assessment Methodology

Potential impacts arising from planned and unplanned activities linked to the implementation of the Project are assessed. Unplanned events are those not anticipated to occur during the normal course of Project activities.

6.4.1 Impact Magnitude

The magnitude of a given impact is a measure of the degree of change from the baseline conditions, and was typically determined through the consideration of the following factors (which can be considered in parallel):

- **Extent**: the spatial extent (e.g. the area impacted) or population extent (e.g. proportion of the population/ community affected) of an impact.
- **Duration**: how long the impact will last (e.g. hours, weeks, months or years).
- **Frequency**: how often the impact will occur (e.g. a one-off event, periodic, or continuous); and
- **Reversibility**: the length of time and effort required for baseline conditions to return (e.g. reversible in the short term or long term, or irreversible).

The following criteria provide a general definition for determining the magnitude of a particular effect:

1. **High Magnitude**: Total loss or major alteration to key elements/features of the baseline conditions such as post-Project implementation character/composition of the baseline condition will be fundamentally changed.
2. **Medium Magnitude**: Loss or alteration to one or more key elements/features of the baseline conditions such as post-Project implementation character/composition of the baseline condition will be materially changed.
3. **Low Magnitude**: Minor shift away from baseline conditions. Changes will be detectable but not material; the underlying character/composition of the baseline condition will be similar to before Project implementation.
4. **Negligible Magnitude**: Very little change from baseline conditions. Change is barely distinguishable, approximating to a “no change” situation.

6.4.2 Impact Significance

Once the impact magnitude and receptor sensitivity are rated, the overall significance of the impact will be predicted. This is assisted by an impact assessment matrix (see Table 5-1) and the impact significance definitions (see Table 5-2), which ensure a consistent approach throughout the impact assessment.

Table 6-1: Impact Significance Matrix

		Sensitivity of Receptor			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Change	**High**	High	High	Moderate	Insignificant / Low*
	Medium	High	Moderate	Low / Moderate*	Insignificant
	Low	Moderate	Low / Moderate*	Low	Insignificant
	Negligible	Insignificant / Low*	Insignificant	Insignificant	Insignificant

** Professional expertise will determine the impact significance*

Table 6-2: Impact Significance Definition

Significance	Definitions
High Significance	Significant. Potential or residual impacts with a **high** significance are predicted to have damaging and lasting changes to the functioning of a receptor and may have broader consequences (e.g. on ecosystem health or community well-being). Potential impacts of **high** significance are a priority for mitigation in order to avoid or reduce their significance.
Moderate Significance	Significant. Potential or residual impacts with a **moderate** significance are predicted to be noticeable and result in lasting changes which may cause hardship to or degradation of the receptor. Broader consequences for the ecosystem or community are not anticipated. Potential impacts of **moderate** significance are a priority for mitigation in order to avoid or reduce their significance.
Low Significance	Detectable but not significant. Potential or residual impacts with a **low** significance are predicted to be noticeable changes to baseline conditions, beyond what would naturally occur, but are not expected to cause hardship or degradation. However, potential impacts of **low** significance still warrant the attention of decision-makers and should be avoided or mitigated where practicable.
Insignificant	Not significant. Potential or residual impacts that are **insignificant** are expected to be indistinguishable from the baseline or within the natural level of variation. These potential impacts do not require mitigation and are not a concern of the decision-making process.

The above matrix and significance definitions will be used to assess adverse impacts of the Project. Where possible, the same criteria will be used to identify the significance of beneficial impacts (only looking at the positive changes). However, where this is not possible, the beneficial impact will be described in qualitative terms and, where applicable, measures to maximise benefits will also be described. This is the approach that has been adopted for each of the technical topics unless clearly stated otherwise in the following technical ESIA chapters.

It should be noted that impacts assessed as 'High' or 'Moderate' are classed as being significant; whilst those classed as 'Low' or 'Insignificant' are deemed to be not significant. This allows the Project Proponents to primarily focus resources and mitigation measures on those potential impacts which are considered significant, although measures are incorporated to reduce the significance of all impacts.

6.5 IMPACT MITIGATION AND MANAGEMENT

To alleviate possible impacts as far as reasonably practicable, a mitigation hierarchy of prioritized steps through avoidance, minimization (or reduction), and restoration has been established, as illustrated in Figure 5-1. Mitigation measures are most effective when applied at the source of the impact; however, where this is not possible or does not completely mitigate the possible impact, other forms of mitigation are applied.

Proposed mitigation measures can include, but are not limited to, the following:

- Modification of the project design.
- Alteration of the timing/scheduling of project implementation.
- Operational management (e.g., waste management).
- Behavioural management (e.g., training and competency).

The selection of mitigation measures will consider a standard mitigation hierarchy, whereby preference is given to avoiding impacts altogether and subsequently to minimizing the impact, repairing its effects, and/or offsetting the impact through actions in other areas, as illustrated in Figure 5-1.

Where mitigation measures are identified, they will be communicated to the Project Team to be fed back into the Project design and incorporated into the Project Environmental and Social Management Plan (ESMP). Activities that are deemed to have a significant level of residual impact after mitigation will be identified and evaluated. These impacts will be subject to the environmental and social monitoring program and will be characterized by appropriate indicators.

Figure 6-2: Mitigation Hierarchy

6.6 RESIDUAL IMPACTS

After mitigation measures have been identified, the significance of each impact will be re-evaluated to predict the post-mitigation ('residual') significance. It is this residual significance that is used to support decision making and conclusions about the Project.

7 STAKEHOLDER ENGAGEMENT

7.1 APPROACH

Building and maintaining a positive relationship between the Project and stakeholders, ensuring that interested and affected communities, as well as other types of stakeholders, are appropriately engaged on issues that may affect them, and establishing an effective grievance mechanism are the goals of stakeholder engagement.

7.2 OBJECTIVES

Engagement and consultation with stakeholders are essential for obtaining the Project's 'Social Licence to Operate[2] and facilitating the successful completion of the baseline socio economic and environmental surveys. Stakeholders include local communities who are beneficiaries of the Project or potentially affected by the Project's activities and other stakeholders not directly affected but who have an interest in Project activities or who could affect their progress. The stakeholder engagement process has been designed to achieve:

- Identification, mapping, categorization and prioritization of Project stakeholders who have influence on the Project or who the Project influences, including any vulnerable groups or communities.
- Programming the public consultation and disclosure activities.
- Disclosure of relevant Project information to the stakeholders and regular information sharing on the Project's activities and social and environmental performance.
- Demonstrating how national requirements, GIIP and lender standards have been addressed in the Environmental and Social Impact Assessment (ESIA).
- Identification and recording of key issues and concerns that stakeholders may have about the Project.
- Engaging with affected communities in meaningful informed consultation.
- Building trusting relationships with local stakeholders based on a transparent and timely supply of information, open dialogue, and provision of opportunities for stakeholders to voice opinions and concerns for informing Project design and mitigation measures, and minimizing impacts on local resources and/or stakeholders.
- Keeping stakeholders regularly informed about the Project's activities, explaining the nature of the construction and operation stages, overall Project duration, and any changes that could generate new impacts or increase the existing ones, and opportunities for grievance and engagement;
- Implementation of a viable feedback/grievance mechanism.
- Recording of all consultations and grievances using a Stakeholder Database and Grievance Mechanism Database.

7.3 COMPLIANCE WITH ENGAGEMENT REQUIREMENTS

This section summarizes the regulatory framework applicable to stakeholder engagement for the Project.

[2] A project's Social License to Operate refers to the ongoing acceptance of a company or industry's standards business practices and operating procedures by its employees, stakeholders and the general public

7.3.1 National Requirements

Article 166 (6) of the Transitional Constitution of the Republic of South Sudan offers the most explicit requirement for public consultation and stakeholder engagement during the preparation and implementation of development projects. At the same time, South Sudan laws and regulations such as the draft Environmental Bill (2013) and the Environmental Impact Assessment Regulations and Guidelines also emphasis the importance of stakeholder participation in development projects. The developer shall, in undertaking the environmental and social impact study, carry out consultations with relevant stakeholders, communities likely to be affected by the project and the public. On consultation and participation, the borrower or client is responsible for conducting and providing evidence of meaningful consultation (i.e., consultation that is free, prior and informed) with communities likely to be affected by environmental and social impacts, and with local stakeholders, and also for ensuring broad community support.

7.3.2 AFDB E&S Operational Safeguard 10 Requirements

The AfDB's Environmental and Social Operational Safeguard 10 (Stakeholder Engagement and Information Disclosure) sets out requirement for undertaking stakeholder engagement. These include:

- Borrowers shall engage with stakeholders throughout the project life cycle, commencing as early as possible in the project development process and in a time frame that enables meaningful consultations with stakeholders on project design. The nature, scope, and frequency of stakeholder engagement will be proportionate to the nature and scale of the project and its potential risks and impacts.
- Borrowers shall facilitate meaningful consultations with all stakeholders by providing them with timely, relevant, understandable, and accessible information, and consulting with them in a culturally appropriate manner, free of manipulation, interference, coercion, discrimination, intimidation, and reprisal.
- The process
  of stakeholder engagement will involve the following: (i) stakeholder identification and analysis; (ii) planning how the engagement with stakeholders will take place; (iii) disclosure of information; (iv) consultation with stakeholders; (v) addressing and responding to grievances; (vi) providing feedback to stakeholders; and (vii) a sufficient budget for implementation of all stakeholder engagement activities planned throughout the project life cycle.
- The Borrower shall maintain and publicly disclose as part of the ESA a documented record of stakeholder engagement, including a description of the stakeholders consulted, a summary of the feedback received, and a brief explanation of whether or not the feedback was taken into account, and if so, how.

