



CUVKUN

Enhanced Water Security and Community Resilience in the Adjacent
Cuvellal and Kunene Transboundary River Basins Project



Environmental and Social Impact Assessment Report for Angola

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Global Water Partnership Southern Africa is requesting feedback on this Environmental and Social Impact Assessment Report.

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Executive summary

ES 1: Project Description

The Enhanced Water Security and Community Resilience in the Adjacent Cuvelai and Kunene Transboundary River Basins (**CUVKUN Project**) is a regional initiative led by the Global Water Partnership Southern Africa (GWPSA) and the United Nations Development Programme (UNDP), with financial support from the Global Environment Facility (GEF). It aims to address escalating water scarcity, climate-induced hydrological variability, and land degradation in southern Angola and northern Namibia.

The Project will implement a comprehensive set of activities aimed at strengthening joint management and planning capacities at the transboundary basin level. These activities are structured under six (6) components, each addressing a distinct aspect of water resources management and community resilience. One of the critical components of the project “*Enhancing Community Participation in Integrated Water Resources Management*” focuses on empowering local communities to build resilience in their livelihoods through targeted IWRM interventions. This component supports the implementation of pilot demonstration initiatives across ten sites, with five located in Angola and five in Namibia. These community driven initiatives focus on rainwater and floodwater harvesting ponds, refurbishing and improvement of community deep wells, livelihood-based watershed management mainly irrigation improvements, and rehabilitation of early warning stations for floods and droughts.

This report documents the Environmental and Social Impact Assessment (ESIA) process undertaken for the CUVKUN project with a specific focus on activities planned to be undertaken at the **Angolan pilot sites**. Proposed interventions with potential environmental and social impacts include: (a) *Borehole rehabilitation and water supply systems installation or floodwater harvesting in Nehone village*; (b) *Rehabilitation of hydrometric stations for early flood warning in Evale & Cuvelai villages*; (c) *Gabion weir construction, mobile solar water pumping and drip irrigation in Kapanda village*; and (d) *Repair of canal flood regulation gates and institutional strengthening of irrigation associations in Capelongo village*. Although these interventions are expected to contribute to improved water security, enhanced climate resilience and strengthened community livelihoods they present environmental and social risks which require careful consideration.

ES 3: Legal and Technical Basis for the ESIA

Initial environmental and social screening of the Project conducted using UNDP’s Social and Environmental Screening Procedure (SESP) categorized the overall transboundary Project (Angola and Namibia) as ‘Substantial Risk’. This rating reflects the inherent E&S risk profile identified at project level, including risks to biodiversity and rivers (e.g., potential introduction/spread of invasive alien species) and, for Namibia, the potential presence of Indigenous Peoples. Subsequent field assessments for the Angola pilot sites confirmed that Indigenous Peoples, as defined under UNDP SES, are not present at the proposed Angola locations (see Section 5.2.6), and that child labour risks can be effectively managed through national legislation and contractor management measures. These findings inform the design and targeting of site-specific mitigation measures but do not change the overall project risk category.

Accordingly, an Environmental and Social Impact Assessment (ESIA) study was undertaken for activities proposed for implementation at the targeted Angola pilot sites. This ESIA report has been prepared in line with the Project's Environmental and Social Management Framework (ESMF), applicable national laws, and UNDP/GEF standards. The Environmental and Social Management Plan (ESMP) prepared as part of this ESIA outlines potential risks across the project phases (Design, Construction, Operation, and Decommissioning) and presents mitigation strategies, monitoring indicators, and a responsibility matrix to ensure risks are effectively managed and project benefits are equitably distributed

ES 4: Legal and Policy Framework

The implementation of the proposed interventions will be carried out in compliance with relevant international conventions as well as national laws, policies, standards, and strategies. This approach ensures that the Project promotes sustainable development, fosters social inclusion, safeguards vulnerable groups and strengthens climate resilience. Relevant international conventions include Convention on Biological Diversity (CBD), UN Framework Convention on Climate Change (UNFCCC), Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW), The United Nations Convention on the Rights of the Child, etc.

Relevant National legal framework include the Constitution of the Republic of Angola, Basic Environmental Law (Law No. 5/98), Environmental Impact Assessment Regulation and Environmental Licensing Procedure (No. 117/20), National Environmental Quality Program (No. 138/20), Responsibility for Environmental Damage (No. 194/11), Regulation on Public Consultation (No. 87/12), Regulation of Waste Management (No.190/12), General Regulation of Occupational Health and Safety Services (No. 6/96), General Labour Law (No. 7/15), Water Law (No. 6/02), Cultural Heritage Law (No. 14/05), National Policy for Gender Equality and Equity, etc.

The project will be implemented in alignment with the United Nations Development Programme (UNDP) Social and Environmental Standards (SES) and will comply with all applicable requirements identified through the project Social and Environmental Screening Procedure (SESP). At the overall, transboundary project level, the SESP identified eleven (11) relevant Principles and Standards (P&S): five (5) UNDP SES Principles (Principles 1–5) and six (6) Project-level Standards (Standards 1, 2, 3, 6, 7 and 8). This Angola ESIA addresses all applicable triggered P&S for the Angola pilot sites. In particular, it provides the most detailed impact assessment and management measures for the Standards that are most material to the Angola interventions (Standards 1, 2, 3, 7 and 8), while also ensuring that requirements under the triggered Principles and other relevant standards are integrated through specific sections of the ESIA (including ES5) and embedded mitigation/management measures (e.g., gender/GESI and SEA/SH risk management, stakeholder engagement and grievance redress, and child labour prevention under labour and working conditions). Standard 6 (Indigenous Peoples) remains triggered at overall project level (linked to the Namibia context) but is not applicable to the Angola pilot sites based on field verification (see Section 5.2.6).

Triggered UNDP SES P&S (per SESP) and where addressed in the ESIA:

UNDP SES Principles (triggered):

- Principle 1: Leave no one behind (ES6/SEP; inclusive engagement; targeting vulnerable groups)
- Principle 2: Human Rights (ES6/SEP; GRM; monitoring and reporting)
- Principle 3: Gender Equality and Women’s Empowerment (ES5/ESMP; GESI/SEA risk controls; inclusive governance measures)
- Principle 4: Sustainability and Resilience (ES5; climate resilience/DRM measures; sustainable resource management)
- Principle 5: Accountability (ES6/SEP; GRM; disclosure and stakeholder feedback loops)

Project-level Standards (triggered at project level):

- Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management (ES5; ESMP/BMP measures; monitoring plan)
- Standard 2: Climate Change and Disaster Risks (ES5; DRM/EWS measures; climate-resilient design standards)
- Standard 3: Community Health, Safety and Security (ES5; OHS/CHSS measures; public safety; SEA/SH prevention where relevant)
- Standard 6: Indigenous Peoples (project level: Namibia context; not applicable to Angola pilot sites—see Section 5.2.6)
- Standard 7: Labour and Working Conditions (ES5/ESMP; LMP; worker GRM; child labour prohibition and contractor controls)
- Standard 8: Pollution Prevention and Resource Efficiency (ES5/ESMP; waste/effluent management; hazardous materials; resource efficiency measures)

Other standards screened as not triggered for the Angola pilot sites but managed as good practice:

- Standard 4: Cultural Heritage (chance-find procedure; cultural heritage screening and consultation; compliance with Cultural Heritage Law No. 14/05)
- Standard 5: Land Acquisition and Involuntary Resettlement (site screening; preference for use of existing/communal land; voluntary land donation protocol if applicable)

ES 5: Environmental and Social Baseline Conditions

Climate: The project area exhibits a predominantly semi-arid to sub-humid climate regime. Drought represents the most recurrent and severe climatic hazard. Rainfall patterns are erratic and spatially heterogeneous with certain zones particularly those adjacent to major river systems occasionally experiencing localized flooding events. *Although project interventions can increase water access to both communities and livestock, overextraction coupled with unsustainable use could lead to water depletion which may increase vulnerability of local communities to climate change risks.*

Topography, Geology, and Soils: The project area features varied soil profiles shaped by geomorphology and land use history. The terrain is predominantly flat underlain by impermeable clay beds and saline soils that influence surface water dynamics and limit infiltration. Evale has severely eroded and low-fertility soils and extensive fallow land especially along riverbanks. Nehone, located within a forested

zone, exhibits moderate soil fertility and benefits from sustainable land management practices. *Project interventions such as water supply systems or floodwater harvesting ponds in Nehone will involve minimal excavation and are not expected to significantly alter the topography or geology of the landscape. However, the installation of irrigation systems in Kapande village may pose risks of soil salinization, structural degradation, and declining fertility over time particularly if drainage and water management systems are inadequately maintained.*

Hydrology and Hydrogeology: Surface water flows originate in the north and north-westerly highlands of southern Angola branching into numerous channels that connect as they flow south towards the Etosha pan. In many years, the flow replenishes the pan and other surface water features. The landscape generally has moderate groundwater potential, although it is affected by poor saline quality. *Rehabilitation of existing borehole in Nehone can lead to increased groundwater abstraction. Moreover, accidental fuel and oil spills during the construction of infrastructure components could lead to localized water contamination.* However, the potential inherent impact on groundwater resources (both quality and quantity) is assessed as moderate; the ESMP mitigation measures are expected to reduce residual risks during implementation.

Biodiversity: The project landscape is primarily characterized by *Acacia erioloba*, *Terminalia prunioides*, *Colophospermum mopane*, and *Combretum collinum*. Nehone supports high biodiversity due to intact vegetation and agroecological practices. Kapande shows moderate potential through agroforestry, though maintenance is limited, while Evale exhibits degraded habitats with opportunities for restoration. Nature-Based Solutions such as riparian buffers, agroforestry and rainwater harvesting can enhance habitat quality if implemented with appropriate safeguards. *Although significant biodiversity impacts are not anticipated, participatory planning can further promote ecological resilience and conservation outcomes.*

Air Quality: No publicly available data exists on ambient air quality in the project area. However, ambient air quality is generally considered good with vehicular traffic being the only notable emission source. *Proposed construction activities may generate dust and exhaust emissions, but these impacts are expected to be localized, short-term and largely reversible. Hence, the overall effect on air quality is anticipated to be minimal.* During the construction of proposed interventions, ambient air quality will be assessed against World Health Organisation (WHO) standards to identify any exceedances. In occupational settings, Occupational Health and Safety Administration (OSHA) exposure limits (10 mg/m³ for total dust and 3 mg/m³ for respirable dust) will be applied to ensure worker safety.

Noise and Vibration: Noise and vibration levels in the project area are generally low, with occasional spikes linked to vehicular movement. *Construction-related noise is expected to be short-term, localized, and of low intensity especially with mitigation measures in place.* During the construction of proposed interventions, ambient noise will be assessed against WHO standards to identify any exceedances. For occupational exposure, the ACGIH limit of 85 dBA over an 8-hour workday will be applied. Vibration impacts will be evaluated using ACGIH Threshold Limit Values for Whole-Body and Hand-Arm Vibration across all axes.

Cultural Heritage: The Archaeological Impact Assessment (AIA) conducted across the targeted villages highlights a diverse and vibrant cultural landscape rich in both tangible and intangible heritage. The tangible heritage sites include the King's Ombala in Evale and two cemeteries in Matala (Freixiel and Kapelongo), as well as intangible heritage practices such as the *Efundula* (female initiation rite), *Hepala* (fishing ritual), and rain-calling ceremonies. These cultural expressions are deeply embedded in the social fabric of the Ovambo, Nyaneka-Nkhumbi and Ovimbundu communities. *Importantly, the risk assessment confirmed that none of the identified cultural resources fall within the project's direct footprint and the proposed project interventions will not adversely impact on cultural heritage.*

Land Tenure: The land tenure system within the project area is primarily governed by customary arrangements under the authority of traditional leaders and communal norms. Land is collectively held and managed by extended family units and clans with access and allocation determined through lineage and oral tradition. Cultural practices including burial customs and sacred sites are deeply embedded in the spatial organization of land reinforcing its socio-cultural significance. Although formal land registration is largely absent, the tenure system remains robust and locally legitimized. *The proposed interventions such as rainwater harvesting, water supply infrastructure and irrigated agriculture are intended to strengthen community resilience to climate variability without disrupting existing land tenure arrangements.*

Sources of livelihoods: Livelihoods in the project area are predominantly agro-pastoral with communities relying on subsistence agriculture and extensive livestock rearing. Crop production primarily millet, sorghum, maize, beans, and pumpkins is practiced under semi-arid conditions while cattle serve both economic and socio-cultural functions including food security, income generation and social status. Complementary activities such as fishing, small game hunting and artisanal crafts (e.g., pottery, hairdressing, and metalwork) contribute to household economies. *The proposed project interventions including domestic and livestock water supply systems and irrigated agriculture are expected to enhance these livelihood systems by improving water availability, boosting agricultural productivity and reducing vulnerability to climate risks.*

Indigenous Peoples: The Archaeological Impact Assessment (AIA) conducted within the project area conclusively determined that Indigenous Peoples are not present in the targeted locations. This determination was substantiated through triangulated evidence comprising direct consultations with local authorities, traditional leaders, community members as well as field observations and a comprehensive review of ethnographic literature. The communities encountered were composed of non-indigenous populations primarily engaged in agriculture, livestock production, and cooperative-based livelihoods, with no observable cultural, institutional, or spatial characteristics indicative of Indigenous identity. *Accordingly, the AIA affirms that the proposed project interventions will not affect Indigenous Peoples, and the application of a formal Free, Prior, and Informed Consent (FPIC) process was not warranted.*

Gender Aspects

The gender landscape in the area is shaped by entrenched patriarchal norms with women facing systemic exclusion from decision-making, land ownership and access to resources. Women bear the brunt of

climate change impacts and are responsible for domestic water use and unpaid agricultural labour yet they are largely absent from governance structures. *The Project is set to transform this landscape by promoting inclusive governance, empowering women and vulnerable groups and integrating gender-responsive strategies across water and agriculture sectors.*

ES 5: Impact Assessment & Mitigation Measures

Despite the above mentioned benefits, the development of the project may generate direct and indirect negative environmental and social impacts. The table below provides an overview of some potential adverse environmental and social risks/impacts at different phases of development along with the proposed mitigation measures.

Risk/Impact Description	Mitigation Measures
DESIGN/ PRECONSTRUCTION PHASE	
Exclusion or limited participation of women and vulnerable groups in the design and upgrading of critical infrastructure components (e.g. Water supply system, hydrometric system, gabion weir construction, drip irrigation systems, and canal gate repairs) may result in systems that do not adequately address their specific needs and usage patterns thereby reinforcing existing social inequalities leading to community dissatisfaction	<ul style="list-style-type: none"> (i) Conducting targeted consultations with women and vulnerable groups during the planning and design phases (ii) Ensuring representation of women and vulnerable groups in project committees, technical working groups, and monitoring teams (iii) Implementing the Gender and Social Inclusion Action Plan (<i>GESI – Annex 3</i>) (iv) Rolling out the project Grievance Redress Mechanism (GRM) that is gender responsive (<i>Refer to section 11.3</i>)
Inadequate assessment of groundwater yield and quality on the disused existing borehole in Nehone village could result in inconsistent water availability, aquifer depletion, and contamination, thereby compromising planned water distribution and overall project sustainability	<ul style="list-style-type: none"> (i) Undertaking pump tests and water quality analysis before finalizing the designs
Failure to integrate local flood knowledge in the upgrading of existing hydrometric stations in Evale and Cuvelai may result in inaccurate data capture, poor flood forecasting and ineffective early warning systems	<ul style="list-style-type: none"> (i) Using historical flood data (ii) Engaging local communities in design
Underestimation of seasonal flow and sedimentation risks in the design of gabion protection works in Kapande village may lead to structural failure, erosion of adjacent land and reduced effectiveness in flood control	<ul style="list-style-type: none"> (i) Conducting hydrological and sediment studies (ii) Designing for peak flow events and sediment bypass

Risk/Impact Description	Mitigation Measures
potentially resulting in damage to infrastructure and increased maintenance costs.	
Inadequate sizing or siting of brine pond(s) form desalination unit in Nehone may lead to overflow and contamination of surrounding soil and water sources	(i) Conducting hydrogeological assessments; design lined ponds with overflow protection; monitor salinity levels regularly
Failure to consider local technical capacity in the design of solar-powered infrastructure may result in unmaintainable systems	(i) Developing training manual and deliver the training in local languages
Failure to secure required permits/ licenses required for the construction of infrastructure components (e.g. Water supply system, drip irrigation systems, and canal gate repairs) may lead to poor relationships and weak compliance with regulatory authorities	(i) Ensuring that the environmental clearance certificate is acquired before commencing all works activities
(ii) CONSTRUCTION PHASE	
Potential interaction between Project workers including contractor staff with vulnerable community members may lead to Sexual Exploitation, Abuse and Harassment (SEAH) of women and girls	<ul style="list-style-type: none"> (i) Defining and incorporating SEAH prevention specifications into the bidding documents and works contracts (ii) Undertaking SEAH training for Project workers including contractor workforce (iii) Sensitising community members on the prevention of SEAH (iv) Ensuring all contractor workers sign a SEAH code of conduct (<i>Annexed in the Construction Safety Management Guidelines, Annex 1</i>) (v) Displaying contacts of GBV service providers at construction sites (vi) Implementing the Labour Management Procedures (vii) Undertaking training of community grievance management committees on reporting/ escalation of SEAH cases (viii) Undertaking the GRM audit to assess its functionality (ix) Implementing the Project Accountability and Response Framework in case of SEAH allegation