7.4 Project Stakeholders

7.4.1 Stakeholders Identified

A list of key stakeholders has been identified and assessed through a process of 'stakeholder mapping'. Stakeholder mapping refers to a process of identifying stakeholders and understanding their influence and potential interest in relation to the Project so that tailored consultation approaches can be developed for each type of stakeholder. Key stakeholder groups comprise:

- State Government Ministries
- County Representatives.
- UN/Non-Governmental Organizations (NGOs).

- Local communities

The stakeholder list will be continuously updated throughout the life of the Project. The full list of stakeholder groups classified by interest will be provided in the Stakeholder Engagement Plan (SEP) to be developed for this Project.

7.4.2 Stakeholder Priority Level

The identified stakeholders were identified as high priority during the engagement for the ESIA of the Project. An engagement priority level will be allocated in the SEP in order to tailor future engagement approach to each stakeholder group or individual. The results of the mapping exercise will be periodically reviewed and updated to include any new stakeholders identified during the identification and engagement process for this Project and/or amend the categorization of stakeholders, as required.

7.5 Stakeholder Engagement Undertaken to Date

7.5.1 Key Informant Interviews and Group Meetings in Rubkona County

Between 2nd September 2025 and 4th September 2025, the ESIA Consultant carried out group meetings, key informant interviews, and focus group discussions in Bentiu.

Key informant interviews were carried out with stakeholders identified as persons with substantial knowledge of the background and current characterization of the social, economic, health, and cultural aspects of the Area of Influence. The interviews were undertaken by implementing semi-structured interviews with community, county, and state representatives and UN/NGOs operating in the project area.

Table 7-1: Stakeholders Engaged in Rubkona County

DATE	INSTITUTIONS/STAKEHOLDER	ROLE OF STAKEHOLDER
02/09/2025	Relief & Rehabilitation Commission (RRC)	Supervise NGOs operations in the county.
	County WASH Director	WASH coordination at the County level.
	County Agriculture Director Representative	Agriculture development.
	Unity State Ministry of Agriculture, Environment & Forestry	Responsible for implementing laws, managing local resources, and providing services to its citizens.
	Unity State Director General – Ministry of Housing, Land & Public Utilities	
	UN Food and Agriculture Organization (FAO)	Agricultural production & Food security
	Welthungerhilfe (WHH)	Emergency aid, food security & resilience

DATE	INSTITUTIONS/STAKEHOLDER	ROLE OF STAKEHOLDER
03/09/2025	Group meeting with local community members, mostly farmers, including fishermen and fish mongers.	Project beneficiaries.
04/09/2025	Focus discussions with local women from the community in Bentiu	Project beneficiaries.
	IOM Protection	Displaced population protection, gender mainstreaming, gender empowerment, GBV/SEA support, & POW support.

7.5.2 KEY ISSUES RAISED

Key concerns which have arisen during stakeholder engagement to date are summarized in Table 7-2 below.

Table 7-2: Key Issues Raised by Stakeholders

STAKEHOLDER/INSTITUTION	CONCERNS RAISED/RECOMMENDATIONS
Relief & Rehabilitation Commission (RRC)	• There are only two temporary water points which are not sufficient to meet the clean water needs of the local communities. The NGO in charge of the water points had communicated to RRC that the water point will be closed in October due to funding cut. • Waterborne diseases are prevalent due lack of clean water for drinking. Water from the river and flooded areas is contaminated from open defecation and poor sanitation practices. • Insufficient sanitation facilities. • Flooding has caused displacement of local communities and loss of agricultural land. This has increased communities vulnerability in additional to armed conflicts experienced in the region.
County WASH Director	• Water facilities destroyed by flooding. Rivers are the main source of water for cooking and drinking. • Noted poor sanitation across the county due to lack of sufficient facilities. • Open and illegal dumping of waste promotes poor sanitation especially in Robkona town. • Crowding in town from families displaced by floods has put stress on existing sanitary facilities and increase cases of open defection. • 210 hygiene promoters participated in WASH awareness in collaboration with Coalition for Humanity (CH).

STAKEHOLDER/INSTITUTION	CONCERNS RAISED/RECOMMENDATIONS
County Agriculture Director Representative	• Flooding in Rukona has increased households' vulnerability especially food security. • Maize (staple food), beans and sorghum are the crops commonly cultivated by most households. • Seedlings for crop farming is bought at the market, and provided by relatives and NGOs such as FAO. • Support local farmers by providing new maize varieties and collaborate with CH train extension workers and climate informers. • Access to land is a major problem in the county. • WFP will stop food aid for the lean aid period and this might affect displace families. • Local community relies on food aid as a copying mechanism.
Unity State Ministry of Agriculture, Environment & Forestry	• Seed bank present in the county provide seeds to farmers for cultivation. • Conflict experience in the region coupled by flooding are the main causes of vulnerability in the county. • Agricultural farming in the county is mostly subsistent. • Flooding offers opportunity for new crops such as rice. • UN FAO provides farmers with tools such as hoes and seeds. • There are no trees because of flooding. The ministry is promoting tree planting.
Unity State Director General – Ministry of Housing, Land & Public Utilities	• IOM with funding from the World Bank has built dykes has reclaimed 14 km2 of alternative land for resettlement of displaced communities.
UN Food and Agriculture Organization (FAO)	• Encourage tree planting as part of the climate resilience components • Consider fishing as a livelihood component for communities in Rubkona. Flooding offer opportunity alternative livelihood. • Promote rice cultivation and floating gardens. • Floods have decimated trees in the county. FAO is creating community tree nursery and promoting tree planting as part of their livelihood and resilience project in the region. • Land is scarce in the county due to flooding. It is a vital resource for livelihoods development and sustainability. • The county expects bumper harvest this season due to increase agricultural cultivation with support from the different agencies implementing food security project. • Encourage the W4F Project to collaborate with agencies already implementing similar project in the state as they have experience and know to support successful implementation of the proposed project. • Encourage the engagement of local communities in the design of the project to incorporate their priorities and concerns.

STAKEHOLDER/INSTITUTION	CONCERNS RAISED/RECOMMENDATIONS
Welthungerhilfe (WHH)	• Discouraged the inclusion of cash disbursement in the project design as it is not sustainable and encourage dependency on cash. • Humanitarian focus in the implementation of livelihood program encourages dependency rather than create sustainability. • Funding cuts are enabling factor for alternative livelihoods. • Explore the non-crop livelihood components.
Group meeting with local community members, mostly farmers, including fishermen and fish mongers.	• There is inadequate and inconsistency supply of water in IDP camp. • Residents fetch water from the streams/river. • Women walk distances to collect water for their households. • Since there are no water services the sanitation and hygiene at the household is poor. • Open dumping is common in the camp. • Training and capacity building on new agronomical practices and provision of seed to boost food production. • Fishing is an important livelihood for the people in Rubkona. Requested for support with fishing gear, construction of land site with concrete surface for keeping fish.
Focus discussions with local women from the community in Bentiu	• They welcomed and supported the project. The community face water and sanitation challenge due to lack of treated clean water and sanitary facilities. • Women are responsible for collecting water for household use and they choose the location of sanitary facilities such as toilets within the household premises. • Women are the one involved in farming. • Requested the involvement of women during the project implementation as they play a key role in WASH and agriculture at household level. • Recommended women empowerment initiatives.
IOM Protection	• Design of sanitary facilities (i.e., toilets) should take into consideration security of women and girls as well as accessibility by persons with disabilities (POWs).

7.5.3 Key Informant Interviews and Group Meetings in Mayom County

Group meetings and focus group discussions were in Mayom County between 10th September 2025 and 12th September 2025. Key concerns were raised during group meetings and focus group discussion are summarized in Table 7-3 below.

Table 7-3: Issues raised by stakeholder

STAKEHOLDER	ISSUES RAISED

Group meetings with the local community members	• Welcomed the Project and emphasize for the Project to become a success the need to engage and include the local community. • Most vulnerable people may lack food this season due to flood which spoiled their crops in farms and there are no organization. • Lack of youth centres and vocational training centre. • Subsistence farming had been affected by floods and droughts impacting harvest and food security. • Pastoralists are impact by floods and droughts and have to migrate from time to time in search of pasture for their animals. • Open defecation happens because of few sanitary facilities that are not sufficient or lack of sanitary facilities. • Rivers, stream and ponds that community members rely as sources of water for household use are contaminated from poor sanitation practices. •
Focus group discussions with women	• Requested for empowerment initiatives and opportunities for women participation in the Project. • Women are involved in farming and has been affected by floods. • Lack of improved seeds and tools limit the capacity to farm large part of their land. • Women do not own land but ownership I transferred to them when the husband passes away. • Women are responsible for fetching water from the rivers, streams, ponds and few boreholes. Drinking water is boiled whereas it is used as it for other uses. • Women are responsible for sanitation and hygiene in their homes but the access to clean water and soap is a challenge.

Payam administrators, County RRC and Payam H/Chiefs expressed deep concern about the lack of humanitarian presence in the greater Mayom County to support the most vulnerable population. The few organizations present in the county do not reach the eleven Payams and complain of lack of funding from donors.

8 E&S IMPACT ASSESSMENT AND MITIGATION MEASURES

The implementation of the Climate Proof Water 4 Food Project is expected to bring socio-economic benefits and potential negative environmental impacts. The main potential environmental impacts of the proposed project and their enhancement and mitigation measures are discussed below.

8.1 IMPACT IDENTIFICATION AND ASSESSMENT

Impact identification is a process designed to ensure that all potential significant impacts are identified and considered in project design and implementation. The impacts identified are classified into two groups, i.e., project benefits (positive impacts) and negative impacts. The impacts have been assessed through the project cycle based on the methodology presented in Chapter 6 of this report.

8.2 PROJECT BENEFITS

The positive/beneficial impacts of the project far outweigh the temporary and short-term environmental and social impacts. The beneficial impacts of the Project include:

- Contribute to increase adaptation to extreme weather events and climate change within the agriculture and water sectors, increased food production, increased food security and increased access to water and sanitation, benefitting people, agriculture and livestock.
- It is anticipated that women's status, economic empowerment, and access will change as a result of the Project's climate-smart gender transformative approaches. This will raise incomes, promote gender equality, and result in climate-smart solutions in both the agriculture and waters sectors.
- Participants from Unity State will benefit from transfer of both hardware and technological know-how to set up solar panel driven water systems and using state-of-the-art new water mapping technology from TEM company, introducing vital new technology to South Sudan.
- Introduction of climate resilient crops and farming practices, CSGTA, CRGT WASH, agri-business trainings and access to finance, changed gendered power distribution and integrated management of water resources will increase resilience and reduce damage to resources in the agri-value chain, ensure availability, access to and utilization of enough food and water for families, and enable them to sell possible surplus food production on the market.
- The construction of flood resistant sanitation facilities reducing water pollution (elevated latrines, pit latrines with raised floors), including establishing integrated proper drainage system around sanitation and a system to make compost out of fecal and organic waste and biogas for clean cooking will benefit 51% of women in the target areas.
- The use of SunWash Technologies, which has self-cleaning qualities (using light's power to break down organic and biological materials that come into contact with the surface), reduces the need for cleaning chemicals and offers sustained self-cleaning activity when used in the construction of sanitary facilities.

8.3 POTENTIAL NEGATIVE IMPACTS

The following Project activities are likely to present potential environmental and social impacts or risks:

- The construction of flood resistant sanitation facilities reducing water pollution (i.e., elevated latrines, pit latrines with raised floors) and establish integrated proper drainage system around sanitation system.

- Establishment of systems to make compost out of fecal and organic waste and biogas for clean cooking.
- Construction or rehabilitation of solar-powered water supply and flood control systems.
- Construction of water conservation structures for flood and drought mitigation e.g., small dams and sand dikes).
- Construct solar-panel-driven surface water pump systems applied to move water from flooded areas; establish Solar Powered multi-user Water Supply Systems (SPWSS) – tTEM testing, drilling borehole/shallow well with raised platforms, supplying and installing the solar system, surface pumps; link water captured to new irrigation systems for agricultural production.
- Establish, rehabilitate and solarize existing non-functional groundwater systems.

Potential environmental and social impacts and risks associated with the above activities are discussed below:

8.3.1 Project Related Labour Influx

The Environmental and Social Operational Safeguard 2: Labour and Working Condition and South Sudan Labour Act, 2017 provide guidelines on labour and working conditions for the Project. They are both informed by International Labour Organization's (ILO) Declaration on the Fundamental Principles and Rights at Work and the United Nations Guiding Principles on Business and Human Rights. They apply to project workers including full-time, part-time, temporary, seasonal, and migrant workers.

The Project is anticipated to create employment opportunities in both counties for skilled and semi-skilled people. The number of people to be employed by the Project will be confirmed during inception.

The Influx of people in the project area in search of employment may present negative impacts on the local communities especially given the communities are rural, remote or small, or existing resources are limited. Potential negative effect of Project related labour influx include:

- Social conflicts within and between communities, which may be affected by cultural differences between the labor influx and the local communities may arise or escalate, and there may be a potential for increased spread of communicable diseases, and increased drug and alcohol use, violence, rates of illicit behavior and crime.
- Increased demand for local resources, such as health care, housing, clean water, food production, etc., will put a strain on already scarce resources leading to inadequate services for both locals and new employees as well as environmental degradation (e.g., poor waste management and pollution).
- Employment opportunities may favour skilled workers from outside the community, exacerbating local economic disparities and may result in conflict and disrupt local community cohesion.
- New employment opportunities may lead to changes in traditional lifestyles and cultural practices, impacting community identity.

The local communities in the Project areas will be receptors of negative impacts of employment opportunities created by the Project.

The influx of people to the Project area in search of employment opportunities created by the Project are considered to have a high level of sensitivity. The level of significance of the impact is predicted to be moderate.

The impact is categorized as short-term and reversible. Therefore, the overall magnitude of the impact is categorized as moderate.

Proposed Mitigation Measures

- Sourcing of local workforce.
- Develop and implement a Labour Management Plan incorporating key components such as worker identification, labour risk assessment, labour procedure, occupational health and safety, grievance mechanism and contractor management.
- Contractor to hire workers through recruitment offices and avoid hiring “at the gate” to discourage spontaneous influx of job seekers.
- Communication on hiring criteria, minimum age, and applicable laws.
- Introduction of sanctions (e.g., dismissal) for workers involved in criminal activities.
- Provision of cultural sensitization training for workers regarding engagement with local community.
- Establishment and operation of an effective grievance mechanism accessible to community members to facilitate early identification of problems and targeted mitigating interventions by the Project.
- Code of Conduct to be developed, incorporated into workers’ contracts, and training and socialization on it provided to workers.
- Provision of training and socialization of Code of Conduct for workers in local language(s).
- Mandatory and regular training for workers on required lawful conduct in local community and legal consequences for failure to comply with laws.
- Ensuring that children and minors are not employed directly or indirectly on the project.

Additional enhancement measures include developing and implementing a Labour Content Plan to set local recruitment goals and performance indicators to disclose information on available positions. The magnitude of residual impact from labour influx is low, and the residual impact significance is low adverse.

8.3.2 CONFLICT OVER LAND

In Robkona County particularly Rubkona and Panhiany Payams, land has been inundated by floodwaters, rendering it uninhabitable and forcing the majority of the inhabitants to relocate and move into camps in Bentiu and Robkona town. The International Organization for Migration (IOM UN Migration) is implementing a World Bank-funded infrastructure project in Rubkona County, under the Enhancing Community Resilience and Local Governance Project (ECRP), focusing on flood mitigation and infrastructure rehabilitation, particularly the construction of new dikes and rehabilitation of dikes constructed during previous floods (2022). New dikes built by IOM make land under flooding available for agriculture and settlement. However, conflict is emerging between communities over land that has been reclaimed from flooding.

The Project incorporates a component on the establishment of a flood management system and may likely encounter conflicts over land that becomes available for agriculture and settlements.

The receptor of the impact of conflict over land are the local communities who are displaced because of flooding and armed conflict experienced in the region.

The impact is categorized as long-term and reversible. Therefore, the overall magnitude of the impact is categorized as high.

Proposed Mitigation Measures

To prevent and minimize conflict over land reclaimed from the implementation of flood management system, the following mitigation measures are proposed:

- Work in closely with the County Government and other stakeholders involved in the land allocation and the allocated families to minimize the risk of conflict.
- Project participants to be selected after extensive engagement and consultation with the local community and leadership and their participation in the selection process.
- Collaborate with IOM Migration during the implementation of the flood management system since they have extensive experience in the Project area and may support in overcoming the challenges of conflict over land by providing pointers on resolving the issue.

Residual impact magnitude is low, and the residual impact significance is insignificant.

8.3.3 Waste Management

Construction and rehabilitation work will generate debris and waste. Construction debris and waste consist of concrete, bricks, metals, overburden, excavated soils, wood, packaging materials, etc. Packaging materials for agricultural inputs such as seeds and agrichemicals will also generate empty container as waste. Sanitary waste from the sanitary facilities will be used to generate biogas as an alternative energy source for coking. The estimated quantity waste to be generated by Project activities cannot be estimated at this point but it is likely to be minimal.

It should be noted that the Project areas lack proper waste management facilities. There is no municipal landfill or dumping site. Open dumping was observed during the site visits, and it was reported to contribute significantly to pollution and contamination of surface water especially when it rains.

The receptors of poor waste management are the environment (littering and pollution) and the local community from the pollution of soil, water resources and visual aesthetics of the landscape.

The impact is categorized as short-term and reversible. Therefore, the overall magnitude of the impact is categorized as moderate.

Proposed Mitigation Measures

- Implement the waste hierarchy (avoid, source reduction & reuse, recycle, recover, treat, & dispose) as a strategy for waste management.
- Sort waste into different streams or categories such biodegradable, recyclable and non-recyclable, and hazardous waste.
- Provide waste collection bin at project site for proper collection of different waste streams. Ensure the bins are colour-coded or distinctively labeled.
- Maintain records of waste types generated and how they were disposed off.
- Keep hazardous waste (agricultural inputs containers or expired agrochemicals) in a designated store with restricted access as the Project explore appropriate disposal methods.
- Prohibit open burning of waste as a waste disposal strategy.
- Train workers on good waste management practices.