Risk/Impact Description	Mitigation Measures
<p>Contractor personnel may be exposed to occupational hazards associated with undertaking civil works components (e.g. installations of water supply components, hydrometric system rehabilitation, gabion weir construction, solar pump installation, and canal gate repairs). High-risk activities include manual material handling, working at elevated heights, hot work operations, and the use of vibratory, cutting, and electrically powered equipment.</p>	<ul style="list-style-type: none"> (i) Defining and incorporating health and safety specifications into the bidding documents and works contracts (ii) Implementing the Construction Safety Management Guidelines (CSMGs – Annex 1) (iii) Implementing the Labour Management Procedure (LMP – Annex 2) (iv) Preparing and implementing an incident reporting and management procedure (v) Developing and implementing a workplace grievance redress procedure accessible to all the workforce (vi) Conducting site inspections and ESMP implementation audits to ensure that the CSMGs and LMP are implemented
<p>Indiscriminate disposal of waste (e.g. <i>Paint and solvent residues, electrical wiring scraps, packaging waste, wire mesh remnants, pipe offcuts, scrap metal, Brine (from desalination units), etc</i> from construction sites may lead to soil and water pollution</p>	<ul style="list-style-type: none"> (i) Providing colour coded bins to enable on-site segregation of waste streams, thereby facilitating reuse, recycling, or safe disposal (ii) Utilization of inert construction materials, such as rubble, for backfilling open trenches (iii) Installation of clearly visible and informative waste management signage at strategic locations across the site (iv) Conducting induction sessions for all site personnel on sustainable waste management practices, emphasizing segregation, minimization, and safe disposal methods
<p>Generation of dust, noise and vibrations and exhaust fumes from the use of earth moving equipment leading to local air pollution and occupational health</p>	<ul style="list-style-type: none"> (i) Avoiding operations during heavy winds (ii) Providing employees with adequate Personal Protective Equipment (PPE) (iii) Implement speed controls (iv) Implement the CSMGs
<p>Trenching and digging for the installation of various of water supply components (e.g. water pipelines, and brine ponds) may loosen soil which may accelerate erosion</p>	<ul style="list-style-type: none"> (i) Restricting excavation to the minimum area necessary for construction (ii) Promptly backfilling trenches to reduce exposure time of bare soil (iii) Re-vegetating disturbed areas immediately after construction using native species (iv) Scheduling works during dry season (v) Regularly inspect work sites especially after rainfall events

Risk/Impact Description	Mitigation Measures
Tangible forms of cultural heritage could be accidentally encountered during trenching	<ul style="list-style-type: none"> (i) Implementing a chance find procedure (ii) Training workers on cultural sensitivity
Clearing of vegetation may lead to habitat alteration and degradation	<ul style="list-style-type: none"> (i) Clearing vegetation in line with the siting of works plan (ii) Re-vegetating disturbed areas immediately after construction using native species
Leaks of oil, fuel, hydraulic fluid from the construction machinery may contaminate soils and water resources	<ul style="list-style-type: none"> (i) Ensuring that machinery and equipment is serviced by approved dealers with proper containment facilities (ii) Undertaking regular inspections of vehicles, mobile equipment and machinery to check for oil and fuel leaks (iii) Providing drip trays on machinery to prevent drips and small leaks onto the ground (iv) Developing and implementing the spill prevention and control procedure
Increased spread of STIs and HIV & AIDS through interaction of project workers including contractor workers with community members	<ul style="list-style-type: none"> (i) Training and sensitization of workforce and community members on HIV/AIDS and other STIs
Construction activities may introduce the risk of child labour	<ul style="list-style-type: none"> (i) Implementing Labour Management Procedures
Injuries or Death due to road traffic accidents	<ul style="list-style-type: none"> (i) Providing training of project workers on road safety (ii) Providing regular maintenance of vehicles (iii) Using authorized and competent drivers
Project Affected Persons (PAPs), might not be able to effectively raise their concerns or file grievances due to limiting factors and barriers	<ul style="list-style-type: none"> (i) Rolling out the Grievance Redress Mechanism (GRM) (ii) Implementing the Stakeholder Engagement Plan (SEP)
Limited institutional capacity among government ministries, agencies, NGOs, and local communities may hinder effective implementation and supervision of the ESMP, potentially compromising compliance, environmental safeguards, and social outcomes	<ul style="list-style-type: none"> (iii) Implementing the SES Training Plan (Refer to section 9.2)
(iv) OPERATIONAL PHASE	
The water harvesting ponds and brine ponds may pose risks of drowning to communities members particularly children and/or livestock.	<ul style="list-style-type: none"> (i) Undertaking community awareness of the dangers associated with these infrastructures (ii) Erecting anti-drowning pictograms and signs around the ponds

Risk/Impact Description	Mitigation Measures
	<ul style="list-style-type: none"> (iii) Installing exit ramps for animals (iv) Fencing off brine evaporation pond(s) to prevent unauthorized access
<p>Rainwater harvesting infrastructure or brine ponds may serve as breeding grounds for vectors, thereby increasing the risk of waterborne and vector-borne diseases such as schistosomiasis and malaria, with potential adverse health impacts to the Nehone community.</p>	<ul style="list-style-type: none"> (i) Collaborating with health authorities to monitor disease incidence and conduct public health education campaigns (ii) Undertaking focal insecticide and molluscicide application
<p>Improper brine disposal generated during desalination could lead to soil and groundwater contamination</p>	<ul style="list-style-type: none"> (i) Constructing lined brine ponds (ii) Monitoring groundwater quality
<p>Risk of equipment theft or vandalism</p>	<ul style="list-style-type: none"> (i) Using tamper-proof enclosures (ii) Co-branding equipment with government logos
<p>Over-extraction and unsustainable use of groundwater resources associated with the revitalization of the Nehone water supply system and installation of a new irrigation system at Kapande may lead to aquifer depletion, thereby increasing the vulnerability of target communities to climate change-induced water stress</p>	<ul style="list-style-type: none"> (i) Adopting water-efficient technologies such as drip irrigation and low-flow fixtures at Kapande (ii) Integrating water balance modeling to guide abstraction limits (iii) Conducting inspections of water irrigation infrastructure to detect any possible leakages and attend to them promptly (iv) Training farmers and users on water conservation practices and long-term impacts of over-abstraction and climate variability
<p>The development of an irrigation system will promote the use of agrochemicals including pesticides or other chemicals that may have a negative effect on the environment or human health</p>	<ul style="list-style-type: none"> (i) Promoting integrated pest management (IPM) (ii) Training farmers on safe handling, storage, use and disposal of agrochemicals (iii) Establishing a 30 meters buffer zones near water bodies
<p>Weak water governance structures in Kapelongo may result in inequitable water distribution and the exclusion of women and marginalized groups from decision-making and access, thereby undermining social equity and sustainable resource management.</p>	<ul style="list-style-type: none"> (i) Strengthening water user associations (ii) Developing and enforcing equitable water allocation protocols (iii) Providing gender-sensitive training
<p>Waterlogging and soil salinization from irrigated agriculture</p>	<ul style="list-style-type: none"> (i) Installing drip irrigation and monitor soil moisture (ii) Training farmers on efficient irrigation practices

Risk/Impact Description	Mitigation Measures
Introduction of invasive species from enhanced farming activities leading to biodiversity loss	(i) Promoting the use of certified seeds (ii) Sourcing planting material from reliable suppliers (iii) Clearing invasive species using mechanical means
(iv) DECOMMISSIONING PHASE	
Environmental contamination from improper disposal of materials	(i) Following prescribed decommissioning protocols (ii) Ensuring safe disposal of hazardous materials
Improper disposal of solar panels and batteries may lead to environmental pollution	(i) Following hazardous waste management protocols (ii) Partnering with certified recyclers; document disposal process
Loss of flood monitoring capacity increasing community vulnerability	(i) Coordinating with government to integrate stations into national systems; train local staff for continued operation

ES 6: Stakeholder Consultation

Stakeholder engagement has been a cornerstone of the project’s design and implementation ensuring that the perspectives of all relevant actors particularly vulnerable and marginalized groups are meaningfully integrated into decision-making processes. Guided by a comprehensive stakeholder mapping exercise and aligned with international best practices and UNDP’s Social and Environmental Standards, the project adopted a participatory and culturally sensitive approach. Engagements were conducted through a variety of methods, including focus group discussions, interviews, workshops, and public meetings.

These consultations brought up several critical concerns. Community members emphasized challenges related to water scarcity and the long distances required to access water. Women-headed households raised issues around personal safety during water collection, underrepresentation in leadership roles, and the need for gender-responsive infrastructure. Elderly and vulnerable groups highlighted difficulties in accessing services during floods and droughts. Traditional leaders called for structured engagement and greater community ownership of infrastructure. Cooperative members pointed to inadequate irrigation systems, limited market access, and a lack of training opportunities. Local government officials noted coordination gaps and the need for stronger disaster management systems, while youth expressed concerns around infrastructure vandalism.

In response, the project has developed a comprehensive Stakeholder Engagement Plan (SEP) that spans the entire project lifecycle. The Project Coordination Unit (PCU), through the Safeguards Officer is responsible for implementing the SEP including managing grievances and maintaining continuous stakeholder feedback loops. A dedicated budget of USD 21,000 shall be allocated to support these efforts including information dissemination, capacity building and promotion of the Grievance Redress Mechanism (GRM).

ES 7: Project Grievance Redress Mechanism

The Grievance Redress Mechanism (GRM) is an integral part of the project's design, serving as a cornerstone for transparency, accountability and inclusive engagement. Under the stewardship of the Safeguards Officer within the PCU, the GRM will be rolled out across all pilot sites and will remain accessible to all relevant stakeholders including vulnerable groups, contractors and other affected parties.

The mechanism is designed to handle both non-sensitive and sensitive grievances. Non-sensitive issues will follow a structured six-tier escalation process, beginning at the community level and extending to the UNDP's highest accountability bodies. For sensitive cases, particularly those involving GBV and SEAH, the project will apply a survivor-centered approach that prioritizes dignity, safety, and confidentiality.

To operationalize the GRM, the project will roll out targeted communication materials, conduct community sensitization, establish inclusive community grievance management committees, and train all relevant actors. An Accountability and Response Framework annexed to this report has been developed to guide the handling of GBV and SEAH allegations.

The performance of the GRM will be monitored using a human-rights-based lens, assessing its accessibility, responsiveness, transparency, and fairness. In addition to the project-level mechanism, stakeholders will have access to UNDP's global accountability systems, including the Stakeholder Response Mechanism (SRM) and the Social and Environmental Compliance Unit (SECU), offering further assurance of redress and compliance. A dedicated budget of **USD 14,000** has been allocated to support the full implementation and operation of the GRM.

ES 8: Roles and Responsibilities in ESMP Implementation

The implementation of the ESMP prepared as part of this report involves a range of stakeholders, each playing a distinct role in ensuring environmental and social safeguards are upheld. Oversight is provided by the Project Steering Committee (PSC) which reviews progress reports from the PCU and offers strategic guidance to enhance responsiveness to stakeholder needs. The PCU through its Safeguards Expert will lead coordination of ESMP activities including integrating environmental and social conditions into procurement processes and works contracts, contractor orientation training, the development and review of reporting tools and rolling out the project Grievance Redress Mechanism (GRM). The Safeguards Expert shall also conduct ESMP implementation audits and overseeing capacity-building efforts aligned with the ESMP training plan.

At construction sites, the contractor's Safety, Health, and Environmental (SHE) Officer shall be responsible for preparing and implementing the Contractor ESMP and reporting progress to the PCU. Additional oversight will be provided through supervision of key institutions including the UNDP Country Office, National Directorate for Prevention and Assessment of Environmental Impacts as well as local and traditional authorities.

ES 9: ESMP implementation budget

The project will allocate a total budget of USD 52,000 for the implementation and monitoring of the ESMP. Key components of the budget include training and capacity building, stakeholder engagement, rolling out of the project GRM and environmental and social monitoring. While specified activities within the budget will be funded directly by the project, the implementation of management measures associated with construction activities (e.g. health and safety, waste management) will be covered under contractor obligations. This costed approach ensures that both project and contractor responsibilities are adequately resourced to support compliance with environmental and social safeguard requirements.

ES 10: Conclusion and Recommendation

The implementation of the Project is expected to generate transformative outcomes within and beyond the project area, particularly by improving food production, climate resilience, employment opportunities and overall livelihoods. These gains are projected to contribute significantly to regional economic development and enhance the quality of life for affected communities. The overall transboundary Project risk category remains Substantial (as per the UNDP SESP). This Angola ESIA confirms that the key risks for the Angola pilot sites are localized and can be effectively managed through the mitigation measures, monitoring indicators and institutional responsibilities set out in the ESMP and Monitoring Plan. Given the dynamic nature of project implementation, the ESMP developed as part of this report must remain flexible and responsive to evolving conditions, unforeseen events and feedback from monitoring activities. Provided that the recommended safeguard measures are rigorously applied throughout the project lifecycle, the anticipated benefits will far outweigh the potential adverse impacts. Accordingly, the project interventions should be approved for implementation.

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List of acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AIA	Archaeological Impact Assessment
CSMGs	Construction Safety Management Guidelines
DNPAIA	National Directorate for Prevention and Assessment of Environmental Impacts
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FPIC	Free, Prior and Informed Consent
GEF	Global Environmental Facility
GESI	Gender Equality and Social Inclusion Plan
GMC	Grievance Management Committee
GRM	Grievance Redress Mechanism
GWPSA	Global Water Partnership Southern Africa
IWRM	Integrated Water Resources Management
LMP	Labour Management Procedures
PCU	Project Coordination Unit
SEAH	Sexual Exploitation, Abuse and Harassment
SECU	Social and Environmental Compliance Unit
SEP	Stakeholder Engagement Plan
SESP	Environmental and Social Screening Procedure
SES	Social and Environmental Standards
SRM	Stakeholder Response Mechanism
UNDP	United Nations Development Programme

1. Introduction

1.1 Project Background

The Cuvelai and Kunene River basins, located in southern Angola and northern Namibia are home to approximately 1.2 million and 2.38 million people respectively. These transboundary basins face significant socio-economic and environmental challenges including escalating water scarcity, pronounced hydrological variability and widespread land degradation. These issues are further intensified by climate change which has increased the frequency and severity of droughts and floods across the region.

Moreover, water quality deterioration driven by unsustainable land-use practices and inadequate sanitation infrastructure poses a growing threat to public health and ecosystem integrity. The rising demand for water fuelled by population growth and agricultural expansion places additional pressure on already limited water resources.

Efforts to implement Integrated Water Resources Management (IWRM) are hindered by limited institutional capacity, insufficient financial and technical resources, and fragmented data and information-sharing mechanisms at the transboundary level.

In response to these challenges, the Global Water Partnership Southern Africa (GWPSA) in collaboration with the United Nations Development Programme (UNDP) and with financial support from the Global Environment Facility (GEF) is implementing the Enhanced Water Security and Community Resilience in the Adjacent Cuvelai and Kunene Transboundary River Basins (CUVKUN) Project. This initiative aims to strengthen the integrated management of water resources across both basins, fostering sustainable development, enhancing climate resilience and improving livelihoods for the millions of people who depend on these vital water systems.

1.2 Purpose and Scope of the Study

The primary objective of the ESIA study is to identify and assess the potential social and environmental risks and impacts associated with the proposed activities. This understanding informed the development of appropriate measures to avoid, minimize, mitigate, and manage adverse impacts, while enhancing opportunities for positive social and environmental outcomes.

The study covered a suite of community-driven interventions across five pilot sites in Angola namely; *Nehone, Evale, Cuvelai, Kapande, and Kapelongo*, each tailored to address specific water-related challenges. In Nehone, the project proposes the rehabilitation of an existing borehole, complemented by solar-powered desalination and brine management systems to ensure safe water for domestic and livestock use. At Evale and Cuvelai, the focus is on revitalising the hydrometric stations through upgraded monitoring equipment and solar-powered infrastructure. Kapande community will benefit from water intake protection via gabion weir construction, mobile solar pumping for irrigation, and the introduction

of drip irrigation to improve water use efficiency. In Kapelongo, the intervention combines the repair of canal flood regulation gates with institutional strengthening among irrigation associations to improve water governance, reduce conflict and enhance market linkages. ***Detailed description of these interventions is provided under section 2.3.***

The Terms of Reference (ToRs) of the study involved:

- i. describing the proposed Project and associated works together with the requirements for carrying out the proposed development;
- ii. identifying and describing elements of biophysical and socio-economic environment likely to be affected by the proposed Project;
- iii. identifying and where possible quantify any potential losses or damage to environmental and social aspects and to propose measures to mitigate these impacts;
- iv. identifying, predicting and evaluating the cumulative effects expected to arise during the construction and operation phases of the proposed development in relation to the sensitive receivers and potential affected uses;
- v. identifying, assessing and specifying methods, measures and standards, to be included in the detailed design, construction and operation of the proposed works activities which are necessary to mitigate the potential environmental and social impacts;
- vi. discussing with the project team on the alternate options considered for the project and rationale of selection of the identified alignment along with review of earlier reports; and
- vii. preparing an Environment and Social Management Plan and the relevant subsidiary management plans including the Stakeholder Engagement Plan, Grievance Redress Mechanism, Construction Safety Management Plan, Labour Management Procedures, etc.) based on the assessment of identified environment and social risks and impacts.

1.3 Technical Approach and Methodology

The ESIA study was conducted using a multi-methodological approach aligned with international best practices and the national regulatory frameworks. Data collection encompassed both primary and secondary sources. The desk-based review included a comprehensive analysis of existing documentation such as peer-reviewed scientific literature, national environmental legislation and policies, prior environmental assessments reports, project documents including the ESMF and SESP. Subsequent to document review, field visits were conducted at project sites in Angola to collect primary data. During these visits, the consultant gathered site-specific information on biophysical and socio-economic conditions. These surveys served to validate secondary data and to identify localized environmental and social sensitivities.

Stakeholder consultations were held during the field missions with representatives from government institutions, local authorities, traditional leaders and community members. These engagements aimed to incorporate local knowledge, capture community concerns and promote participatory decision-making. In accordance with the Terms of Reference, the consultations included an assessment of the

potential presence of indigenous peoples within the project area. As no indigenous communities were identified in the pilot sites, the Free, Prior and Informed Consent (FPIC) process was not implemented.

Risk identification and analysis was conducted using the UNDP Environmental and Social Screening Procedure. A risk matrix tool was applied to assess the magnitude of potential impacts by evaluating both the consequence (severity) and the likelihood (probability) of occurrence, using the formula: *Risk Level = Impact × Likelihood*.

Figure 1 presents the risk assessment matrix used to evaluate potential risks associated with the project. Based on the identification and analysis of potential impacts, mitigation strategies were formulated in accordance with the risk mitigation hierarchy. The ESMP prepared as part of the report serves as a practical framework to ensure that environmental and social safeguards are operationalized throughout the project lifecycle.

Score	Rating	Social and environmental impacts
5	Extreme	Significant adverse impacts on human populations and/or environment. Adverse impacts of large-scale magnitude and/or spatial extent (e.g. large geographic area, large number of people, transboundary impacts, cumulative impacts) and duration (e.g. long-term, permanent and/or irreversible); areas adversely impacted include areas of high value and sensitivity (e.g. valuable ecosystems, critical habitats); adverse impacts to rights, lands, resources and territories of indigenous peoples; involve significant levels of displacement or resettlement; generates significant quantities of greenhouse gas emissions; impacts may give rise to significant social conflict
4	Extensive	Adverse impacts on people and/or environment of considerable magnitude, spatial extent and duration, but more limited than Extreme (e.g. more predictable, mostly temporary, reversible). <i>Impacts of projects that may affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples are to be considered at a minimum potentially Extensive</i> ¹⁵
3	Intermediate	Impacts of medium magnitude, limited in scale (site-specific) and duration (temporary), can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures
2	Minor	Very minor impacts in terms of severity and magnitude (e.g. small affected area, very low number of people affected) and duration (short), may be easily avoided, managed, mitigated
1	Negligible	Negligible or no adverse impacts on communities, individuals, and/or environment

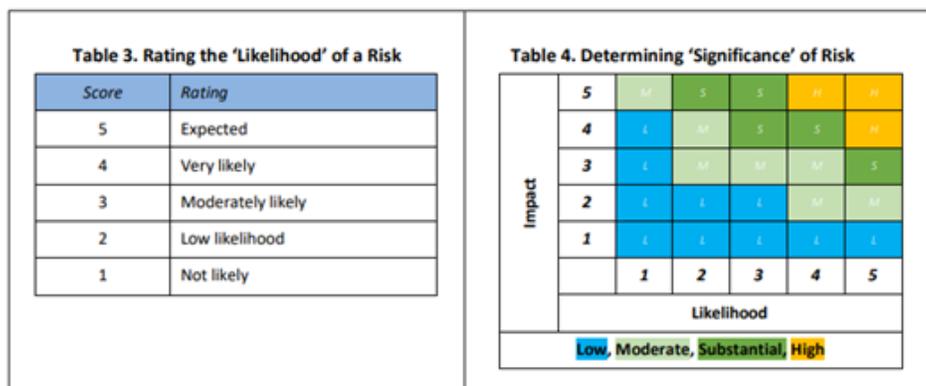


Figure 1: UNDP Risk Assessment Matrix

1.6 ESIA Study Team

This ESIA was undertaken by a multidisciplinary team of professionals with proven expertise in environmental and social assessment methodologies. The composition of the team is presented in Table 1.

Table 1: ESIA Technical Team

Name	Title	Role in the ESIA study
Mr. Abias Moma Huongo	National Environmental Specialist	<ul style="list-style-type: none"> • Assessment of baseline social, economic and environmental settings of the project landscape • Risk identification, prediction and evaluation • Identification of mitigation, management and monitoring measures • Assessment of capacity development and training needs
Dr. Rudo Angela Sanyanga Hungwe	International Environmental and Social Safeguards Consultant with a Specialisation in Indigenous Peoples and Local Communities, including FPIC Processes	<ul style="list-style-type: none"> • Conducting training and technical backstopping on IPP development and FPIC processes • Guiding national consultants on conducting safeguards screening and preparing ESIA's and ESMPs for new pilot landscapes. • Reviewing, updating and improving the draft SES instruments and documents developed by the national consultants • Supporting and guiding the Stakeholder Engagement and Gender experts to develop landscape-specific plans for • Supporting and guiding the national consultants to develop the Grievance Redress Mechanisms • Provide training to stakeholders on safeguards and risk management implementation.
Ms. Litumelo Mater-Sievers	Gender Specialist	<ul style="list-style-type: none"> • Led the gender analysis and mainstreaming component of the ESIA. • Ensured the integration of Gender Equality and Social Inclusion (GESI) principles throughout the assessment. • Conducted gender-sensitive consultations with communities. • Identified gender-differentiated impacts and proposed mitigation and inclusion measures
Dr. Pinimidzai Sithole	Social and Governance Specialist	<ul style="list-style-type: none"> • Provided expertise on stakeholder engagement, social safeguards, and institutional/governance frameworks. • Guided the Stakeholder Engagement Plan, ensuring inclusive and participatory approaches.

Name	Title	Role in the ESIA study
		<ul style="list-style-type: none"> • Led the analysis of social impacts, governance arrangements, and alignment with national regulatory frameworks and UNDP SES requirements
Mr. Tsungai Mavambe	Technical Specialist	<ul style="list-style-type: none"> • Led technical field assessments and design engagement with communities • Contributed to identifying infrastructure-related impacts and mitigation measures. • Provided technical inputs on the design of interventions to ensure alignment with environmental and social safeguards. • Supported integration of technical findings into the ESIA report

2. Project description

2.1 Project location

The CUVKUN project will be implemented in the Cuvelai and Kunene River Basins, which straddle the border between northern Namibia and southern Angola. Figure 2 shows the locality map for the Cuvelai and Kunene river basins. The project targets both rural and peri-urban communities that are heavily dependent on the water resources from these basins for their livelihoods particularly for agriculture, livestock farming, and domestic use.

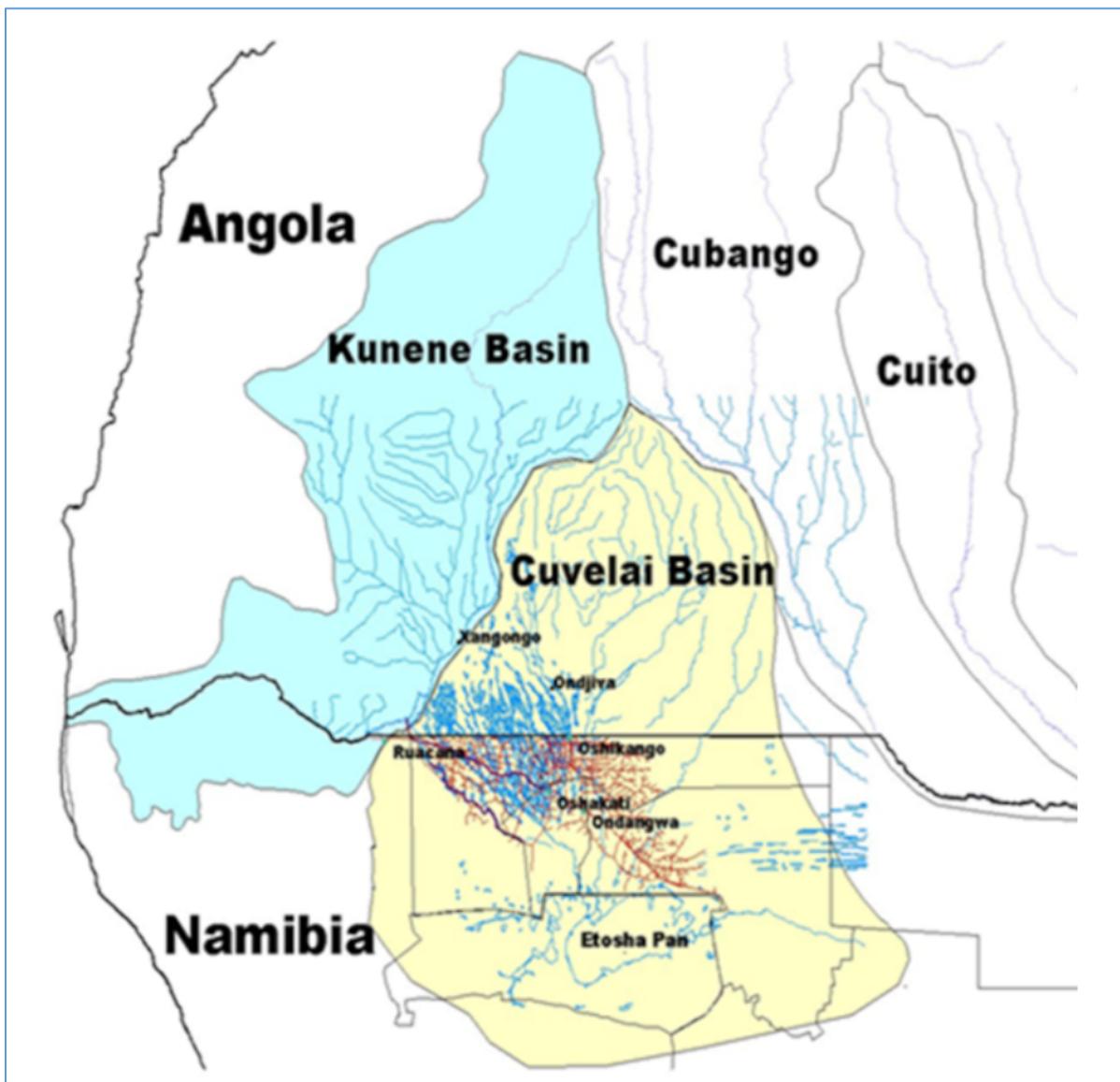


Figure 2: Location of the Cuvelai and Kunene river Basins (Source, GWPSA)

2.2 Project Components

The project is organized into six components, each targeting a specific area of water resources management and community resilience:

- (i) **Component 1: Strengthening Transboundary Water Resources Management in the Cuvelai River Basin:** This component focuses on improving water management practices within the Cuvelai River Basin, with particular emphasis on the collaborative management of water resources between Namibia and Angola.
- (ii) **Component 2: Strengthening Transboundary Water Resources Management in the Kunene River Basin:** Similar to Component 1, this component will enhance water management practices in the Kunene River Basin, including future development scenario analysis to predict and manage potential challenges.
- (iii) **Component 3: Strengthening Governance for Joint Management:** This component seeks to improve the governance structures for the shared water resources of the Cuvelai and Kunene Basins, fostering more efficient and cost-effective joint management between Angola and Namibia.
- (iv) **Component 4: Enhancing Institutional and Technical Capacity in Angola:** This component aims to strengthen the institutional and technical capabilities in Angola to sustainably manage its water resources, especially in the southern regions where key water towers are located.
- (v) **Component 5: Enhancing Community Participation in IWRM:** Through this component, the project will focus on increasing community involvement in water resources management, empowering local communities to build resilience in their livelihoods. Interventions will include water harvesting, conservation agriculture, community-based aquaculture, and watershed management. As was pointed out earlier, this report relates to this component.
- (vi) **Component 6: Outreach and Knowledge Management:** This component will focus on disseminating project results, best practices, and lessons learned to stakeholders to replicate and scale up the project's impact.

2.3 Activities with potential environmental and social implications

Component 5 of the CUVKUN Project supports integrated water resource management interventions across at least ten pilot demonstration sites in Angola and Namibia, with five sites in each country. These initiatives focus on rainwater and floodwater harvesting ponds, refurbishing and improvement of community deep wells, livelihood-based watershed management mainly irrigation improvements, and early rehabilitation of early warning stations for floods and droughts. In Angola, the proposed community driven interventions with potential risks are fully described below:

2.3.1 Borehole Rehabilitation

At Nehone, the proposed intervention involves the revitalization of an existing borehole to meet the community's immediate water needs for both domestic consumption and livestock use. This approach was selected following hydrological assessments that invalidated the community's initial proposal to construct a floodwater harvesting pond. The assessments revealed that the proposed site lies outside the primary flood channel, making it hydrologically unreliable and unlikely to fill consistently except during infrequent, high-magnitude flood events. Consequently, the pond option was deemed technically unfeasible and unsuitable for a community requiring a dependable and year-round water source.

To address this, the project will rehabilitate the existing borehole infrastructure. A pump test will be conducted to evaluate both the yield and the quality of the groundwater. If the water is found to be brackish, a solar-powered, small-scale desalination unit (Figure 3) will be installed to remove excess salts and minerals, ensuring the water is safe for human and animal consumption. To manage the saline byproduct generated during desalination, a brine evaporation pond will be constructed. This pond will facilitate the passive and environmentally safe disposal of concentrated brine through natural evaporation, eliminating the need for complex mechanical systems or chemical treatments.



Figure 3: Typical desalination unit

Once treated, the desalinated water will be pumped into a 10,000-litre elevated storage tank positioned two metres above ground level. From this tank, water will be distributed via gravity through a 50mm high-density polyethylene (HDPE) pipeline to designated domestic water points and livestock drinking troughs. These water access zones will be securely fenced to ensure safety and controlled usage, as illustrated in the system layout (Figure 4). This intervention offers substantial benefits to the Nehone community. It will significantly reduce the time and physical burden associated with water collection, particularly for women and children, while improving public health through enhanced hygiene and reduced exposure to

waterborne diseases. For households dependent on livestock, consistent access to clean water will improve animal health and productivity thereby strengthening local livelihoods.

To promote inclusivity and sustainability, the project will incorporate gender-sensitive training, enabling women to participate actively in the operation and maintenance of the water system. The modular nature of the design allows for future upgrades, and the environmental footprint of the intervention remains minimal due to the reuse of existing infrastructure and reliance on renewable energy sources.