Additional mitigations include the development of a waste management plan. Residual impact magnitude is moderate, and the residual impact significance is significant.

8.3.4 Occupational Health and Safety

Potential occupation health and safety hazards and risks associated the proposed construction and rehabilitation works will include:

- Slip, trip, and fall caused by caused by uneven surfaces, wet conditions or cluttered walkways.

- Heat stress and weather-related hazards, particularly during extreme temperatures can pose serious health risks to workers.
- Ergonomic hazards from repetitive motions, awkward postures or excessive lifting, leading to musculoskeletal disorders and injuries.
- Fire hazard present by flammable materials, sparks from welding, or electrical malfunctions can lead to fires.
- Fall from height by worker on elevated platform and using of ladder. Falls may lead to injuries and fatality.
- Contact with live wires, faulty equipment, or improper use of electrical tools can result in electrocution.
- Contact injury (caught-in, crush, burn, amputation, etc.). from contact with machine, device or surface.
- Working near water presents the risk of drowning,

The impact is categorized as short-term and reversible. Therefore, the overall magnitude of the impact is categorized as high.

Proposed Mitigation Measures

- Conduct a thorough risk assessment before commencing any work near water. Identify potential hazards and implement measures to control and mitigate risks.
- Safeguard any machine part, function, or process that might cause injury when possible.
- Develop and implement machine safety guidelines and train workers on machine safety for the machines they use.
- Provide hydration stations, scheduling breaks in shaded areas, using appropriate clothing for weather conditions.
- Maintain good housekeeping at the Project site to prevent trip and fall hazards.
- Implement a routine inspection program to identify and address hazards, ensure compliance with safety standards and evaluate current practices for continuous improvement.
- Foster a safety-first culture by encouraging open communication about hazards and providing a reporting system for workers to voice concerns.
- Provide continuous safety training to keep workers informed about hazards and safe practices.
- Develop emergency response plans tailored to common site hazards, including clear procedures, designated roles and regular drills.
- Ensure proper grounding of electrical systems and conducting regular maintenance of electrical tools and equipment as well as training workers on electrical safety practices.
- Erect barriers and use clear signage to communicate the hazards/risks. This helps to prevent unauthorized access and alerts workers to potential hazards.

Additional mitigations include the development of an occupational health and safety plan and carry out occupational health and safety risk of all proposed construction and rehabilitation work. Residual impact magnitude is low, and the residual impact significance is insignificant.

8.3.5 Noise and Vibrations

Machines and equipment utilized in construction or rehabilitation projects will produce noise and vibrations. Activities like drilling boreholes and excavating for sand dikes and small dams will also generate significant levels of noise and vibrations. Even though ambient noise levels was not measured during the assessment, it was noted that, given the rural location of the Project area, noise levels are

low because of minimal human activity, except for limited commercial activities in Bentiu and Mayom town.

The sensitive receptors of noise and excessive vibrations will include residential homes near the Project sites and workers involved in the construction or rehabilitation activities. Construction noise and vibrations is considered to have a moderate level of sensitivity overall. The level of significance of the impact is predicted to be low.

The impact is categorized as short-term and reversible. Therefore, the overall magnitude of the impact is categorized as low.

Proposed Mitigation Measures

To alleviate possible impacts as far as reasonably practicable, measures to reduce or eliminate the impact/risk of an activity have been embedded within the Project design and/ or standard construction and operating procedures. The following embedded mitigation has been included as part of the Project with respect to construction noise and vibrations:

- Limit hours of operation for certain high impact construction activities.
- Control noise at source by building noise barriers such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receptors.
- Avoid nighttime activities. Sensitivity to noise increases during the nighttime hours.
- Site equipment on the construction site as far away from noise-sensitive sites as possible.
- Combine noisy operations so they occur in the same time period. The total noise level produced will not be significantly greater than the level produced if the operations were performed separately
- All workers involved with the construction works will be protected from excessive noise exposure by provision of personal protective equipment (PPE) such as earplugs and earmuffs.

Additional mitigations are not required. Residual impact magnitude is negligible, and the residual impact significance is insignificant.

8.3.6 AGROCHEMICAL/PESTICIDE USE

Crop pests and diseases will intensify the use of pesticides. Currently, farmers in the Project areas don't use agrochemicals for agricultural because of lack of resource to purchase and unavailability of agrochemical dealers in the local towns

Pesticides are not adequately regulated in South Sudan. In the absence of alternatives, uncontrolled and inappropriate use of pesticides is likely to increase significantly, with significant adverse impacts on farmers, community, and ecosystems from poor pesticide use and management practices. Specific issues include the use of banned or unregistered pesticides, unapproved uses, incorrect application methods, rates, and timing, occupational exposure from the lack of personal protective equipment, early re-entry by farmers in the fields, unsafe storage, onward sale of re-packaged or out of date pesticides, preparing/mixing chemicals in the inappropriate places (e.g. near water), pesticides in runoff from fields and from cleaning equipment near or in water; re-use of containers for water and food storage.

Receptors include the local farmers from exposure while handling and applying and the environmental from contamination during application.

The impact is categorized as long-term and irreversible. Therefore, the overall magnitude of the impact is categorized as high.

Proposed Mitigation Measures

- Promote the use of organic fertilizers and biological pest control methods such as natural enemies and pathogens.
- Establish and implement Integrated Pest Management (IPM). Train extension officers and farmer on IPM.
- Develop and deliver appropriate extension service that include capacity building and training farmers of proper storage, handling and use agrochemicals.

8.3.7 Community Health and Safety

There are potential negative effects on health and safety, such as the spread of waterborne diseases and unintentional injuries and deaths (for humans and livestock), even though building water conservation structures for flood mitigation (such as small dams, sand dikes, ponds, and opening riverbanks) can have positive effects, such as decreased flood damage and improved water supply. In the regions impermeable soils permit floodwater to pool, so providing a breeding ground for disease vectors. Small dams and sand dikes will cause water to stagnate, which will provide ideal circumstances for vectors for diseases such as, malaria, and water-borne illnesses (typhoid, gastroenteritis, etc.), which are the most common illnesses recorded.

Sensitive receptors include the local communities residing near the water conservation structures for flood mitigation.

The impact is categorized as long-term and irreversible. Therefore, the overall magnitude of the impact is categorized as moderate.

Proposed Mitigation Measures

- Locate the small dams and sand dikes away from human settlements.
- Create community awareness creation and education campaign to sensitize on the dangers of water-borne diseases in collaboration with partners in the health sector.
- Prohibit direct access of small dams and sand dikes by erecting fencing or growing trees around them, which will reduce the likelihood of accidents and help prevent contamination.

Additional mitigations may include development and implementation of a community health and safety plan. Residual impact magnitude is low, and the residual impact significance is moderate.

9 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

9.1 INTRODUCTION

An Environmental and Social Management Plan (ESMP) documents the Project's risk management strategy. It serves as an "Umbrella Document" that integrates the findings of all impact studies carried out during the design phase, the plans and other provisions for complying with the requirements of the AfDB Group Integrated Safeguard System (ISS) that were triggered as well as country- and site-specific information.

The purpose of the ESMP is to ensure that social and environmental impacts, risks and liabilities identified during the ESIA process are effectively managed during the implementation of the proposed Project. The ESMP specifies the mitigation and management measures to which the Project Proponent is committed and shows how the Project will mobilize organizational capacity and resources to implement these measures. The ESMP also shows how mitigation and management measures will be scheduled.

The key objectives of the ESMP are to:

- Formalize and disclose the program for environmental and social management.
- Provide a framework for the implementation of environmental and social management initiatives.

Best practice principles require that every reasonable effort is made to reduce and preferably to prevent negative impacts while enhancing the benefits. These principles have guided the ESIA process.

9.2 IMPLEMENTATION ARRANGEMENTS

Plan International will recruit an Environmental and Social Safeguard Specialist to coordinate all Environmental and Social Safeguard (ESS) related activities within the project as well as the implementation of the ESMP. All the Project implementing partners will nominate their ESS focal points to ensure better planning, implementation, and the monitoring of the ESMP. Contractors appointed for construction activities will also have a focal point for the implementation of the Construction Environmental and Social Management Plan (CESMP) that they will develop.

A Project Implementation Unit will be established and will oversee the ESMP implementation. The PIU will likely be composed of the following key members:

- Project Coordinator: will be in charge of project implementation and coordinating the teams at the county-level.
- Finance/Accounts Officer: responsible for the management of project finance including reporting on the use.
- WASH Coordinator: coordinate the implementation of WASH activities.
- Agricultural Expert/Agronomist: coordinate the implementation of the smart-agriculture components.
- Monitoring Evaluation, Reporting & Learning (MERL) Officer: responsible collating Project data including E&S information
- E&S Safeguard Specialist: responsible for ESMP implementation and E&S performance management and reporting, uncluding gender mainstreaming.
- Extension Officers: support the dissemination and training of farmers on agronomical best practices and implementation smart-agriculture component/activities.