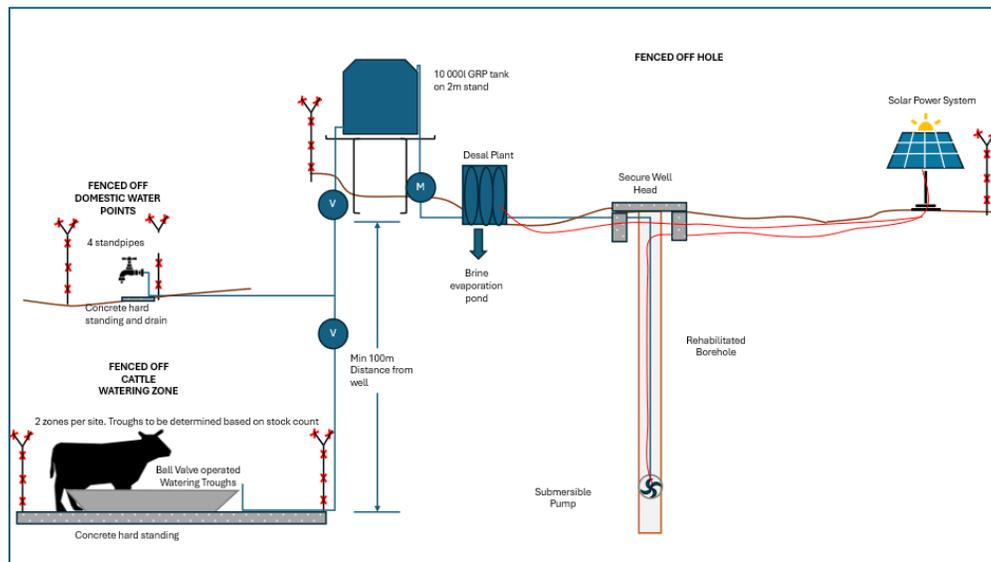


Figure 4: Typical water supply system

2.3.2 Rehabilitation for Early Warning Systems

At Evale and Cuvelai, the proposed interventions focus on the rehabilitation and upgrading of existing hydrometric stations to restore their functionality and enhance flood early warning capabilities. These stations have suffered equipment degradation over time, rendering them ineffective. Although the structural components of the stations remain largely intact, the monitoring instruments such as transducers and data loggers are no longer operational, and the power systems are unreliable or absent.

The intervention strategy is designed to revitalise these stations using durable, tamper-resistant technologies. New transducers and loggers will be installed to ensure accurate and continuous data collection on water levels and flow dynamics. Solar panels will be integrated to provide a reliable and autonomous power source. The existing housing structures will be replaced with interlock systems, that is, steel enclosures that are both tamper-proof and solar-integrated, offering enhanced security and resilience.

Shallow trenches will be excavated typically less than five meters in length with concrete bases approximately two meters deep to ensure stability and protection of the equipment. Trenching and

installation activities will be confined to existing footprints to minimize ecological disruption. Labour will be provided by trained government teams. Community health and safety will be addressed through pre-installation awareness sessions and the establishment of local oversight mechanisms. These works are designed to be minimally invasive, preserving the surrounding environment and vegetation. Figure 5 shows the typical interlock system installation arrangement.

Beyond the technical upgrades, the intervention incorporates measures to strengthen community engagement and trust in the early warning system. Recognizing the risk of vandalism and misuse, the design includes co-branding of equipment with government logos and awareness campaigns targeting schools and local authorities. Communication channels will be diversified to include radio alerts, WhatsApp messaging, and the appointment of community flood marshals, ensuring that warnings are disseminated effectively and reach all segments of the population.

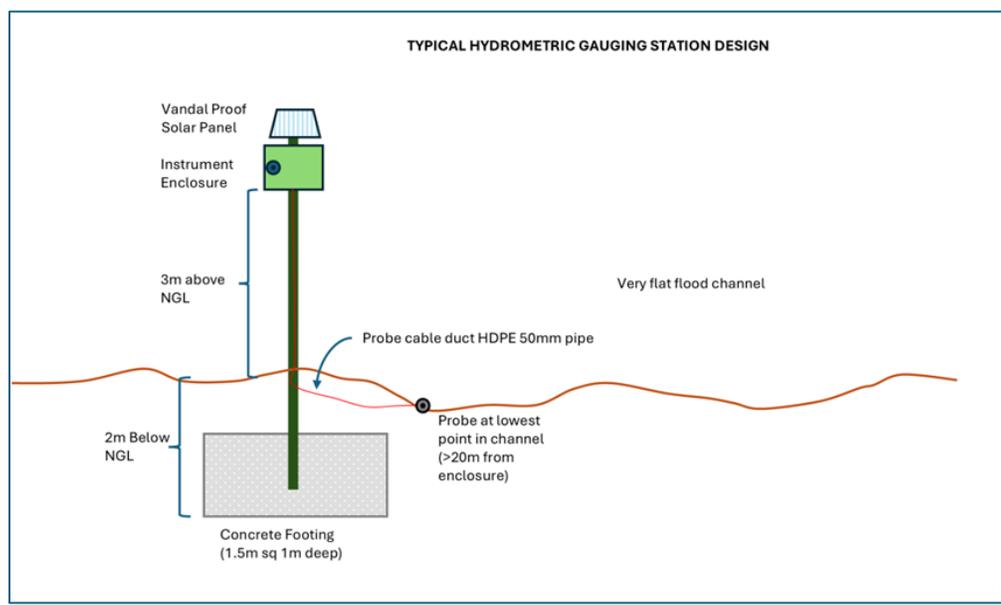


Figure 5: Typical interlock system installation arrangement

In essence, the rehabilitation of the Evale and Cuvelai hydrometric stations represents a strategic investment in climate resilience and disaster risk reduction. By restoring real-time monitoring capabilities and embedding the system within a community-led framework, the intervention aims to reduce vulnerability to flooding, improve preparedness, and foster a culture of proactive risk management.

2.3.3 Water Intake Protection and Solar Pumping

At Kapande, the proposed intervention is designed to address the challenges associated with seasonal water access for irrigation, particularly the vulnerability of the intake structure to erosion and flooding. The intervention is grounded in hydrological and engineering principles aimed at stabilizing the water source and improving water conveyance efficiency to agricultural plots.

The first component of the intervention involves the construction of a gabion weir along the riverbank. This structure is intended to reinforce the intake area, mitigating the effects of seasonal erosion and preventing the collapse or displacement of the intake during high-flow events. Gabions are a proven solution for bank stabilization, offering both structural integrity and permeability, which helps dissipate hydraulic energy while maintaining ecological connectivity.

To complement the intake stabilization, a mobile solar-powered pumping unit will be installed. This system is designed to lift water from the river to the agricultural fields, reducing reliance on manual hauling and improving the reliability of irrigation. The mobility of the unit allows for flexible deployment and maintenance, while solar energy ensures low operational costs and environmental sustainability. Plate 1 shows a typical mobile solar pumping unit.



Plate 1: Mobile solar pumping unit

An additional design consideration is the potential use of an existing fishpond as a temporary storage buffer. This would allow for regulated water distribution during peak irrigation periods and reduce pressure on the intake system. To further enhance water use efficiency, the intervention includes the introduction of drip irrigation systems. These systems deliver water directly to the root zone of crops, minimizing evaporation and runoff, and significantly reducing the physical burden on women who traditionally manage water hauling.

The intervention is also informed by social and environmental safeguards. Excavation and construction activities will be localized to minimize ecological disruption. Labour inputs will be voluntary and supported with appropriate protective equipment. Safety measures such as fencing and signage will be implemented around open water structures to prevent accidents, particularly among children. Gender-sensitive training will be provided to ensure that women are actively involved in irrigation scheduling and system management, promoting equitable access and decision-making.

In summary, the Kapande intervention integrates structural engineering, renewable energy, and inclusive water management practices to enhance irrigation reliability, reduce environmental risks, and promote social equity. It is a technically sound and contextually appropriate solution to the challenges faced by the community in accessing and managing water for agricultural production.

2.3.4 Institutional Strengthening and Flood Gate Repairs

At Kapelongo, the proposed intervention is centered on improving water governance and infrastructure functionality within a fragmented irrigation system. The site is characterized by multiple irrigation associations operating across different municipalities, with limited coordination and malfunctioning canal flood regulation gates. These issues have led to inequitable water distribution, operational inefficiencies, and heightened potential for inter-district conflict over access to irrigation water.

To address these challenges, the project seeks to adopt a dual approach combining physical infrastructure rehabilitation with institutional strengthening. The first component involves the repair of canal flood regulation gates. These gates are critical for controlling water flow and ensuring equitable distribution across irrigation plots. Their malfunction has contributed to water losses and disputes and restoring them to operational standards is essential for improving hydraulic control and system reliability. Plate 2 shows the typical flood control gates on canal.



Plate 2: Typical flood control gates on canal

The second component focuses on enhancing institutional coordination among water user associations and municipal authorities. This includes the facilitation of joint water governance structures and the development of irrigation scheduling protocols. By harmonizing operations and establishing cooperative norms, the intervention aims to reduce conflict, improve transparency, and promote efficient water use. These governance mechanisms will be supported by capacity-building activities and stakeholder engagement processes to ensure inclusive participation and local ownership.

In addition to governance and infrastructure, the intervention seeks to strengthen market linkages for irrigated produce. By connecting associations to offtakers and service providers, the project aims to improve economic returns from irrigation, incentivize maintenance of infrastructure, and enhance the sustainability of water management practices.

Environmental and social safeguards are integrated throughout the intervention. Stakeholder mapping and inclusive planning will be conducted to mitigate institutional conflict and ensure representation of marginalized groups, particularly women, in water user committees. Safety signage and standard-compliant repairs will reduce risks associated with gate failure or misuse.

In summary, the Kapelongo intervention combines engineering solutions with institutional reforms to address both the physical and governance-related constraints of the irrigation system. It is a scientifically grounded and socially responsive strategy aimed at restoring equitable water access, improving operational efficiency, and fostering long-term resilience in agricultural water management.

2.4 Status in project cycle

The project is currently at the feasibility stage as shown in Figure 6.

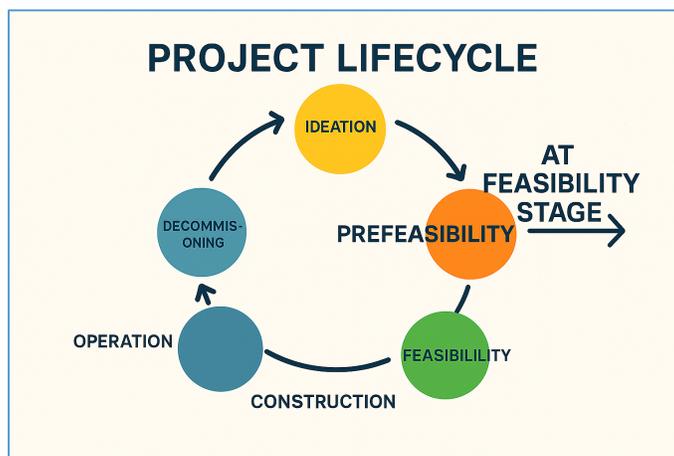


Figure 6: Status in the project cycle

3. Analysis of project alternatives

3.1 Overview

The assessment of environmental and social impacts for development projects requires a systematic evaluation of alternatives. For the proposed interventions across five sites, a Multi-Criteria Decision Analysis (MCDA) was applied to identify the most suitable option for each location. The analysis covered five key aspects: (1) No-action alternative, (2) Water supply options at Nehone, (3) Early warning systems at Evale and Culevalai, (4) Irrigation solutions at Kapande and, (5) flood mitigation measures at Kapelongo.

3.2 No Action Alternative

The “No Action” alternative would result in failure to implement the proposed interventions across the five pilot sites. In Nehone, continued reliance on an unreliable water source may exacerbate water scarcity, leading to poor hygiene, increased exposure to waterborne diseases, and reduced livestock productivity. At Evale and Cuvelai, the absence of functional hydrometric stations would undermine flood early warning systems, increasing community vulnerability to climate-related disasters and limiting preparedness and response capacity.

In Kapande, lack of intake protection and inefficient irrigation system would perpetuate inefficient water use, soil erosion and reduced agricultural yields disproportionately affecting women and smallholder farmers. At Kapelongo, unresolved governance issues and malfunctioning flood gates could intensify inter-municipal conflicts over water access, reduce irrigation efficiency and hinder equitable resource distribution. Collectively, these risks threaten community resilience, food security, public health and sustainable livelihoods in the region.

3.3 Water supply options at Nehone

The assessment of water access alternatives at Nehone considered four options: (a) rehabilitating an existing borehole, (b) connecting to a nearby borehole, (c) drilling a new borehole, and (d) constructing a floodwater harvesting pond. Each option was evaluated across environmental, social, technical, and economic dimensions. The analysis revealed that rehabilitating the existing borehole presents the most favorable balance of low environmental impact, minimal social disruption, technical feasibility and cost-effectiveness. It leverages existing infrastructure and offers a scalable solution with the potential for desalination if water quality is poor.

In contrast, the other options carry higher risks related to cost, technical uncertainty and social acceptability. Based on this multi-criteria assessment, rehabilitating the existing borehole is recommended as the preferred intervention. Table 2 presents a structured assessment of water access

alternatives at Nehone. Each option is rated based on its overall risk level to support decision-making within the environmental and social analysis framework.

Table 2: Water access alternatives at Nehone

Option	Description	Environmental	Social	Technical	Economic	Overall Risk Level
Rehabilitate Existing Borehole	Revitalise the existing infrastructure; test disused borehole; install small-scale desalination unit	Minimal biodiversity disturbance.	Low social tension; community familiarity	Technically feasible; desalination contingent on water quality	Lowest cost; minimal sunk cost risk	Acceptable
Connect to Nearby Borehole (~4 km)	Pipeline from FRESAN borehole; may require power and pump upgrades	Moderate impact due to pipeline routing	Risk of social conflict over water sharing	Technically feasible if yield confirmed	Moderate cost	Moderate
Drill New Borehole Within Village	Drill new borehole in Nehone	Potential land disturbance; risk of dry hole	Neutral to negative if drilling fails	High risk of brackish water; uncertain yield	High cost; risk of sunk investment	Moderate
Floodwater Harvesting Pond	Reconsider pond only if all other options fail	High ecological risk; unreliable hydrology	Low community confidence due to prior rejection	Technically unviable based on flood analysis	High cost; low return	High

3.4 Analysis of Early Warning Systems

3.4.1 Early warning system at Evale

At Evale, the preferred intervention is the revitalization of the existing hydrometric station which offers minimal environmental impact, strong community support and technical feasibility using existing infrastructure. This option enhances flood preparedness and climate resilience at a moderate cost. In contrast, relocating the station to a new site introduces construction-related environmental risks, potential social resistance and higher financial and logistical demands. Failure to revitalize the station could result in inadequate flood monitoring, increased vulnerability to climate-related disasters and diminished community trust in early warning systems. Table 3 offers an analysis of the practical options.

Table 3: Options for the hygrometric stations at Evale

Option	Description	Environmental	Social	Technical	Economic	Overall Risk Level
Revitalise Existing Station	Upgrade current hydrometric station	Low impact	High community support	Technically feasible	Moderate cost	Acceptable
Relocate Station	Build new station at alternate site	Moderate impact	Potential resistance	Feasible but complex	High cost	Moderate

3.4.2 Early warning system at Cuvelai

For Cuvelai, revitalizing the existing hydrometric station is the most favorable option. It ensures continuity in data collection, minimizes ecological disturbance, and strengthens community trust in early warning systems. The alternative which involved deploying a mobile monitoring unit offers flexibility and lower costs but lacks robustness and long-term reliability. If the revitalization of the existing system is not implemented, the community may face reduced flood preparedness, compromised data accuracy and increased exposure to flood risks. Table 4 offers an analysis of the practical options.

Table 4: Options for the hygrometric stations at Evale

Option	Description	Environmental	Social	Technical	Economic	Overall Risk Level
1. Restore Existing Station	Upgrade current hydrometric station	Low impact	High community trust	Technically feasible	Moderate cost	Acceptable

2. Mobile Monitoring Unit	Deploy portable monitoring equipment	Minimal impact	Neutral	Less robust	Low cost	Moderate
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3.5 Water Intake Protection and Solar Pumping

In Kapande, the integrated solution involving gabion weir construction, solar-powered pumping and drip irrigation stands out as the most effective intervention. It balances environmental protection with improved agricultural productivity and social inclusion, particularly for women. The alternative which involves continuing manual irrigation with minor intake repairs poses high labor demands, low efficiency and limited long-term benefits. Without the preferred intervention, the community risks ongoing water inefficiency, soil degradation, reduced crop yields and heightened vulnerability to climate variability. Table 5 presents an analysis of options for water intake protection and solar pumping

Table 5: Options for water intake protection and solar pumping

Option	Description	Environmental	Social	Technical	Economic	Overall Risk Level
1. Integrated Irrigation Solution	Gabion weir, solar pump, drip irrigation	Protective	Inclusive, especially for women	Technically sound	Moderate cost	Acceptable
2. Manual Irrigation	Minor intake repairs, manual labor	Neutral	High labor demand	Low efficiency	Low cost	High

3.6 Flood Gate Repairs

At Kapelongo, repairing canal flood gates and strengthening institutional coordination among irrigation associations is the most viable option. It addresses both physical infrastructure and governance challenges, promoting equitable water distribution and reducing conflict. Constructing a new canal system, while potentially transformative carries high environmental, social and financial risks. Failure to implement the recommended intervention could exacerbate water access disputes, reduce irrigation efficiency and hinder agricultural productivity and market integration. Table 6 provides alternative options for revitalizing the canal system.