Table 9-1: Environmental and Social Management Plan

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT	ESTIMATED COST (USD)
Project-related labour influx	• Sourcing of local workforce. • Develop and implement a Labour Management Plan incorporating key components such as worker identification, labour risk assessment, labour procedure, occupational health and safety, grievance mechanism and contractor management. • Contractor to hire workers through recruitment offices and avoid hiring “at the gate” to discourage spontaneous influx of job seekers. • Communication on hiring criteria, minimum age, and applicable laws. • Introduction of sanctions (e.g., dismissal) for workers involved in criminal activities. • Provision of cultural sensitization training for workers regarding engagement with local community. • Establishment and operation of an effective grievance mechanism accessible to community members to facilitate early identification of problems and targeted mitigating interventions by the Project. • Code of Conduct to be developed, incorporated into workers’ contracts, and training and socialization on it provided to workers. • Provision of training and socialization of Code of Conduct for workers in local language(s).	Contract duration for civil works and borehole drilling and rehabilitation	Civil Works Contractor(s) Borehole Drilling and Rehabilitation Contractor	High	3,000

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT	ESTIMATED COST (USD)
	• Mandatory and regular training for workers on required lawful conduct in local community and legal consequences for failure to comply with laws. • Ensuring that children and minors are not employed directly or indirectly on the project.				
Conflict over land reclaimed from flooding	• Work in closely with the County Government and other stakeholders involved in the land allocation and the allocated families to minimize the risk of conflict. • Project participants to be selected after extensive engagement and consultation with the local community and leadership and their participation in the selection process. • Collaborate with IOM Migration during the implementation of the flood management system since they have extensive experience in the Project area and may support in overcoming the challenges of conflict over land by providing pointers on resolving the issue.	Duration of the Project	Plan International and Coalition for Humanity	High	5,000
Waste management	• Implement the waste hierarchy (avoid, source reduction & reuse, recycle, recover, treat, & dispose) as a strategy for waste management. • Sort waste into different streams or categories such biodegradable, recyclable and non-recyclable, and hazardous waste. • Provide waste collection bin at project site for proper collection of different waste streams. Ensure the bins are colour-coded or distinctively labeled.	Contract duration for civil works and borehole drilling and rehabilitation Project Implementation Duration	Civil Works Contractor(s) Borehole Drilling and Rehabilitation Contractor Plan International and Coalition for Humanity	Moderate	10,000

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT	ESTIMATED COST (USD)
	• Maintain records of waste types generated and how they were disposed off. • Keep hazardous waste (agricultural inputs containers or expired agrochemicals) in a designated store with restricted access as the Project explore appropriate disposal methods. • Prohibit open burning of waste as a waste disposal strategy. • Train workers on good waste management practices.				
Occupational health and safety	• Conduct a thorough risk assessment before commencing any work near water. Identify potential hazards and implement measures to control and mitigate risks. • Safeguard any machine part, function, or process that might cause injury when possible. • Develop and implement machine safety guidelines and train workers on machine safety for the machines they use. • Provide hydration stations, scheduling breaks in shaded areas, using appropriate clothing for weather conditions. • Maintain good housekeeping at the Project site to prevent trip and fall hazards. • Implement a routine inspection program to identify and address hazards, ensure compliance with safety standards and evaluate current practices for continuous improvement. • Foster a safety-first culture by encouraging open communication about hazards and providing a reporting system for workers to voice concerns.	Contract duration for civil works and borehole drilling and rehabilitation	Civil Works Contractor(s) Borehole Drilling and Rehabilitation Contractor	High	5,000

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT	ESTIMATED COST (USD)
	• Provide continuous safety training to keep workers informed about hazards and safe practices. • Develop emergency response plans tailored to common site hazards, including clear procedures, designated roles and regular drills. • Ensure proper grounding of electrical systems and conducting regular maintenance of electrical tools and equipment as well as training workers on electrical safety practices. • Erect barriers and use clear signage to communicate the hazards/risks. This helps to prevent unauthorized access and alerts workers to potential hazards.				
Noise and vibrations	• Limit hours of operation for certain high impact construction activities. • Control noise at source by building noise barriers such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receptors. • Avoid nighttime activities. Sensitivity to noise increases during the nighttime hours. • Site equipment on the construction site as far away from noise-sensitive sites as possible. • Combine noisy operations so they occur in the same time period. The total noise level produced will not be significantly greater than the level produced if the operations were performed separately • All workers involved with the construction works will be protected from excessive noise exposure by provision of	Contract duration for civil works and borehole drilling and rehabilitation	Civil Works Contractor(s) Borehole Drilling and Rehabilitation Contractor	Low	3,000

E&S IMPACT/ISSUE	MITIGATION MEASURES	TIMELINES	RESPONSIBILITY	LEVEL OF IMPACT	ESTIMATED COST (USD)
	personal protective equipment (PPE) such as earplugs and earmuffs.				
Agrochemical/pesticide use and management	• Promote the use of organic fertilizers and biological pest control methods such as natural enemies and pathogens. • Establish and implement Integrated Pest Management (IPM). Train extension officers and farmer on IPM. • Develop and deliver appropriate extension service that include capacity building and training farmers of proper storage, handling and use agrochemicals.	Project Implementation Duration	Plan International and Coalition for Humanity	Moderate	5,000
Community health and safety	• Locate the small dams and sand dikes away from human settlements. • Create community awareness creation and education campaign to sensitize on the dangers of water-borne diseases in collaboration with partners in the health sector. • Prohibit direct access of small dams and sand dikes by erecting fencing or growing trees around them, which will reduce the likelihood of accidents and help prevent contamination.	Project Implementation Duration	Plan International and Coalition for Humanity	Low	4,000
Total					**35,000**

9.3 MONITORING, OVERSIGHT AND CONTINUAL IMPROVEMENT

9.3.1 ENVIRONMENTAL AND SOCIAL MONITORING

The proposed mitigation measures that will be implemented to eliminate or minimize the Project's environmental and social impacts to a level that is not considered significant. The implementation of these measures and the effectiveness in achieving a reduction of impacts will be monitored, evaluated and reported

The objectives of monitoring are to ensure regulatory requirements are met, verify predictions made during the ESIA process, verify the implementation and effectiveness of mitigation measures, provide early warning of potential environmental and social impacts and inform future operations and contribute to continuous improvement in management of environmental and social issues.

The environmental and social monitoring activities will be conducted by Environmental and Social Safeguard Specialist who will be part of the Project Implementation Unit (PIU). The following types of inspections, monitoring and reporting.

- Inspections: Inspections will be planned and conducted on a regular basis to ensure that mitigation measures and commitments are properly implemented and maintained, and specific management procedures are being followed
- Auditing: Auditing can include either internal audits where the Project conducts an audit to assess compliance to the ESMP or external audits by a consultant to assess compliance to the ESMP and lenders E&S requirements.

The frequency of inspections, monitoring, auditing and reporting is included in the monitoring plan. The outputs will be used to provide feedback on the effectiveness of mitigation measures and to adjust mitigation measures to suit evolving conditions.

9.3.2 NON-CONFORMANCE MANAGEMENT

When non-compliances or non-conformities are discovered through monitoring, auditing, or oversight efforts, corrective action plans are created and followed through on until they are resolved. The status of corrective actions will be discussed during Project progress meetings.

9.3.3 PERFORMANCE REPORTING

The Project will develop a comprehensive reporting system that describes:

- Internal reporting of environmental and social performance, including performance against KPIs
- External reporting to the lender relating to:
    - Quartely reporting on E&S performance of the project
    - permitting and licensing requirements, e.g., notification before starting an activity.
    - monitoring results in accordance with the terms and conditions of any licenses or consents
    - annual environmental and social audits
    - environmental and social incidents as required by lender.

9.4 TRAINING AND CAPACITY BUILDING

Trainings Project implementation staff will be conducted. The overall goal of the training is to deliver necessary information on the Climate Proof Water 4 Food Project and the Project's environmental and social documentation including ESIA, ESMP, Stakeholder Engagement Plan (SEP), etc. The main

concept of the training is to provide necessary knowledge and skills required for implementation of ESMP procedures throughout the project lifecycle.

Training modules will be designed according to the identified training needs. The training includes – among other contents – i) the AfDB E&S Operational Safeguards, ii) a general overview on the Project's ESIA and iii) the SEP and the Grievance Mechanism of the Project

9.5 MANAGEMENT OF CHANGE

The Project will develop a management of change procedure to ensure that the impacts of any changes to the Project as described in the ESIA are adequately assessed and appropriate management and mitigation activities identified, implemented and tracked through to closure. Examples of changes include changes to the Project footprint/location, Project components, etc.