Table 6: Alternative options for revitalizing the canal system

Option	Description	Environmental	Social	Technical	Economic	Overall Risk Level
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Repair Gates & Strengthen Institutions	Fix canal gates and improve governance	Low impact	Reduces conflict	Feasible	Moderate cost	Acceptable
Build New Canal System	Construct new irrigation infrastructure	High impact	Displacement risk	Complex	High cost	High

4. Legal and institutional framework

The implementation of the project will be subject to various pieces of environmental and social policies, laws, standards and guidelines. All project actors shall ensure that project activities are aligned to the national development policies, strategies and plans of the country while ensuring that all operations comply with the national and international laws and conventions.

4.1 National Policies, Plans and Strategies

Angola has developed various laws and policies which directly and indirectly affects the project. Table 7 provides a detailed compliance checklist for the CUVKUN Project, specifically tailored to Angola’s legal and policy framework. This checklist ensures that all community-driven activities such as water harvesting, aquaculture, watershed management, and flood early warning systems are aligned with national laws, policies, and constitutional provisions.

Table 7: Compliance checklist for the Project based on national legal framework

Legal/Policy Basis	Requirement	Implementation Notes
Constitution of the Republic of Angola	The Constitution enshrines fundamental human rights including access to water, health and a healthy environment. Additionally, the Constitution promotes gender equality and parity.	Formulate and implement plans or measures to respect, protect, promote, and fulfil these rights at all pilot sites
Basic Environmental Law (Law No. 5/98)	Ensure activities promote environmental protection, conservation, and rational resource use	Apply principles of sustainability, precaution, and intergenerational equity in all pilot designs.
Environmental Impact Assessment Regulation and Environmental Licensing Procedure (Presidential Decree No. 117/20)	Conduct ESIA or simplified ESIA for pilot sites (e.g., irrigation systems, community water supply systems, flood water harvesting, etc)	Determine project category; obtain license before implementation.
National Environmental Quality Program (Decree No. 138/20)	Ensure water used for aquaculture and harvesting meets potability and pollution control standards	Monitor water quality regularly; use approved testing protocols; report exceedances.
Presidential Decree No. 194/11 (Regulation on	Enforces the “polluter pays” principle to prevent and remedy environmental damage	Develop plans to manage pollution of water, soil and air

Legal/Policy Basis	Requirement	Implementation Notes
Responsibility for Environmental Damage)		
Executive Decree No. 87/12 (Regulation on Public Consultation)	Defines procedure within the framework of public participation to collect opinions and suggestions from stakeholders on projects subject to an Environmental Impact Assessment.”	Conduct inclusive consultations; document consent; ensure representation of women, youth, and indigenous groups.
Presidential Decree No. 190/12 (Regulation of Waste Management)	Ensure all generators of waste prepare a Waste Management Plan (WMP) prior to the commencement of their activity	Prepare plans or measures for managing waste at all pilot sites
Executive Decree No. 6/96 (General Regulation of Occupational Health and Safety Services)	Establishes the principles that aim to promote safety, hygiene and health at work	Develop Construction Safety Management Plans (CSMP) or Occupational Health and Safety Plans to protect workers safety
Executive Decree No. 128/04 (General Regulation of Safety and Health at Work Signaling)	Lays down minimum requirements for placement and use of occupational safety and health signs at work	Develop Construction Safety Management Plans (CSMP) or Occupational Health and Safety Plans (OHS) to protect workers safety
General Labour Law (No. 7/15)	Stipulates the responsibility of employes in ensuring the adoption of "appropriate measures of safety and health at work".	Contractors to develop OHS plans
Water Law No. 6/02	Establishes the general principles regarding the use of water resources	Develop Management measures to allow efficient water utilization at all project sites
Presidential Decree No. 261/11 (Regulation of Water Quality)	Establishes water quality standards and criteria for the purpose of protecting the aquatic environment and improving the quality of water on the basis of their main uses	Ensure water generate from project interventions meets the required standards. Perform water quality tests
Cultural Heritage Law No. 14/05	Provides for the protection and management of all archaeological and historical artifacts of importance.	Prepare “Chance Find Procedure” to ensure that all material of archaeological and cultural importance accidentally discovered during implemented are preserved

Legal/Policy Basis	Requirement	Implementation Notes
National Policy for Gender Equality and Equity	Establish accessible and transparent GRM for community complaints	Set up local GRM committees; train focal points; ensure multilingual access and gender sensitivity.
Customary Law Reform, Inclusive Public Policies (2021)	Promote women’s access to land and water resources used in pilot projects	Conduct awareness campaigns; engage traditional leaders; document land/water access agreements.

4.2 International Conventions and National Regulations

Table 8 provides a matrix for international laws, conventions, and protocols relevant to the project in Angola, which focuses on flood water harvesting, watershed management, irrigation systems and flood early warning systems. It also includes detailed entries on social protection and human rights, gender equality, and women’s empowerment conventions and protocols that Angola has ratified or endorsed. It includes compliance areas, specific requirements, Angola’s ratification status, and implementation guidance for field teams and safeguards reporting.

Table 8: International laws, conventions and treaties relevant to the Project

International Instrument	Compliance Area	Requirement	Implementation Notes
Paris Agreement (2015)	Environmental Protection & Climate Resilience	Ensure sustainable use of natural resources and climate adaptation in community projects	Align pilot projects with Angola’s Nationally Determined Contributions (NDCs); integrate climate risk screening and resilience-building.
Basel Convention (1989)	Environmental Protection & Climate Resilience	Prevent hazardous waste and pollution in water supply and irrigation development	Avoid use of hazardous materials; ensure safe waste disposal practices in pilot sites.
Convention on Biological Diversity (CBD, 1992)	Environmental Protection & Climate Resilience	Protect biodiversity and ecosystems in watershed management	Conduct biodiversity assessments; promote ecosystem restoration.
UN Convention to Combat Desertification (UNCCD, 1994)	Environmental Protection & Climate Resilience	Combat desertification and land degradation	Apply sustainable land management practices; monitor soil health and erosion in pilot areas.
International Covenant on	Social Protection & Human Rights	Ensure inclusive development and	Monitor social impacts of pilot projects.

International Instrument	Compliance Area	Requirement	Implementation Notes
Economic, Social and Cultural Rights (ICESCR, 1966)		protection of vulnerable groups	
UN Declaration on the Rights of Indigenous Peoples (UNDRIP, 2007)	Social Protection & Human Rights	Protect rights of Indigenous Peoples and local communities	Respect cultural practices; ensure land and water rights; include Indigenous voices in planning.
ILO Social Protection Floors Recommendation (No. 202, 2012)	Social Protection & Human Rights	Promote social protection systems for vulnerable populations	Align pilot interventions with Angola's Kwenda and PNAS programs; ensure coverage of rural poor.
Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW, 1979)	Gender Equality & Women's Empowerment	Eliminate discrimination and promote gender equality in all project activities	Prepare and implement a Gender Action Plan; ensure 50% female participation; address gender-specific risks and barriers.
Maputo Protocol (2003)	Gender Equality & Women's Empowerment	Promote women's rights in Africa	Ensure access to water, and decision-making for women; and economic empowerment.
ILO Convention No. 190 (Violence and Harassment at Work, 2019)	Gender Equality & Women's Empowerment	Prevent gender-based violence in project areas	Train staff and communities; establish GBV response protocols; ensure safe spaces for women.
Beijing Declaration and Platform for Action (1995)	Gender Equality & Women's Empowerment	Promote gender equality in sustainable development	Mainstream gender in all planning and implementation; monitor gender indicators in M&E frameworks.
UN Framework Convention on Climate Change (UNFCCC)	Climate Change Mitigation and Adaptation	Promote climate resilient practices and interventions	Implement climate-resilient interventions

4.3 UNDP's Social and Environmental Standards

Initial environmental and social screening of the overall CUVKUN Project using UNDP's Social and Environmental Screening Procedure (SESP) categorized the transboundary Project (Angola and Namibia)

as Substantial Risk. Consistent with UNDP practice, this rating reflects the inherent environmental and social risks before mitigation and remains the overall Project risk category. In addition to risks associated with Indigenous Peoples (confirmed for Namibia), the SESP identified other Substantial risks, including risks to biodiversity and to rivers through the potential introduction/spread of invasive alien species (IAS). This Angola ESIA does not re-categorize the overall Project risk; instead, it provides a site-specific assessment of the Angola pilot interventions, confirming that the key risks at these locations are localized and can be effectively managed through the mitigation measures, monitoring indicators and roles set out in the Environmental and Social Management Plan (ESMP) in Section 7 and the Environmental and Social Monitoring Plan in Section 8. Table 10 summarizes all UNDP SES Principles and Standards (P&S) triggered by the Project and indicates their applicability to the Angola pilot sites and where each is addressed in this ESIA and related Project instruments (e.g., ESMF, SEP, LMP and GRM). All Project contractors and workers will comply with applicable national laws and ILO conventions ratified by Angola, including ILO Convention No. 138 (Minimum Age) and ILO Convention No. 182 (Worst Forms of Child Labour).

Table 9: Programming principles and Operational standards triggered

Principle/ Project- Level Standard	Safeguard Details	Applicable to the Project	
		Yes/No	Justification
Principle 1. Leave no one behind	UNDP prioritize its interventions to address the situation of most marginalized, discriminated and excluded	Yes	The project landscape has vulnerable groups (e.g. youth, women and elderly) that are at risk of being left behind in the development processes. These groups must be empowered as active agents of the development process
Principle 2. Human Rights	UNDP recognizes the centrality of human rights to sustainable development	Yes	The project must adopt the human rights-based approach through interventions that address poverty, social equity and equality.
Principle 3. Gender and women empowerment	UNDP promotes gender equality and the empowerment of women in development	Yes	The project must implement specific measures to address gender equality and women empowerment considering that the project landscape has poor and vulnerable rural communities
Principle 4: Sustainability and	UNDP seeks to address poverty and inequality and	Yes	The project must mainstream environmental sustainability and resilience by making investments that will collectively contribute to

Principle/ Project- Level Standard	Safeguard Details	Applicable to the Project	
		Yes/No	Justification
Resilience	to reduce vulnerabilities while maintaining and enhancing natural capital.		improved security and sustainable natural resources management including water and land
Principle 5: Accountability	UNDP promotes accountability to programme and project stakeholders	Yes	The project must promote meaningful, effective and inclusive participation of stakeholders in project design and implementation. The project must ensure that stakeholders have access to appropriate grievance resolution procedures
ESS 1	Biodiversity Conservation and Sustainable Natural Resource Management	Yes	This standard has been triggered because the project could generate potential biodiversity impacts through habitat loss or hydrological changes.
ESS 2	Climate Change and Disaster Risks	Yes	This standard has been triggered because the project infrastructure and outcomes may be threatened by climate change or disaster risks such as flooding and high temperatures
ESS 3	Community Health, Safety and Security	Yes	This standard has been triggered due to the potential safety risks associated with the construction of critical infrastructure such as water harvesting ponds and brine ponds from desalination units. These structures may pose hazards to community members, particularly children and livestock, and could serve as breeding grounds for disease vectors. This increases the risk of waterborne and vector-borne diseases, including schistosomiasis and malaria, with possible adverse health impacts.
ESS 4	Cultural Heritage	No	This standard has not been triggered, as the archaeological impact assessment did not identify any tangible or intangible cultural heritage likely to be affected by the Project. Nonetheless, a chance find procedure will be implemented to ensure appropriate management of any archaeological materials discovered during excavation, trenching, or

Principle/ Project- Level Standard	Safeguard Details	Applicable to the Project	
		Yes/No	Justification
			digging activities
ESS 5	Displacement and Resettlement	No	This standard has not been triggered because the project interventions are not expected to physically or economically displace individuals or groups
ESS 6	Indigenous Peoples	No	This standard has not been triggered as there are no Indigenous Peoples within the Project area likely to be affected by its interventions. The local population comprises communities with shared ethnic backgrounds, primarily engaged in agriculture and livestock rearing. Social organization is based on traditional leadership and cooperative models, rather than distinct indigenous governance systems
ESS 7	Labour and Working Conditions	Yes	The standard has been triggered because contractor personnel may be exposed to occupational hazards associated with undertaking civil works components (e.g. installations of water supply components, hydrometric system rehabilitation, gabion weir construction, solar pump installation, and canal gate repairs). Potentially high-risk activities include manual material handling, working at elevated heights, hot work operations, and the use of vibratory, cutting, and electrically powered equipment.
ESS 8	Pollution Prevention and Resource Efficiency	Yes	This standard has been triggered because the project is expected to generate construction-related waste (e.g., <i>paint and solvent residues, electrical wiring scraps, packaging materials, wire mesh, pipe offcuts, scrap metal, brine, etc</i>), which may pose risks of soil and water contamination if not properly managed. Additionally, support for irrigated agriculture may increase the use of agrochemicals (e.g., fertilizers and pesticides), potentially leading to further pollution. Planned water supply interventions involving groundwater abstraction

Principle/ Project- Level Standard	Safeguard Details	Applicable to the Project	
		Yes/No	Justification
			also require sustainable management to prevent resource depletion.

4.4 Comparative Analysis between UNDP SES and National requirements

Table 10 presents a comparative analysis of Angola’s national laws and policies against the UNDP Social and Environmental Standards (SES), highlighting alignment and identifying gaps relevant to the implementation of the Project.

Table 10: Analysis of Nations laws against UNDP SES Standards

UNDP SES	UNDP SES Requirement	National Regulations	Regulatory Requirements	Comparative Analysis	Identified gaps
Principle 2: Human Rights	The UNDP SES promotes human rights by requiring all projects to respect international human rights standards, ensure non-discrimination, protect vulnerable groups, and enable inclusive participation and accountability. The SES also integrate gender equality, disability rights, and indigenous peoples' protections, ensuring development activities are socially just, transparent, and accountable	Constitution of the Republic of Angola (2010)	Angola's Constitution provides a strong foundation for human rights that aligns with the objectives of the CUVKUN Project. It guarantees the right to life, human dignity, and equality, which support inclusive and respectful stakeholder engagement.	The Constitution of Angola and the UNDP Social and Environmental Standards both uphold core human rights principles such as dignity, equality, and non-discrimination. They align with international human rights instruments and promote civil, political, and socio-economic rights. While the Constitution provides a national legal foundation, the SES offers enforceable safeguards within development projects, making both frameworks complementary in advancing rights-based governance and inclusive development	No significant gaps identified

UNDP SES	UNDP SES Requirement	National Regulations	Regulatory Requirements	Comparative Analysis	Identified gaps
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management	UNDP is committed to integrating biodiversity and ecosystem management into development planning and production sector activities, strengthening protected areas systems, and managing and rehabilitating ecosystems for adaptation to and mitigation of climate change.	The Forest and Wildlife Law (Law No. 6/17) and the Forest Regulation (Presidential Decree No. 171/18) provide the foundation for sustainable management of forests and wildlife. The Law on Environmental Conservation Areas (Law No. 8/20) regulates biodiversity use and ecosystem protection. These are supported by the Basic Law on the Environment (Law No. 5/98), which sets overarching principles for environmental protection and conservation.	The main conservation goals of Angola's biodiversity-related laws and policies focus on ensuring the sustainable use, protection, and restoration of the country's natural ecosystems and biological resources. These goals are embedded in several key legal instruments and institutional mandates.	Angola's biodiversity conservation laws align well with UNDP SES Standard 1, which focuses on biodiversity conservation and sustainable natural resource management. Both frameworks emphasize the sustainable use of forests and wildlife, protection of critical habitats, and the integration of biodiversity considerations into development planning.	Angola's EIA process, while legally required, does not consistently apply ecosystem-based approaches or ensure inclusive public participation both key elements of UNDP SES Standard 1. Additionally, Angola's laws give limited attention to the mitigation hierarchy, a core SES principle that prioritizes avoiding, minimizing, restoring, and offsetting environmental

UNDP SES	UNDP SES Requirement	National Regulations	Regulatory Requirements	Comparative Analysis	Identified gaps
					impacts.
Standard 2: Climate Change Mitigation and Adaptation	UNDP SES Standard 2 focuses on minimizing greenhouse gas emissions, integrating climate and disaster risk considerations into project planning, and ensuring resilience through adaptive measures.	Key Angolan laws on Climate Change and Disaster Risks include the Basic Law on the Environment (Law No. 5/98), Presidential Decree No. 162/20, Presidential Decree No. 177/20, and the Water Law (Law No. 6/02).	The laws focus on promoting environmental protection, sustainable development, climate change mitigation, drought and desertification control, renewable energy, and integrated water resource management	Angola's climate-related laws align with UNDP SES Standard 2 through shared priorities such as promoting low-emission development, protecting ecosystems, managing water resources sustainably, and reducing vulnerability to climate and disaster risks. This convergence is evident in laws like the Basic Law on the Environment, which emphasizes sustainable development and environmental protection; Presidential Decree No. 162/20, which mandates climate action and renewable energy promotion; and Presidential Decree No.	While national laws mandate environmental protection, promote low-emission development, and address drought and desertification, they lack comprehensive implementation frameworks for climate risk screening and integration into all development planning.

UNDP SES	UNDP SES Requirement	National Regulations	Regulatory Requirements	Comparative Analysis	Identified gaps
				177/20, which focuses on drought and desertification control.	
Standard 3: Community Health, Safety and Security	The standard seeks to anticipate and avoid adverse impacts on the health and safety of affected communities during the Project life cycle from both routine and non-routine circumstances.	Angola has several laws consistent with UNDP SES Standard 3 on Community Health, Safety, and Security. These include the Basic Law on the Environment (Law No. 5/98), the Regulation of Water Quality (Presidential Decree No. 261/11) and the Regulation for the Prevention and Control of National Water Pollution (Presidential Decree No. 141/12)	Angola's environmental laws such as Law No. 5/98, Presidential Decree No. 261/11, and Presidential Decree No. 141/12 prioritize the protection of water quality and pollution control as essential to safeguarding public health. These laws establish standards for safe water use, regulate pollutants from industrial and marine sources, and promote sustainable environmental practices to prevent health risks.	The three Angolan laws mentioned collectively support the objectives of UNDP SES Standard 3: Community Health, Safety, and Security by focusing on environmental protection as a foundation for public health and safety. Law No. 5/98 mandates environmental protection to support public health. Presidential Decree No. 261/11 sets water quality standards for safe use. Presidential Decree No. 141/12 regulates industrial pollution to prevent health risks.	Angola's environmental laws support public health but partially diverge from UNDP SES Standard 3. They lack clear requirements for community-level risk assessments and emergency preparedness. Provisions for vulnerable groups are limited, and enforcement at local levels is weaker than SES expectations.

UNDP SES	UNDP SES Requirement	National Regulations	Regulatory Requirements	Comparative Analysis	Identified gaps
<p>Standard 7: Labour and Working Conditions</p>	<p>Standard 7 ensures workers work in a safe and healthy environment to prevent accidents, injuries, and disease. It goes further to respect and promote workers' rights, to promote the right to decent work, fair treatment, non discrimination, and equal opportunity for workers, and to avoid the use of forced labour and child labour (as defined by the ILO)</p>	<p>Angola's occupational health and safety framework is built on laws that promote safe working conditions and employer responsibility. These include Executive Decree No. 6/96, Decree No. 53/05 and Law No. 7/15</p>	<p>Executive Decree No. 6/96 outlines general workplace safety principles, while Executive Decree No. 128/04 regulates safety signage. Decree No. 53/05 governs compensation for work-related injuries and diseases, and Law No. 7/15 requires employers to ensure a safe work environment.</p>	<p>The Standard 7 ensures that the risks as a result of the use of forced labour and child labour (as defined by the ILO) are adequately mitigated which is broader in scope that the national regulations that looks into only the health and safety of workers.</p>	<p>Hence UNDP Standard 3 on Community health, Safety and Security shall be upheld</p>

UNDP SES	UNDP SES Requirement	National Regulations	Regulatory Requirements	Comparative Analysis	Identified gaps
Standard 8: Pollution Prevention and Resource Efficiency	The standards helps to avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from Project activities including promote more sustainable use of resources, including energy, land and water.	Angola's legal framework consistent with SES 8 include the Regulation of Waste Management (Presidential Decree No. 190/12), the Executive Decree No. 17/13, Presidential Decree No. 141/12 and Presidential Decree No. 261/11	Angola's laws focus on waste management, pollution control, and water quality standards. They promote responsible disposal, regulate industrial pollutants, and safeguard water resources, supporting sustainable resource use and environmental protection.	Angola's legal framework shows strong convergence with UNDP SES Standard 8 on Pollution Prevention and Resource Efficiency	No Identified gaps

4.5 Institutional Framework

The project is structured around a multi-tiered institutional framework that brings together regional commissions, national agencies, and international partners to ensure coordinated planning, implementation, and long-term sustainability of IWRM in both basins. The implementation of the environmental and social management measures proposed in this document will demand a multistakeholder approach involving all stakeholders at national and subnational levels. In this section, the capacity of the institutions directly involved in implementing and monitoring the ESMP is assessed.

National Directorate for Prevention and Assessment of Environmental Impacts (DNPAIA): The DNPAIA serves as the principal authority responsible for overseeing the monitoring of biophysical parameters including water quality, air emissions, and soil integrity within the project area ensuring full compliance with Angola's environmental regulatory framework. The Directorate operates under a robust institutional framework, guided by the Environmental Impact Assessment Regulations and Presidential Decree No. 117/20, which establishes the General Regulation for Environmental Impact Assessment and Environmental Licensing Procedures.

DNPAIA employs standardized methodologies and technical protocols for the identification, evaluation, and mitigation of environmental and social risks. It possesses the institutional capacity including qualified personnel and appropriate field instrumentation, to critically review ESIA reports and to ensure effective implementation and monitoring of the ESMPs.

Project Coordination Unit (PCU)

The PCU holds ultimate responsibility for ensuring the integration and operationalization of environmental and social management plans throughout the project lifecycle. Within the PCU, the Environmental and Social Safeguards (ESS) Expert will provide technical oversight for the implementation and monitoring of the Environmental and Social Management Plan (ESMP), ensuring alignment with national regulations and international best practices.

Key responsibilities of the ESS Expert include, but are not limited to:

- (a) Evaluating the Contractor's Environmental and Social Management Plans (C-ESMPs), including periodic updates and revisions, to ensure consistency with contractual and regulatory requirements.
- (b) Analyzing environmental, social, health, and safety (ESHS) risks associated with design modifications and advising on compliance implications.
- (c) Conducting scheduled audits and site inspections to verify adherence to ESHS standards, including review of incident logs, stakeholder engagement records, and other relevant documentation.

- (d) Identifying non-compliance issues and determining appropriate remedial measures, including timelines for implementation.
- (e) Facilitating inclusive stakeholder participation in ESHS-related meetings to ensure transparency and consensus on compliance actions.
- (f) Ensuring that the Contractor's reporting mechanisms meet the obligations outlined in the contract and safeguard protocols.
- (g) Operationalizing and maintaining the project's GRM, with particular attention to confidentiality and sensitivity in handling GBV and SEAH allegations.
- (h) Holding regular consultations with the Contractor's health and safety personnel to verify the implementation of accident prevention and mitigation measures.
- (i) Leading the end-of-project environmental and social audit to identify unresolved issues and ensure a responsible and sustainable project closure

Responsible Parties

The Cuvelai Watercourse Commission (CUVECOM), the Permanent Joint Technical Commission (PJTC), and the Gabinete para a Administração das Bacias Hidrográficas do Cunene, Cubango e Cuvelai (GABHIC) play a pivotal role in steering transboundary water governance and coordinating project implementation within the Cunene and Cuvelai river basins. While these entities are central to the success of the CUVKUN Project, a capacity gap has been identified in their familiarity with the UNDP's SES Policies.

Specifically, there is limited institutional experience in key safeguard domains such as environmental and social risk management, prevention of sexual exploitation, abuse and harassment (PSEAH), stakeholder engagement, grievance redress mechanisms, community safety and security, and gender mainstreaming. To ensure effective leadership and alignment with international standards, targeted capacity-building interventions will be essential throughout the project implementation period. Strengthening these competencies will not only enhance institutional effectiveness but also contribute significantly to the achievement of the project's environmental and social outcomes

Local authorities and Community-based structures

Local councils and community-based structures currently face limited capacity and lack sufficient access to information on both e and rights-based approaches, which hinders their ability to effectively manage safeguards implementation. To address the full spectrum of risks associated with this project, capacity strengthening is required at both national and sub-national levels,

including government agencies and local representatives in communities. As part of the project's safeguards strategy, Community Grievance Management Committees (GMCs) and Village Development Committees will require targeted training on key aspects of the project, particularly the handling of sensitive cases such SEAH.

The Contractor(s)

Contractors engaged under the project to implement physical infrastructure are required to fully implement the approved Contractor Environmental and Social Management Plan (C-ESMP). This plan is designed to mitigate adverse environmental and social impacts and safeguard the well-being of local communities throughout the construction phase. To ensure effective execution of the C-ESMP, each contractor shall appoint a qualified Safety, Health, and Environment (SHE) Officer. The SHE Officer will be responsible for the following core functions:

- (a) Operationalizing the Construction Safety Management Guidelines, Labour Management Procedures, GRM, and activating the Chance Find Procedure when necessary.
- (b) Conducting routine inspections to identify occupational hazards and verify compliance with national and project-specific safety standards.
- (c) Evaluating potential safety, health, and environmental risks associated with construction activities and recommending mitigation measures.
- (d) Establishing and enforcing site-specific safety protocols to minimize risks and promote a safe working environment.
- (e) Delivering targeted safety training and awareness sessions to ensure all personnel understand and adhere to safety procedures.
- (f) Ensuring all construction activities conform to applicable safety, health, and environmental legislation and project safeguards.
- (g) Leading investigations into accidents or near-miss events, identifying root causes, and implementing corrective actions to prevent recurrence.
- (h) Maintaining comprehensive records of inspections, incidents, and compliance activities, and submitting regular reports to the PCU, relevant authorities, and stakeholders.

4.6 Licenses/Permits

The project is required to secure permits and licenses stipulated in Table 11.

Table 11: Licenses or Permits required

Item	License/ Permit to be acquired	Responsible Body	Regulator	Timeline
1.	EIA License	PCU	DNPAIA	Preconstruction
2.	Groundwater Water Abstraction Permit	Ministry of Energy and Water (Ministério da Energia e Águas)	National Directorate for Water (Direcção Nacional de Águas - DNA)	Operational Phase
3	Public Liability Insurance Cover	Contractor	Angolan Agency of Regulation and Supervision of Insurance (ARSEG)	Construction
4	Certificate of Fitness	Contractor	General Medical Practitioner	Construction

5. Baseline environmental and socio-economic setting

This section provides a comprehensive account of the baseline biophysical and socioeconomic characteristics within the project area. This information forms the analytical foundation for the subsequent assessment of potential environmental and social impacts associated with the proposed interventions. By establishing a clear understanding of existing conditions, the analysis facilitates the identification of risks and opportunities and informs the design of appropriate mitigation and monitoring measures to ensure sustainable project implementation.

5.1 Biophysical Conditions

5.1.1 Climate

The climate in the area is predominantly semi-arid to sub-humid, characterized by a short, highly variable rainy season from November to March and a prolonged dry season. Drought is the most persistent and severe climatic hazard, frequently leading to water scarcity, crop failures, and pasture degradation. Rainfall is unpredictable and unevenly distributed, with some areas occasionally experiencing localized flooding. Rising temperatures and increasing climate variability driven by climate change have intensified these challenges making agricultural livelihoods highly vulnerable and exacerbating food and water insecurity throughout the region.

5.1.2 Topography, geology and soils

The landscape is underlain by a central plateau of Precambrian crystalline rocks and sandstones. The terrain is predominantly flat underlain by impermeable clay beds and saline soils that influence surface water dynamics and limit infiltration. Soils in these areas are shaped by aeolian and fluvial processes, with fertile clay-sand mixtures supporting seasonal agriculture around ephemeral channels and pans.

Evale presents severely eroded, low-fertility soils, particularly along riverbanks, with extensive fallow land. Nehone, located in a forested zone, has fair fertility and benefits from well-maintained sustainable land management practices. Overall, soil conditions range from moderately fertile to saline and rocky, influencing land use, agricultural potential, and water management strategies. Proposed interventions such as rainwater harvesting are expected to support aquifer recharge thereby strengthening geosystem resilience under increasing climatic stress.

5.1.3 Biodiversity

The project landscape is primarily characterized by *Acacia erioloba*, *Terminalia prunioides*, *Colophospermum mopane*, and *Combretum collinum*. Nehone, situated within a forested matrix maintains relatively intact thicket vegetation supporting diverse taxa bolstered by agroecological practices such as mulching and intercropping. Kapande present moderate biodiversity potential through agroforestry and permaculture systems though maintenance and input consistency remain suboptimal. Evale is characterized by degraded habitats with reduced vegetation cover and limited biodiversity-supporting interventions, although restoration opportunities exist via agroforestry. The implementation of Nature-Based Solutions (NBS) including riparian buffers, agroforestry, and rainwater harvesting is projected to enhance habitat complexity, vegetation cover, and ecosystem services. With participatory planning and adaptive management, the project is expected to contribute positively to biodiversity conservation and landscape resilience.

5.1.4 Surface and groundwater hydrology

Surface and groundwater hydrology exhibits pronounced spatial and temporal variability, driven by semi-arid climatic conditions, low-relief terrain, and fragmented hydrological systems. Surface water availability is episodic and closely tied to seasonal precipitation with flood-prone areas such as Evale and Nehone experiencing transient inundation followed by rapid infiltration and evaporation. Groundwater resources are primarily sourced from shallow perched aquifers, which are highly susceptible to contamination from surface runoff and anthropogenic activities.

The interaction between surface and groundwater is critical for maintaining wetland ecosystems, but poor management and land degradation have led to resource depletion and declining water quality. The proposed interventions including rainwater harvesting, irrigation system upgrades, flood control infrastructure, and sustainable land management are expected to enhance water retention, reduce runoff, and facilitate aquifer recharge. These measures will improve water quality, stabilize seasonal availability, and strengthen the resilience of local hydrological systems under increasing climatic stress.

5.1.5 Air quality

The project area currently exhibits minimal anthropogenic sources of air pollution. No significant industrial or commercial activities are present that contribute to elevated levels of air pollutants. However, intermittent dust emissions are observed primarily resulting from vehicular movement along unpaved roads.

The proposed construction activities are anticipated to generate fugitive dust which may temporarily affect ambient air quality within the immediate vicinity of the project footprint. Additionally, dust emissions may arise from agricultural operations during the operational phase. These impacts are expected to be spatially confined to the project area, moderate in intensity, and short-lived in duration.

To ensure compliance with international and occupational health standards, ambient air quality will be monitored during the construction phase using the World Health Organization (WHO) ambient air quality guidelines. In occupational settings, exposure levels will be assessed against the Occupational Safety and Health Administration (OSHA) thresholds, specifically 10 mg/m³ for total dust and 3 mg/m³ for respirable dust. Monitoring results will inform adaptive management strategies to safeguard both environmental and worker health.

5.1.7 Noise & Vibration

Currently, there is no publicly available data on ambient air quality for the project area. According to information obtained from the National Directorate for Prevention and Assessment of Environmental Impacts, no environmental monitoring stations have been established within the project landscape to monitor ambient air quality parameters. Despite the absence of baseline air quality data, noise levels in the area are expected to remain within acceptable limits during the construction phase. The proposed construction activities are anticipated to be short-term and of low intensity in terms of noise generation. Hence, noise impacts are projected to be localized, of medium duration and low magnitude

Ambient noise monitoring will be conducted at designated stations throughout the construction phase. Measured values will be assessed against the World Health Organization (WHO) ambient noise standards to determine any exceedances. In occupational settings, noise exposure will be evaluated using the occupational exposure limit of 85 dBA over an eight-hour work period, as recommended by the American Conference of Governmental Industrial Hygienists (ACGIH). This will ensure compliance with occupational health and safety standards and safeguard worker well-being. Regarding vibration, the assessment will utilize the ACGIH Threshold Limit Values (TLVs) for Whole Body Vibration (WBV) and Hand-Arm Vibration (HAV) across the x, y, and z axes. These reference values will guide the evaluation of vibration impacts during both the construction and operational phases of the project.

5.2 Social, cultural and economic dynamics

5.2.1 Demographic Profile

The demographic profiles across the villages reflect typical rural patterns in Angola. The population is predominantly young with a median age of 16.4 years and over half under 20. Women make up approximately 53.3% of the population. Households are typically large and multigenerational, with high dependency ratios. Fertility rates remain above national averages, with historical averages of 5 to 7 children per woman. Evale has an estimated population of around 400 people, split across both sides of the Cuvelai River, with a majority female population and a growth rate exceeding 3% annually. Kapelongo also hosts approximately 400 residents, with large household sizes averaging eight children per family, and minimal infrastructure, including only a primary school. Women and

youth play central roles in community resilience and agricultural activities though many face challenges related to unemployment, health, and access to education and water services.