9.6 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Table 9-2: Environmental and Social Monitoring Plan

ENVIRONMENTAL & SOCIAL ASPECT	MONITORING PARAMETER	METHOD / MEASUREMENT	LOCATION	FREQUENCY	RESPONSIBILITY	ESTIMATED COST (USD)
Labour	Number of employees; Employee grievances	Review of payroll/contracts; HR grievance register	Mayom & Rubkona	Bi-annually / Monthly	Plan Int'l & CH	USD 3k / year (minimal admin cost, mostly staff time)
Water Quality	Physical & chemical testing against WHO standards	Sample from boreholes + lab testing	New & rehabilitated boreholes	Bi-annually	Plan Int'l & CH	USD 2.5k / year (lab fees + transport)
Health & Safety Incidents	Reported incidents (fatalities, major, lost time, near misses)	Review of incident register	Mayom & Rubkona	Monthly	Plan Int'l & CH + Contractors	USD 5k / year (PPE refresher, reporting materials)
Food Security & Livelihood	Performance KPIs	Village assessment surveys	Mayom & Rubkona	Annually	Plan Int'l & CH + External Consultant	USD 15k / year (surveys + part-time consultant support)
Community Grievances	No. reported & resolved	External grievance register	Mayom & Rubkona	Monthly	Plan Int'l & CH	USD 2k / year (grievance boxes, meetings, staff facilitation)
Waste Management	Amount & type of waste generated	Waste management assessment	Mayom & Rubkona	Bi-annually / Monthly	Plan Int'l & CH	USD 5k / year (assessments, safe disposal support)

ENVIRONMENTAL & SOCIAL ASPECT	MONITORING PARAMETER	METHOD / MEASUREMENT	LOCATION	FREQUENCY	RESPONSIBILITY	ESTIMATED COST (USD)
Agrochemicals / Pesticides	Quantity & types used	Inventory review	Mayom & Rubkona	Bi-annually / Monthly	Plan Int'l & CH	**USD 3k / year** (monitoring, training materials)
Total						**USD 35,000**

10 CONCLUSION AND RECOMMENDATION

The Climate Proof Water 4 Food Project has tremendous potential to create positive environmental and social transformation. To maximize benefits and minimize risks, project design must tailor technologies and approaches to local ecological, social, and economic conditions, actively engage all stakeholders, especially women, youth, and the most vulnerable, in planning and governance, deliberately connecting water management, CSA practices and market development interventions, focus on capacity building and creating a learning system for continuous adaptation and invest in building strong, transparent, and equitable institutions for managing natural resources and market relationships. By embedding these principles, the project can move beyond simple productivity gains and truly foster a sustainable and resilient agricultural system for people and the planet.

This report highlights the positive and negative impact related to the Project on the environment and the local communities. Management and mitigation measures have been proposed for the negative impacts to minimize the impacts to negligible levels.

The negative environmental and social impacts on the implementation of this project are minimal and will be addressed through implementation of the environmental and social management plans. These measures form part of the Project component and will bring minimal added cost in the implementation process. The advantages of implementing the Project are enormous and it will minimize food insecurity, water shortage and a lack of sanitary facilities in the Project area. The Project will also promote the food security and community resilience to climate shocks. In summary the potential negative impacts of the Project are minimal and can be easily through implementation of management and mitigation measures. The positive impacts and the benefits to the community are immense.

Thus, it is our recommendation that the Ministry of Environment and Forestry issue the Project a Letter of No Objection and an EIA Certificate in line the framework anticipated in the Environmental Bill 2010.

ANNEXES

ANNEX A: LIST OF INTERVIEWEES

ROBKONA COUNTY

DATE	NAME	POSITION
02/09/2025	Kubang Dobwol	RRR County Director
02/09/2025	Simon Khor	RRR Deputy County Director
02/09/2025	Mamut Laatuyai Kok	Robkona County Director-Agriculture
02/09/2025	Doul Pech Choul	Robkona County Director-WASH
02/09/2025		Minister of Agriculture, Environment & Fishery – Unity State
02/09/2025		Director General – Housing, Land & Public Utilities
02/09/2025	Noor	FAO-Agriculture & Fisheries
02/09/2025	Alphonse Ngicho	Welthungerhilfe (WHH) – Agriculture & Livelihood
04/09/2025		IOM Protection

MAYOM COUNTY

DATE	NAME	POSITION
10/09/2025	Kugar Kun Dang	Dhulek/Boma H/Chief
10/09/2025	Chop Maluot Gatkek	Kualkuony/boma/administrator
10/09/2025	Salva Mathok Gatphan	Mankien Payam Administrator
10/09/2025	Santino Jack Wat	Deputy RRC Director, Mayom

ANNEX B: LIST OF DOCUMENTS REVIEWED

#	TITLE	DATE	ISSUED BY
1	Project Concept Note- Climate Proof Water4Food South Sudan and Ethiopia	February 2024	African Development Fund
2.	African Development Bank Group Integrated Safeguards System	2023	AfDB
3.	Village Assessment Survey – Mayom County	January 2025	IOM DTM South Sudan
4.	Emergency Food Security Update: Rubkona County	November 2023	REACH
5.	Rubkona Village Assessment Survey	October 2023	IOM DTM South Sudan
6.	County Social Map-Robkona County	May 2016	UNICEF South Sudan
7.	Africa Water Atlas		UNEP
8.	Soil Atlas of Africa		
9.	South Sudan Water Profile		USAID/Sustainable Water Partnership
10.	South Sudan Village Assessment Survey - Bor South, Rubkona, Wau	November 2019	IOM DTM South Sudan