5.2.2 Land Tenure Systems

The prevailing land tenure system within the project area is primarily governed by customary law, administered through traditional leadership structures and communal norms. Land is collectively held and managed by extended family units and clan networks, with access and allocation rights determined through lineage, oral tradition, and community consensus. Although formal land registration mechanisms are largely absent, the customary tenure system remains deeply entrenched and widely recognized within local governance frameworks. It provides a socially legitimized and resilient structure for land management, dispute resolution, and resource allocation, contributing to community cohesion and stability.

Cultural practices are intricately embedded in the spatial organization of land. Sacred sites, ancestral burial grounds, and ritual landscapes are integral to land use patterns, reinforcing the socio-cultural significance of land beyond its economic utility. These cultural dimensions are critical to understanding local perceptions of land and must be carefully considered in project planning to ensure respect for traditional values and to avoid potential social conflict or cultural disruption. The proposed interventions including rainwater harvesting systems, water supply infrastructure, and irrigated agriculture are designed to enhance community resilience to climate variability. These activities will be implemented in a manner that safeguards existing land tenure arrangements and respects cultural spatial practices, thereby promoting inclusive and sustainable development outcomes.

5.2.3 Livelihoods and economic activities

Local communities within the project area primarily depend on subsistence agriculture, livestock rearing, and informal economic activities for their livelihoods. Households typically cultivate staple crops including maize, sorghum, millet, beans, and various vegetables on small plots allocated through customary land tenure systems overseen by village leadership. Agricultural productivity is highly seasonal and remains vulnerable to climatic extremes, particularly droughts and floods, which frequently disrupt planting cycles and reduce yields. Livestock farming, especially cattle rearing, constitutes a critical livelihood strategy and a key asset for household wealth and social status. However, prolonged droughts have contributed to pasture degradation and increased livestock mortality, undermining household resilience. Fishing is practiced in areas with seasonal water availability, though its contribution to household income is minimal due to limited access and variability in aquatic resources.

Additional livelihood strategies include the sale of firewood, charcoal, artisanal goods, and participation in cash-for-work programs, which provide supplementary income during lean periods. Despite these efforts, food insecurity remains a persistent concern. Households often adopt coping

mechanisms such as reducing meal frequency, relying on wild foods, and engaging in informal labour to meet basic needs during periods of scarcity. Strengthening household resilience through sustainable agricultural practices, improved water resource management, and diversified income-generating activities is essential to enhancing food security and overall well-being. The proposed project interventions aim to support these objectives by promoting climate-adaptive livelihoods and inclusive economic development.

5.2.4 Cultural Heritage

An Archaeological Impact Assessment (AIA) conducted across the targeted villages revealed a culturally rich and diverse landscape encompassing both tangible and intangible heritage elements. Tangible cultural assets identified include the King's Ombala in Evale and two cemeteries located in Matala (Freixiel and Kapelongo) which serve as important historical and spiritual landmarks.

In addition to these physical sites, the assessment documented several intangible cultural practices that are deeply embedded in the social fabric of the Ovambo, Nyaneka-Nkhumbi, and Ovimbundu communities. These include the Efundula (female initiation rite), Hepala (fishing ritual), and traditional rain-calling ceremonies, all of which reflect the communities' spiritual beliefs, ecological knowledge, and social cohesion.

Importantly, the risk assessment confirmed that none of the identified cultural resources fall within the direct footprint of the proposed project interventions. As such, the planned activities including infrastructure development and livelihood enhancement measures are not expected to adversely affect cultural heritage. Nonetheless, ongoing engagement with local custodians and traditional authorities will be essential to ensure continued respect for cultural values and to address any unforeseen impacts during implementation.

5.2.5 Public Health

Communities within the project area face persistent public health challenges primarily linked to inadequate water quality, poor sanitation, and limited access to healthcare services. These vulnerabilities are compounded by seasonal climatic extremes particularly flooding and drought which exacerbate the transmission of waterborne and vector-borne diseases.

Recurrent cholera outbreaks have been reported in recent years, characterized by rapid transmission and elevated fatality rates. Malaria remains a leading cause of morbidity and maternal mortality, while tuberculosis and HIV/AIDS continue to impose significant health burdens. Additionally, chronic malnutrition and stunting are widespread among children under five, reflecting underlying food insecurity and limited access to integrated nutrition services.

The proposed project interventions including the development of improved water infrastructure (e.g., boreholes, rainwater harvesting ponds) and irrigation systems are expected to yield positive public health outcomes across the targeted sites. By enhancing access to clean water and reducing

reliance on contaminated sources shared with livestock, the incidence of waterborne diseases such as diarrhoea, typhoid fever, and scabies is anticipated to decline

5.2.6 Indigenous Peoples

A comprehensive field assessment was conducted to determine the presence of Indigenous Peoples within the proposed project implementation areas. The assessment employed a triangulated methodology, combining: (a) Direct consultations with local authorities, traditional leaders, and community members; (b) Field observations across the targeted sites; and (c) a thorough review of ethnographic and anthropological literature relevant to the region.

The findings of this multi-pronged assessment conclusively indicate that Indigenous Peoples, as defined by international standards are not present in the project areas. The communities encountered during the assessment were composed of non-indigenous populations primarily engaged in subsistence and small-scale commercial agriculture, livestock rearing, and cooperative-based economic activities.

No evidence was found of distinct cultural, institutional, linguistic, or territorial characteristics that would meet the criteria for Indigenous identity. Furthermore, there were no indications of collective attachment to geographically distinct habitats or ancestral territories, nor of customary cultural, economic, or social institutions that are separate from those of the dominant communities. Based on these findings, the proposed project interventions will not have any direct or indirect impacts on Indigenous Peoples. Consequently, the application of a formal Free, Prior, and Informed Consent (FPIC) process was not required under the applicable safeguard policies and standards.

Note on Risk Re-categorization: Note on Project Risk Rating and Scope of this ESIA: The UNDP SESP categorized the overall transboundary CUVKUN Project (Angola and Namibia) as Substantial Risk based on inherent environmental and social risks identified at Project level. This Angola ESIA does not revise the overall Project risk category. Findings from the Angola pilot sites (e.g., absence of Indigenous Peoples in the Angola pilot locations and low likelihood of child labour) are used to refine the site-specific risk profile and to strengthen mitigation, monitoring and management measures, but they do not change the Project-level risk categorization.

5.2.7 Gender Context and Project Approach

The project area is shaped by patriarchal norms that limit women's participation in decision-making, land ownership, and access to resources. Despite their central role in domestic water use and unpaid agricultural labour, women remain largely excluded from governance structures and climate adaptation planning.

The Project aims to address these disparities by promoting inclusive governance, empowering women and marginalized groups, and integrating gender-responsive strategies across the water and agriculture sectors. These efforts will enhance equity, resilience, and the effectiveness of project outcomes.

6. Anticipated environmental and social impacts

6.1 Introduction

Following comprehensive stakeholder engagement and field assessments at the Angola pilot sites, this ESIA confirms that the key environmental and social risks associated with the proposed interventions in Angola are localized and manageable through the mitigation strategies outlined in the ESMP. The overall Project risk category remains Substantial at transboundary level, reflecting inherent Project-level risks across both countries, including confirmed Indigenous Peoples-related risks in Namibia and other Substantial risks identified through the SESP. This revision reflects confirmed findings that: (1) Indigenous Peoples are not present in any pilot sites, and (2) child labour is not anticipated given the technical nature of works and robust Labour Management Procedures. The evaluation confirms that identified risks are site-specific, reversible, and manageable through the mitigation strategies outlined in this ESMP.

The study systematically evaluated the potential environmental and social impacts associated with the proposed interventions, which include borehole rehabilitation, solar-powered desalination, and brine management in Nehone; rehabilitation of hydrometric stations to enhance flood early warning systems in Evale and Cuvelai; construction of a gabion weir, deployment of mobile solar pumping units, and installation of drip irrigation systems in Kapanda; and repair of canal flood regulation gates alongside institutional strengthening of irrigation associations in Kapelongo. Impact identification and analysis were conducted using a combination of qualitative and quantitative methodologies, including impact matrices, checklists, network analysis, GIS-based spatial overlays and participatory stakeholder engagements.

6.2 Positive Environmental and Social impacts

The implementation of the proposed interventions within the project landscape is expected to generate positive impacts which are presented in Table 12.

Table 12: Positive Environmental and Social Impacts

S/N	Positive Impact	Impact Level	Enhancement Measure(s)
01	Improved access to clean water for domestic and livestock use (Nehone)	High	Conduct gender-sensitive training and ensure inclusive participation in system operation and maintenance
02	Enhanced flood early warning and disaster preparedness (Evale & Cuvelai)	High	Integrate tamper-proof solar-powered equipment and community awareness campaigns

03	Increased irrigation efficiency and agricultural productivity (Kapande). Local communities become less vulnerable to droughts and adapting better to climate change effects	High	Introduce drip irrigation systems and provide training for women in irrigation scheduling
04	Strengthened water governance and reduced conflict among irrigation associations (Kapelongo)	High	Facilitate joint governance structures and build institutional capacity
05	Improved market linkages and economic returns from irrigated agriculture (Kapelongo)	High	Connect associations to offtakers and service providers to incentivize infrastructure maintenance. Support farmer cooperatives access to finance and digital marketing skills
06	Improved land management through	High	Provide training to farmer cooperatives and associations on maintenance of gabion protection works, sustainable farming practices, irrigation scheduling, and land stewardship
07	The project will create employment opportunities and development of entrepreneurial skills through the realization of project outcomes	High	Partner with local institutions to deliver certified courses in water infrastructure, solar technology, and agribusiness.

6.3 Potential environmental and social risks/impacts

The implementation of the proposed interventions within the project landscape is expected to generate adverse environmental and social impacts. The risks are analysed based on the likelihood of occurrence and impact in line with UNDP SES. Table 13 presents anticipated impacts/risks and their level of significance.

Table 13: Potential environmental and social risks

S/n	Planned Activity	Risk/Impact Description	Likelihood	Impact	Significance Level
DESIGN/ PRE-CONSTRUCTION PHASE					
01	Design of critical infrastructure components (e.g. Water supply system, hydrometric system, gabion weir construction, drip	Exclusion or limited participation of women and vulnerable groups in the design and upgrading of critical infrastructure may result in systems that do not adequately address their	3	3	Moderate

S/n	Planned Activity	Risk/Impact Description	Likelihood	Impact	Significance Level
	irrigation systems, and canal gate repairs)	specific needs and usage patterns thereby reinforcing existing social inequalities leading to community dissatisfaction			
02	Revitalization of the existing borehole at Nehone	Inadequate assessment of groundwater yield and quality on the disused borehole could result in inconsistent water availability, aquifer depletion, and contamination, thereby compromising planned water distribution and overall project sustainability	2	4	Moderate
03	Hydrometric station upgrades at Evale & Cuvelai	Failure to integrate local flood knowledge in the upgrading of hydrometric stations may result in inaccurate data capture, poor flood forecasting, and ineffective early warning systems	2	3	Moderate
04	Design of gabion weir protection	Underestimation of seasonal flow and sedimentation risks in the design of gabion protection works may lead to structural failure, erosion of adjacent land, and reduced effectiveness in flood control, potentially resulting in damage to infrastructure and increased maintenance costs.	2	3	Moderate
05	Planning of brine evaporation ponds (Nehone)	Inadequate sizing or siting of brine ponds may lead to overflow and contamination	3	2	Low

S/n	Planned Activity	Risk/Impact Description	Likelihood	Impact	Significance Level
		of surrounding soil and water sources			
06	Design of solar-powered infrastructure (Kapande, Nehone)	Failure to consider local technical capacity may result in unmaintainable systems	2	4	Moderate
07	Design of critical infrastructure components (e.g. Water supply system drip irrigation systems, and canal gate repairs)	Failure to secure required permits/ licenses may lead to poor relationships and weak compliance with regulatory authorities leading to penalties	2	4	Moderate
CONSTRUCTION PHASE					
08	Mobilization of project workers including contractor workforce to project implementation areas/ works sites	Potential interaction between Project workers including contractor staff with vulnerable community members may lead to Sexual Exploitation, Abuse and Harassment (SEAH) of women and girls	3	3	Moderate
09	Undertaking Civil works including installations of water components, hydrometric system rehabilitation, gabion weir construction, solar pump installation, and canal gate repairs	Contractor personnel may be exposed to occupational hazards associated with high-risk activities such as manual material handling, working at elevated heights, hot work operations, and the use of vibratory, cutting, and electrically powered equipment. These exposures have the potential to adversely affect workers' health and safety if not adequately managed.	3	3	Moderate
10	Undertaking civil works activities at	Generation of waste from construction sites leading to soil and water pollution	4	2	Moderate

S/n	Planned Activity	Risk/Impact Description	Likelihood	Impact	Significance Level
	the construction sites				
11	Use of earth moving equipment to construct/enlarge rainwater harvesting ponds	Generation of dust, noise and vibrations and exhaust fumes leading to air pollution and health and safety problems	4	2	Moderate
12	Excavation of trenches and digging during construction installation of various of water supply components (e.g. pipelines, and brine ponds)	Trenching and digging may loosen soil which may accelerate erosion	4	2	Moderate
		Tangible forms of cultural heritage could be accidentally encountered during trenching	3	3	Moderate
		Clearing of vegetation may lead to habitat alteration and degradation	2	2	Low
13	Use of equipment and machinery on site	Leaks of oil, fuel, hydraulic fluid from the construction machinery may contaminate soils and water resources	2	2	Low
14	Interaction of project workers including contractor workers with community members	Increased spread of STIs and HIV & AIDS from unprotected sex	3	3	Moderate
15	Undertaking Civil works at project sites	Construction activities may introduce the risk of child labour	2	4	Moderate
16	Movement of machinery and vehicles within project implementation areas	Injuries or death to project workers or community members due to road traffic accidents	2	4	Moderate
17	Undertaking Civil works at project sites	Project Affected Persons (PAPs), might not be able to effectively raise their concerns or file grievances	3	3	Moderate

S/n	Planned Activity	Risk/Impact Description	Likelihood	Impact	Significance Level
		due to limiting factors and barriers			
18	Undertaking Civil works at project sites	Limited institutional capacity among government ministries, agencies, NGOs, and local communities may hinder effective implementation and supervision of the ESMP, potentially compromising compliance, environmental safeguards, and social outcomes	3	3	Moderate
OPERATIONAL PHASE					
19	The utilization of the water harvesting pond (if constructed) and brine ponds for water purification at Nahone	The risk is manageable through implementation of safety measures including fencing, signage, community awareness, and exit ramps for animals, which reduce the significance to moderate.	4	3	Moderate
20	The constructed water harvesting pond (if undertaken) and brine ponds for water purification at Nahone	Rainwater harvesting infrastructure may become contaminated or serve as breeding grounds for vectors, thereby increasing the risk of waterborne and vector-borne diseases such as schistosomiasis and malaria, with potential adverse health impacts on the Nehone community.	3	3	Moderate
21	Borehole rehabilitation and desalination system installation (Nehone)	Improper brine disposal generated during desalination could lead to soil and groundwater contamination	3	2	Low

S/n	Planned Activity	Risk/Impact Description	Likelihood	Impact	Significance Level
22	Hydrometric station rehabilitation (Evale & Cuvelai)	Risk of equipment theft or vandalism	3	3	Moderate
23	Revitisation of the water supply system at Nehone and Installation of new irrigation system at Kapande	Over-extraction and unsustainable use of groundwater resources associated with the revitalization of the Nehone water supply system and installation of a new irrigation system at Kapande may lead to aquifer depletion, thereby increasing the vulnerability of target communities to climate change-induced water stress	3	3	Moderate
24	Installation of the irrigation system at Kapelongo	The development of an irrigation system will promote the use of agrochemicals including pesticides or other chemicals that may have a negative effect on the environment or human health	3	3	Moderate
25	Governance of irrigation water in Kapelongo	Weak water governance structures in Kapelongo may result in inequitable water distribution and the exclusion of women and marginalized groups from decision-making and access, thereby undermining social equity and sustainable resource management.	3	3	Moderate

S/n	Planned Activity	Risk/Impact Description	Likelihood	Impact	Significance Level
26	Installed irrigation system and solar pumping (Kapande)	Waterlogging and soil salinization	3	2	Low
27	Operation of hydrometric stations (Evale & Cuvelai)	Inaccurate data due to poor calibration	3	3	Moderate
28	Improved farming activities due to irrigated agriculture	Introduction of invasive species from enhanced farming activities leading to biodiversity loss	3	3	Moderate
DECOMISSINING					
29	Dismantling of obsolete infrastructure components (All sites)	Environmental contamination from improper disposal of materials	3	2	Moderate
30	Dismantling of solar panels and batteries	Improper disposal of solar panels and batteries may lead to environmental pollution	2	2	Low
31	Deactivation of hydrometric stations (Evale, Cuvelai)	Loss of flood monitoring capacity increasing community vulnerability	3	2	Moderate

7. Environmental and social management plan

This section outlines the environmental and social mitigation and management strategies to be implemented throughout the project lifecycle. These measures are designed to prevent, minimize, or manage potential adverse impacts associated with project interventions. For clarity and operational efficiency, the mitigation actions are categorized according to their respective implementation phases. A summary of the identified impacts and corresponding mitigation measures is presented in Table 14 to facilitate reference and prioritization. The Environmental and Social Management Plan (ESMP) presented in Table 14 is designed to manage the moderate-level risks identified during the assessment. The mitigation measures outlined below address all identified impacts across the project lifecycle phases: Design/Pre-construction, Construction, Operation, and Decommissioning.