ANNEX C: PHOTOLOG – RUBKONA COUNTY

Photo 1: Robkona town

Photo 2: Open dumping of waste

Photo 3: Public meeting at Robkona County

Photo 4: Reeds growing in flooded water

Photo 5: Dikes protection against flood water

Photo 6: Pooling of water near

Photo 7: Contaminated flood water

Photo 8: Residential houses previously flooded

Photo 9: FGD with women in Robkona

Photo 10: Meeting with IOM Protection

Phot 11: Cat fish at the landing site in Rubkona

Phot 12: The other fish species common in Rubkona

ANNEX C: PHOTOLOG – MAYOM COUNTY

Photo 1: Public meeting at Riak Payam

Photo 2: Public meeting in Riak Payam

Photo 3: Socio-economic survey in Koulkuony

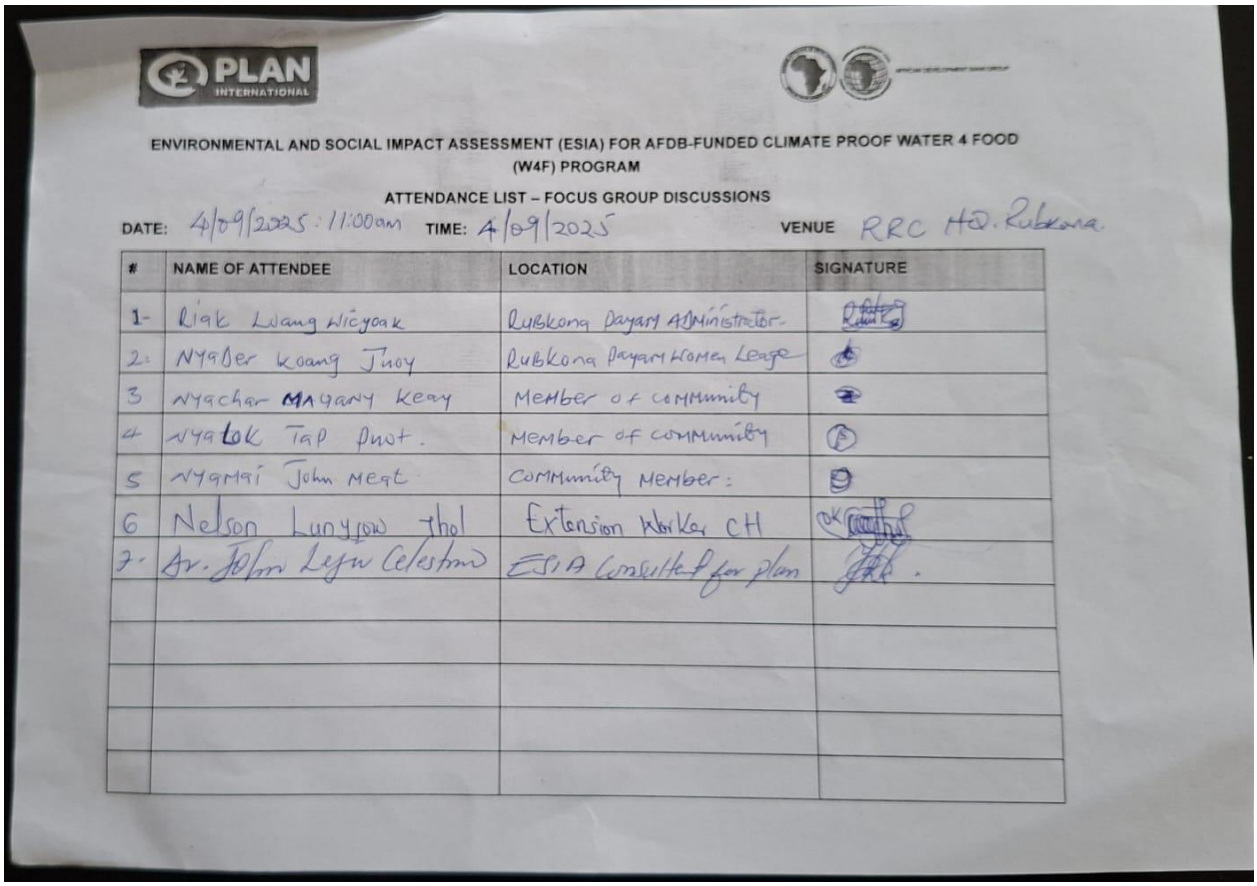
Photo 4: FDG with women in Koulkuony

Photo 5: Socio-economic survey in Witchiep

Photo 6: Public meeting in Witchiep

Photo 7: FDG with women in Witchiep

ANNEX D: STAKEHOLDER ENGAGEMENT ATTENDANCE LIST



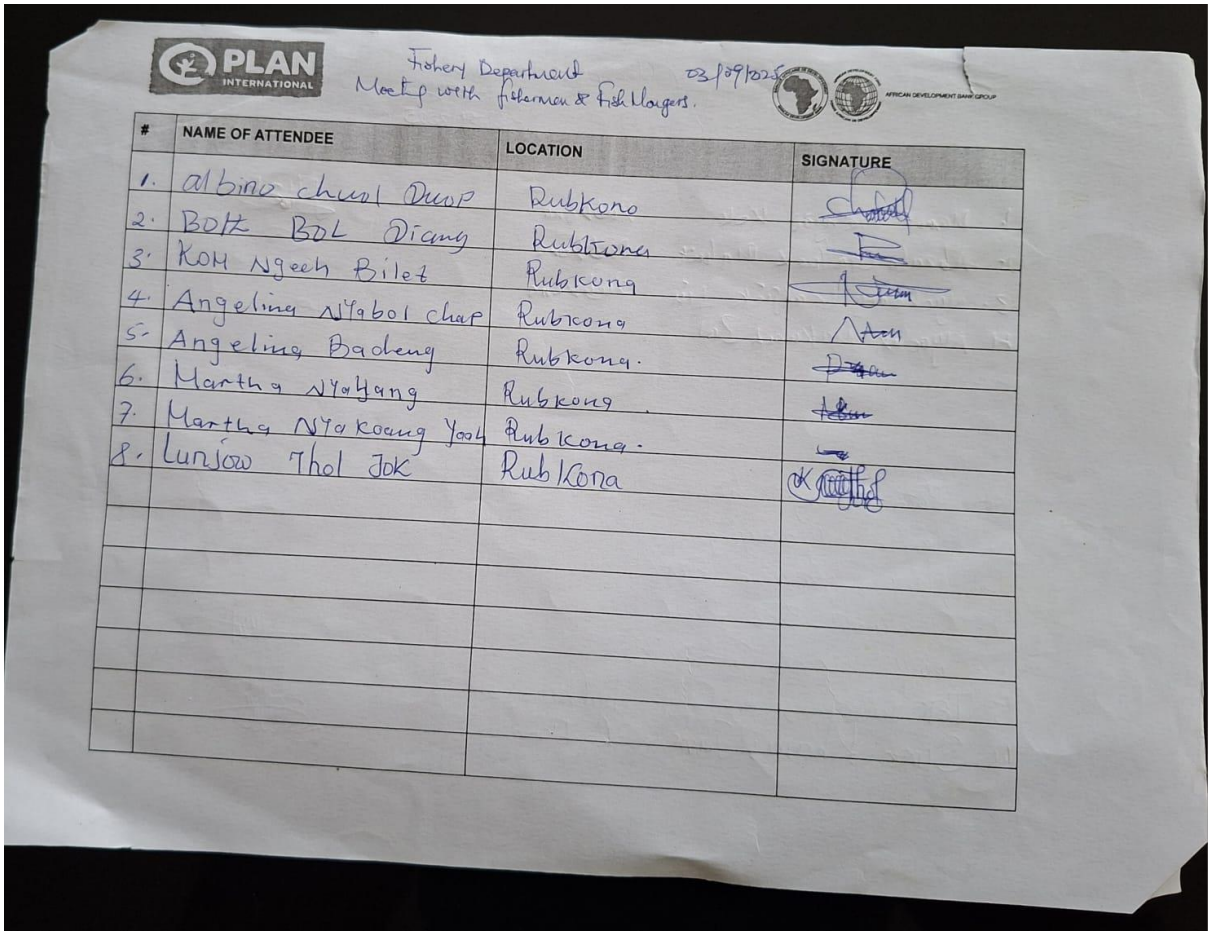
PLAN INTERNATIONAL

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR AFDB-FUNDED CLIMATE PROOF WATER 4 FOOD (W4F) PROGRAM

ATTENDANCE LIST – FOCUS GROUP DISCUSSIONS

DATE: 4/09/2025: 11:00am TIME: 4/09/2025 VENUE RRC HQ. Rubkona.

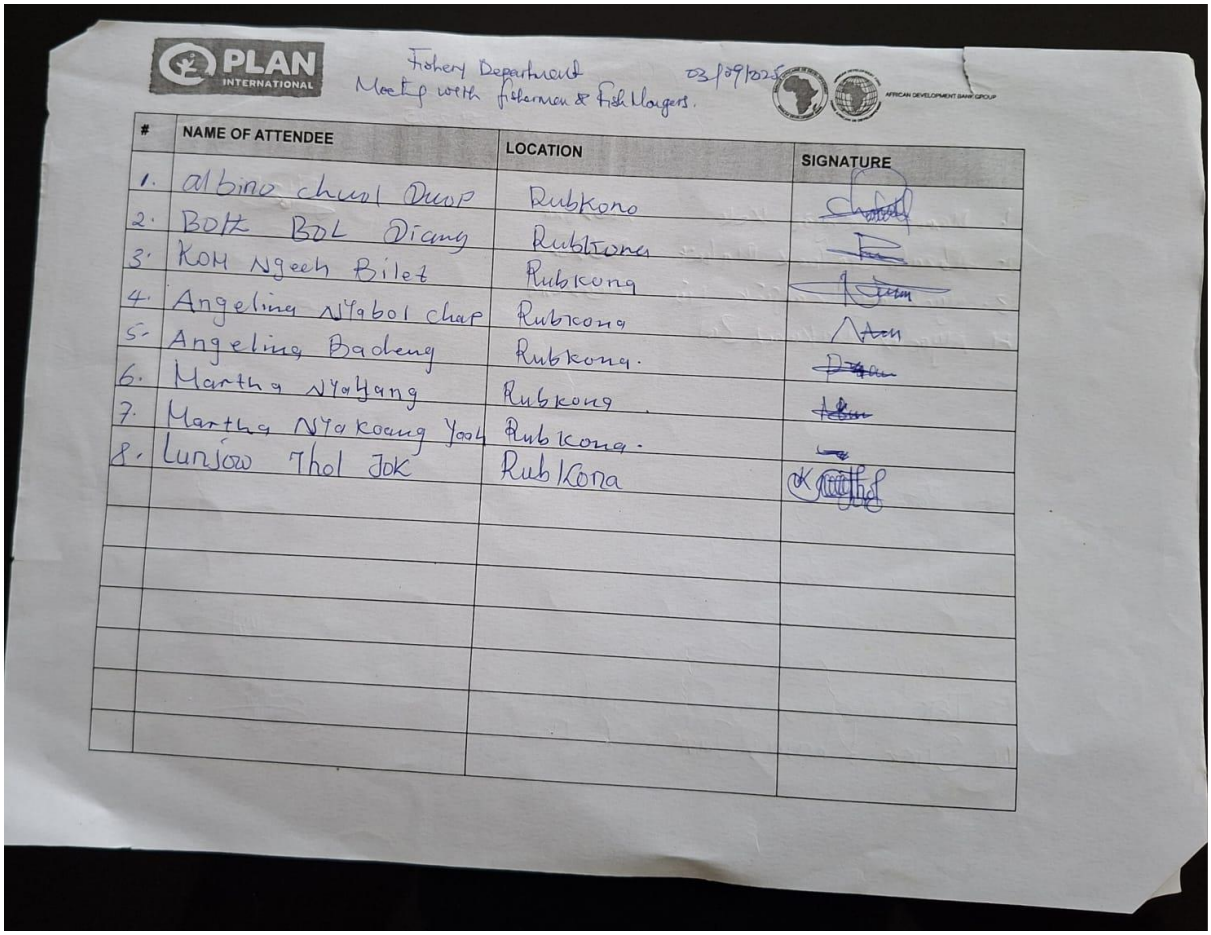
#	NAME OF ATTENDEE	LOCATION	SIGNATURE
1-	Riak Luang Wicyoak	Rubkona Payam Administrator.	
2.	Nyaber Koang Thoy	Rubkona Payam Women League	
3	Nyachar Magany Keay	Member of community	
4	Nyalok Tap Puot.	Member of community	
5	Nyamai John Megt	Community Member:	
6	Nelson Lunyjow Thol	Extension Worker CH	
7.	Dr. John Leju Celestino	ESIA Consultant for plan	



PLAN INTERNATIONAL

Fishery Department 03/09/2025
Meeting with fishermen & Fish Mongers.

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
1.	albino chuol Duop	Rubkona	
2.	BOL BOL Diang	Rubkona	
3.	KOH Ngeah Bilet	Rubkona	
4.	Angelina Nyabol chap	Rubkona	
5.	Angelina Badeng	Rubkona.	
6.	Martha Nyayang	Rubkona	
7.	Martha Nyakoang Yoal	Rubkona.	
8.	Lunjow Thol Jok	Rubkona	



PLAN INTERNATIONAL

Fishery Department 03/09/2025
Meeting with fishermen & Fish Mongers.

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
1.	albino chuol Duop	Rubkona	
2.	BOL BOL Diang	Rubkona	
3.	KOH Ngeah Bilet	Rubkona	
4.	Angelina Nyabol chap	Rubkona	
5.	Angelina Badeng	Rubkona.	
6.	Martha Nyayang	Rubkona	
7.	Martha Nyakoang Yoal	Rubkona.	
8.	Lunjow Thol Jok	Rubkona	

1st Working Day.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR AFDB-FUNDED CLIMATE PROOF WATER 4 FOOD (W4F) PROGRAM

ATTENDANCE LIST – PUBLIC MEETINGS

DATE: 10/9/2025 TIME: 9:00Am till 2:21 VENUE Bhuleek.

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
1-	Peter Both cHar	Pibor/WangBour PaYam	[signature]
2-	Kugar Kur Dang	Pibor/WangBour PaYam	[signature]
3-	TER BanY luak	Pibor/WangBour PaYam	[signature]
4-	Mathony GatJiek	Pibor/WangBour PaYam	[signature]
5-	MEaD cHan	Pibor/WangBour PaYam	[signature]
6-	Gatluak cHoap Riak	Pibor/WangBour PaYam	[signature]
7-	MacHouL madiT	Pibor/WangBour PaYam	[signature]
8-	Gatkuoth thak	Pibor/WangBour PaYam	[signature]
9-	CHick RiEY KuoL	Pibor/WangBour PaYam	[signature]
10-	MaBanY POLice	Pibor/WangBour PaYam	[signature]
11-	Nuor Palatah Pouk	Pibor/WangBour PaYam	[signature]
12-	Kugar Mangow Koang	Pibor/Wangbuor Payam	[signature]

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
13-	NYouT Boach Reath	Pibor/WangBour PaYam	[signature]
14-	MadienY Kuol Phan	Pibor/WangBour PaYam	[signature]
15-	Gatluak BePaL	Pibor/WangBour PaYam	[signature]
16-	ManY thot MuT	Pibor/WangBour PaYam	[signature]
17-	NYadied GON HeaL.	Pibor/WangBour PaYam	[signature]
18-	Kuok Dak BaY	Pibor/WangBour PaYam	[signature]
19-	Beni Kuor YadeT	Pibor/WangBour PaYam	[signature]
20-	Kuol Kueth	Pibor/WangBour PaYam	[signature]
21-	Gatwiech Tang	Pibor/WangBour PaYam	[signature]
22-	Gatluak Chan	Pibor/WangBour PaYam	[signature]
23-	Keah Gatluak.	Pibor/WangBour PaYam	[signature]
24-	Dictor Gai Luoth	Pibor/WangBour PaYam	[signature]

PLAN INTERNATIONAL

1st Working Day.

AFRICAN DEVELOPMENT BANK GROUP

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR AFDB-FUNDED CLIMATE PROOF WATER 4 FOOD (W4F) PROGRAM

ATTENDANCE LIST – FOCUS GROUP DISCUSSIONS

DATE: 10/9/2025. TIME: 9:00am till 2:21 Pm VENUE Bhuleck

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
1	STEPhen Nhial Dieu	Pibor/Kangbuor Payam	
2	NYEKen Riaking	Pibor/Kangbuor Payam	
3	Cham Tol Gueg	Pibor/Luang buor PAYam	
4	NYE Kuang Hai	Pibor/Luang buor PAYam	
5	Both Bak	Pibor/Luang buor PAYam	
6	NYECuei Dobuel	Pibor/Luang buor PAYam	
7	Chiang Manyang	Pibor/Luang buor PAYam	
8	NYachot Yoach	Pibor/Luang buor PAYam	
9	Hoak Madiok	Pibor/Luang buor PAYam	
10	NYEMach Bayak	Pibor/Luang buor PAYam	
11	Phoch Ciat Diek	Pibor/Luang buor PAYam	
12	NYEKang Cuelieng	Pibor/Luang buor PAYam	
13	MANyang Koang	Pibor/Luang buor PAYam	
14	NYEKuei MAYang	Pibor/Luang buor PAYam	

PLAN INTERNATIONAL

AFRICAN DEVELOPMENT BANK GROUP

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
15	Muom Mayian	Pibor/Luang buor PAYam	
16	NYEKhan Ping	Pibor/Luang buor PAYam	
17	Dador Khamich	Pibor/Luang buor PAYam	
18	NYagwang wal	Pibor/Luang buor PAYam	
19	Kuon Kang Dieu	Pibor/Luang buor PAYam	
20	NYEBoth Manyang	Pibor/Luang buor PAYam	
21	Luang Mut Kur	Pibor/Luang buor PAYam	
22	NYAYuok Kotke	Pibor/Luang buor PAYam	
23	Dobuel Puok	Pibor/Luang buor PAYam	
24	Mer Dal Kuol	Pibor/Luang buor PAYam	
25	NYaYack Duach	Pibor/Luang buor PAYam	
26	NYEDuel Makuet	Pibor/Luang buor PAYam	
27	Malou Cham	Pibor/Luang buor PAYam	
28	NYEPuok Cuei	Pibor/Luang buor PAYam	
29	NYEKiek Makuet	Pibor/Luang buor PAYam	
30	NYEPuok Ciang.	Pibor/Luang buor PAYam	

2nd Working day.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR AFDB-FUNDED CLIMATE PROOF WATER 4 FOOD (W4F) PROGRAM

ATTENDANCE LIST – ~~FOCUS GROUP DISCUSSIONS~~ (PUBLIC MEETINGS)

DATE: 11th/09/2025 TIME: 1:30pm – 3:48pm VENUE Kualkuony Primary School

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
01	Chop Maluot Gatkeah	Kualkuony Boma – Liah payam	[signature]
02	Tang Maluel Khoryom	" "	[signature]
03	Mapatoch Lieh	" "	[signature]
04	Marier Koang	" "	[signature]
05	Majack Nhial Dol	" "	[signature]
06	Matiay Manyal	" "	[signature]
07	Majiek Kuol Ngora	" "	[signature]
08	Chichchich puow	" "	[signature]
09	Kuol Nidor Kuolang	" "	[signature]
10	Klukum Batuk	" "	[signature]
11	Pow Diew Makot	" "	[signature]
12	Dien Machar Teal	" "	[signature]

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
13	Marieng Ruai	Kualkuony Boma – Liah payam	[signature]
14	Kuonyguay Deang	" "	[signature]
15	Kuol Gatluak	" "	[signature]
16	Makear Gatduol	" "	[signature]
17	Machuy Tuor	" "	[signature]
18	Kang Mapiny	" "	[signature]
19	Bidong Duoth	" "	[signature]

2nd Working Day.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR AFDB-FUNDED CLIMATE PROOF WATER 4 FOOD (W4F) PROGRAM

ATTENDANCE LIST – FOCUS GROUP DISCUSSIONS

DATE: 17/9/2025

TIME: 1:30pm till 3:48pm

VENUE Kualkuong Primary Scho

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
1	Nyaluok Deng Kuor	Kual Kuong stock Riak	[signature]
2	Nyewar Bol Malieth	Kual Kuong stock Riak	[signature]
3	Nyedoar Gatdier	Kual Kuong Riak	[signature]
4	Nyeriak Makuac Banlkuor	Kual Kuong Riak	[signature]
5	Nyepar Thiewic Majong	Kual Kuong Riak	[signature]
6	Nyadayak Matiok Nhial	Kual Kuong Riak	[signature]
7	Nyanghiel Jiek Bol	Kual Kuong Riak	[signature]
8	Nyawuleka Mapiny Yar	Kual Kuong Riak	[signature]
9	Nyewic Puok Barjany	Kual Kuong Riak	[signature]
10	Nyekor Tekjiek Kheat	Kual Kuong Riak	[signature]
11	Nyekueth Kuol Puok	Kual Kuong Riak	[signature]
12	Nyakuan Kai Lam	Kual Kuong Riak	[signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR AFDB-FUNDED CLIMATE PROOF WATER 4 FOOD (W4F) PROGRAM

ATTENDANCE LIST – PUBLIC MEETINGS

DATE:

TIME:

VENUE

#	NAME OF ATTENDEE	LOCATION	SIGNATURE
13	Nyegeng Jany Chany	Kual Kuong Riak	[signature]
14	Nyebiel Mawic Rom	Kual Kuong Riak	[signature]
15	Nyapak Majang Jal	Kual Kuong Riak	[signature]

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Nairobi, Kenya
alfrick.murunga@kontraktadvisorygroup.com
+254 721 926 132

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ENVIRONMENT & FORESTRY
OFFICE OF THE UNDERSECRETARY OF ENVIRONMENT

2/10/2025

The County Manager,
African Development Bank Group,
South Sudan Country Office (COSS),
UNDP Compound, Ministries Road,
P.O. Box 622, Juba, South Sudan

RE: DISCLOSURE OF THE AfDB CLIMATE PROOF WATER FOR FOOD PROJECT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENTS (ESIA

Reference is hereby made to the environmental and social impact assessment report for the "CLIMATE PROOF WATER FOR FOOD PROJECT" project submitted by PLAN INTERNATIONAL to the Ministry for review.

The Internal compliance review was completed, the Environmental and Social Impact Assessments (ESIA) for Climate Proof Water for Food in Rubkona and Mayom Counties in Unity State have been developed and submitted to the Ministry of Environment and Forestry for review and clearance.

This communication is to notify the African Development Bank that the Ministry of Environment and Forestry is in the process of reviewing and disclosing the documents as required.

The Ministry has granted an approval to AfDB and PLAN INTERNATIONAL to disclose the documents in their websites as required.

REPUBLIC OF SOUTH SUDAN
MINISTRY OF ENVIRONMENT AND FORESTRY
02 OCT 2025
UNDERSECRETARY FOR ENVIRONMENT
JUBA - SOUTH SUDAN

for/ Joseph Africano Bartel
Undersecretary for Environment
Ministry of Environment and Forestry
RSS, Juba

Cc: Hon, Minster, MoEF
Cc: Undersecretary, MoEF