For ease of implementation and filing, the ESMP is presented in this ESIA (Section 7) and the Monitoring Plan in Section 8. These sections form the official management and monitoring instruments for the Angola pilot interventions and are to be read and applied together with this ESIA report as part of the safeguard's submission package.

Table 14: Environmental and Social Management Plan

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
DESIGN PHASE					
Design of critical infrastructure components (e.g. Water supply system, hydrometric system, gabion weir construction, drip irrigation systems, and canal gate repairs)	Exclusion or limited participation of women and vulnerable groups in the design and upgrading of critical infrastructure may result in systems that do not adequately address their specific needs and usage patterns thereby reinforcing existing social inequalities leading to community dissatisfaction	Social	<ul style="list-style-type: none"> • Conduct targeted consultations with women and vulnerable groups during the planning and design phases • Implement a Gender and Social Inclusion Action Plan (<i>Annex 3</i>) • Ensure representation of women and vulnerable groups in project committees, technical working groups, and monitoring teams • Rollout the project GRM that is gender responsive (<i>Refer to section 11.3</i>) 	Project Coordinating Unit (PCU)	Cost related to implementation of Stakeholder Engagement Plan (SEP), Gender Action Plan and GRM rollout
Revitalization of the existing	Inadequate assessment of groundwater yield and quality on the disused	Environmental	<ul style="list-style-type: none"> • Perform pump tests and water quality 	PCU & local implementing partners	1000.00

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
borehole at Nehone	borehole could result in inconsistent water availability, aquifer depletion, and contamination, thereby compromising planned water distribution and overall project sustainability		analysis before finalizing design		
Hydrometric station upgrades at Evale & Cuvelai	Failure to integrate local flood knowledge in the upgrading of hydrometric stations may result in inaccurate data capture, poor flood forecasting, and ineffective early warning systems	Environmental	<ul style="list-style-type: none"> • Use historical flood data • engage local communities in design 	PCU & local implementing partners	0.00
Design of gabion weir protection	Underestimation of seasonal flow and sedimentation risks in the design of gabion protection works may lead to structural failure, erosion of adjacent land, and reduced effectiveness in flood control, potentially resulting in damage to infrastructure	Environmental	<ul style="list-style-type: none"> • Conduct hydrological and sediment studies • Design for peak flow events and sediment bypass 	PCU & local implementing partners	0.00

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
	and increased maintenance costs.				
Planning of brine evaporation ponds (Nehone)	Inadequate sizing or siting of brine ponds may lead to overflow and contamination of surrounding soil and water sources	Environmental	<ul style="list-style-type: none"> Conduct hydrogeological assessments; design lined ponds with overflow protection; monitor salinity levels regularly 	PCU & local implementing partners	0.00
Design of solar-powered infrastructure (Kapande, Nehone)	Failure to consider local technical capacity may result in unmaintainable systems	Social	<ul style="list-style-type: none"> Develop manual and training in local languages 		2 000.00
Design of critical infrastructure components (e.g. Water supply system drip irrigation systems, and canal gate repairs)	Failure to secure required permits/ licenses may lead to poor relationships and weak compliance with regulatory authorities	Environmental	<ul style="list-style-type: none"> Ensure that the environmental clearance certificate is acquired before commencing all works activities 	PCU & local implementing partners	Cost of securing required permits/licenses
CONSTRUCTION PHASE					
Mobilization of project workers	Potential interaction between Project workers	Social	<ul style="list-style-type: none"> Incorporate SEAH specifications into 	PCU	0.00

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
including contractor workforce to project implementation areas/ work sites	including contractor staff with vulnerable community members may lead to Sexual Exploitation, Abuse and Harassment (SEAH) of women and girls		bidding documents and contracts for works <ul style="list-style-type: none"> • Conduct orientation training/sensitisation for contractor (s) before mobilisation to site (virtual) 		
			<ul style="list-style-type: none"> • Undertake SEAH training for workers • Sensitise community members on the prevention of SEAH • Ensure all workers sign a SEAH code of conduct • Erecting grievance suggestion box • Display contacts of GBV service providers at construction site • Implementing the Labour Management Procedures 	Contractor	Part of Contract

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
			<ul style="list-style-type: none"> Undertake training of community grievance management committees on reporting/ escalation of SEAH cases Undertake the GRM audit 	PCU	6 000.00
			<ul style="list-style-type: none"> Implement the Project Accountability and Response Framework in case of SEAH allegation(s) – Annex 4 	PCU	Cost not known
Undertaking Civil works including installations of water components, hydrometric system rehabilitation, gabion weir construction, solar pump	Contractor personnel may be exposed to occupational hazards associated with high-risk activities such as manual material handling, working at elevated heights, hot work operations, and the use of vibratory, cutting, and electrically powered equipment. These exposures have the potential to	Health and Safety	<ul style="list-style-type: none"> Define and incorporate health and safety specifications into the bidding documents and works contracts 	PCU	0.00
			<ul style="list-style-type: none"> Implement the Construction Safety Management Guidelines (CSMP – Annex 1) 	Contractor	Part of Works Contract

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
installation, and canal gate repairs	adversely affect workers' health and safety if not adequately managed.		<ul style="list-style-type: none"> Implement the Labour Management Procedure (LMP – Annex 2) Prepare and Implement an incident reporting and management procedure Develop and implement a workplace grievance redress procedure accessible to all the workforce 		
			<ul style="list-style-type: none"> Conduct site inspections and ESMP implementation audit to ensure that the CSMGs and LMP are implemented 	PCU	5 000.00
Undertaking civil works activities at the construction sites	Generation of waste from construction sites leading to soil and water pollution	Environmental	<ul style="list-style-type: none"> Provision colour coded bins to enable on-site segregation of waste streams, thereby 	Contractor	Part of Contract

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
			<p>facilitating reuse, recycling, or safe disposal at licensed facilities.</p> <ul style="list-style-type: none"> • Utilization of inert construction waste materials, such as rubble, for backfilling open trenches • Installation of clearly visible and informative waste management signage at strategic locations across the site • Conducting induction sessions for all site personnel on sustainable waste management practices, emphasizing segregation, minimization, and safe disposal methods 		

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
Use of earth moving equipment to construct/enlarge rainwater harvesting ponds	Generation of dust, noise and vibrations and exhaust fumes leading to air pollution and health and safety problems	Environmental & Health	<ul style="list-style-type: none"> • Avoid operations during heavy winds • Provide employees with adequate Personal Protective Equipment (PPE) • Implement speed controls • Vehicles should be in good working condition and be regularly serviced to reduce on exhaust fumes • Implement the CSMGs 	Contractor	Part of works contract
Excavation of trenches and digging during construction installation of various of water supply components (e.g. pipelines, and brine ponds)	Trenching and digging may loosen soil which may accelerate erosion	Environmental	<ul style="list-style-type: none"> • Restrict excavation to the minimum area necessary for construction • Promptly backfill trenches to reduce exposure time of bare soil • Re-vegetate disturbed areas immediately 	Contractor	Part of works contract

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
			<ul style="list-style-type: none"> after construction using native species • Schedule works during dry season 		
		Environmental	<ul style="list-style-type: none"> • Regularly inspect work sites especially after rainfall events 	Local authorities	0.00
	Tangible forms of cultural heritage could be accidentally encountered during trenching	Social	<ul style="list-style-type: none"> • Develop and Implement a chance find procedure • Train workers on cultural sensitivity 	Contractor	Cost not known
	Clearing of vegetation may lead to habitat alteration and degradation	Environment	<ul style="list-style-type: none"> • Clear vegetation in line with the siting of works plan • Re-vegetate disturbed areas immediately after construction using native species 	Contractor	Part of Works Contract (1000.00)
Use of equipment and machinery on site	Leaks of oil, fuel, hydraulic fluid from the construction machinery may contaminate soils and water resources	Environmental	<ul style="list-style-type: none"> • Ensure that machinery and equipment is serviced by approved dealers with proper containment facilities 	Contractor	0.00

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
			<ul style="list-style-type: none"> Regular inspections of vehicles, mobile equipment and machinery to check for oil and fuel leaks Provide drip trays on machinery to prevent drips and small leaks onto the ground Develop and implement the spill prevention and control procedure 		
Interaction of project workers including contractor workers with community members	Increased spread of STIs and HIV & AIDS from unprotected sex	Health & Social	<ul style="list-style-type: none"> Training and sensitization of workforce and community members on HIV/AIDS and other STIs 	PCU & Contractor	0.00
Undertaking Civil works at project sites	Construction activities may introduce the risk of child labour	Social	<ul style="list-style-type: none"> Implement Labour Management Procedures 	Contractor	Part of Works contract

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
Movement of machinery and vehicles within project implementation areas	Injuries or Death due to road traffic accidents	Safety	<ul style="list-style-type: none"> • Provide training of project workers on road safety • Provide regular maintenance of vehicles • Use authorized and competent drivers 	PCU & Contractor	0.00
Undertaking Civil works at project sites	Project Affected Persons (PAPs), might not be able to effectively raise their concerns or file grievances due to limiting factors and barriers	Social	<ul style="list-style-type: none"> • Rollout the Grievance Redress Mechanism (GRM) - <i>Refer to section 11.3</i> • Implement the Stakeholder Engagement Plan (SEP) 	PCU	Cost of rolling out GRM and implementing SEP
Undertaking Civil works at project sites	Limited institutional capacity among government ministries, agencies, NGOs, and local communities may hinder effective implementation and supervision of the ESMP, potentially compromising compliance, environmental	Environmental, Social, Health and Safety	<ul style="list-style-type: none"> • Implement the Capacity Strengthening – (<i>Section 9.2</i>) 	PCU	15 000.00

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
	safeguards, and social outcomes				
OPERATIONAL PHASE					
The utilization of the water harvesting pond (if constructed) and brine ponds for water purification at Nahone	The water harvesting ponds and brine ponds may pose risks of drowning to communities members particularly children and/or livestock.	Safety	<ul style="list-style-type: none"> • Undertake community awareness of the dangers associated with these infrastructures • Erect anti-drowning pictograms and signs around the ponds • Install exit ramps for animals • Fence off brine evaporation pond to prevent unauthorized access 	PCU & local implementing partners	1000.00
The constructed water harvesting pond (if undertaken) and brine ponds for water purification at Nahone	Rainwater harvesting infrastructure may become contaminated or serve as breeding grounds for vectors, thereby increasing the risk of waterborne and vector-borne diseases such	Health	<ul style="list-style-type: none"> • Collaborate with health authorities to monitor disease incidence and conduct public health education campaigns 	PCU & local implementing partners	Part of local authorities budget

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
	as schistosomiasis and malaria, with potential adverse health impacts on the Nehone community.		<ul style="list-style-type: none"> • Undertake focal and insecticide and molluscicide application 	Angola Ministry of Health	Part of Ministry of Health Budgetary allocations
Borehole rehabilitation and desalination system installation (Nehone)	Improper brine disposal generated during desalination could lead to soil and groundwater contamination	Environmental	<ul style="list-style-type: none"> • Construct lined brine ponds; • Monitor groundwater quality 	PCU & local implementing partners	20 000.00
Hydrometric station rehabilitation (Evale & Cuvelai)	Risk of equipment theft or vandalism	Safety	<ul style="list-style-type: none"> • Use tamper-proof enclosures • Co-brand equipment with government logos 	PCU & local implementing partners	Part of Project Design Cost
Revitalisation of the water supply system at Nehone and Installation of new irrigation system at Kapande	Over-extraction and unsustainable use of groundwater resources associated with the revitalization of the Nehone water supply system and installation of a new irrigation system at Kapande may lead to aquifer depletion, thereby increasing the vulnerability	Environment	<ul style="list-style-type: none"> • Adopt water-efficient technologies such as drip irrigation and low-flow fixtures at Kapande • Integrate water balance modeling to guide abstraction limits • Conduct inspections of water irrigation 	PCU & local implementing partners	Cost of Drip system (Part of Project Cost)

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
	of target communities to climate change-induced water stress		<p>infrastructure to detect any possible leakages and attend to them promptly</p> <ul style="list-style-type: none"> • Train farmers and users on water conservation practices and long-term impacts of over-abstraction and climate variability 		
Installation of the irrigation system at Kapelongo	The development of an irrigation system will promote the use of agrochemicals including pesticides or other chemicals that may have a negative effect on the environment or human health	Environment and Health	<ul style="list-style-type: none"> • Promote integrated pest management (IPM) • Train farmers on safe handling, storage, use and disposal of agrochemicals • Establish a 30 meters buffer zones near water bodies 	PCU & local implementing partners	Cost of Implementing the Training Plan
Governance of irrigation water in Kapelongo	Weak water governance structures in Kapelongo may result in inequitable water distribution and the	Social	<ul style="list-style-type: none"> • Strengthen water user associations 	PCU & local implementing partners	Part of Project Cost

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
	exclusion of women and marginalized groups from decision-making and access, thereby undermining social equity and sustainable resource management.		<ul style="list-style-type: none"> • Develop and enforce equitable water allocation protocols • Provide gender-sensitive training 		
Installed irrigation system and solar pumping (Kapande)	Waterlogging and soil salinization	Environmental	<ul style="list-style-type: none"> • Install drip irrigation and monitor soil moisture • Train farmers on efficient irrigation practices 	PCU & local implementing partners	Part of Project Cost
Operation of hydrometric stations (Evale & Cuvelai)	Inaccurate data due to poor calibration	Technical	<ul style="list-style-type: none"> • Ensure regular calibration and maintenance • Undertake training for technicians • Establish data validation protocols 	Local implementing partners	Cost of calibration and training
Improved farming activities due to irrigated agriculture	Introduction of invasive species from enhanced farming activities leading to biodiversity loss	Environment	<ul style="list-style-type: none"> • Use of certified seeds • Sourcing planting material from reliable suppliers 	Farmer Cooperatives & Associations	Cost not Known

Planned Activity	Risk/Impact Description	Risk/Impact Category	Mitigation Measures	Responsible Party	Estimated Cost of Mitigation (USD)
			<ul style="list-style-type: none"> Clear invasive species using mechanical or physical means 		
DECOMMISSIONING PHASE					
Dismantling of obsolete infrastructure components (All sites)	Environmental contamination from improper disposal of materials	Environment	<ul style="list-style-type: none"> Follow decommissioning protocols Ensure safe disposal of hazardous materials 	Farmer Cooperatives and Associations	Cost not Known
Dismantling of solar panels and batteries	Improper disposal of solar panels and batteries may lead to environmental pollution	Environment	<ul style="list-style-type: none"> Follow hazardous waste protocols Partner with certified recyclers; document disposal process 	Farmer Cooperatives and Associations	Cost not known
Deactivation of hydrometric stations (Evale, Cuvelai)	Loss of flood monitoring capacity increasing community vulnerability	Social	<ul style="list-style-type: none"> Coordinate with government to integrate stations into national systems; train local staff for continued operation 	Farmer Cooperatives and Associations	Cost not Known

8. Environmental and social monitoring plan

8.1 Introduction

This section outlines the comprehensive environmental and social monitoring plan designed to ensure the effective implementation of mitigation measures and to support adaptive project management. The monitoring framework serves multiple critical functions: (a) To systematically assess the effectiveness of implemented mitigation strategies, (b) To quantify and validate the extent of predicted environmental and social impacts, (c) To ensure adherence to national and international environmental and social standards, and (d) To inform timely corrective actions and the refinement of mitigation measures based on observed outcomes. The monitoring plan is designed to ensure effective management of the project's moderate-level environmental and social risks. The framework provides systematic oversight of mitigation measure implementation and enables adaptive management throughout the project lifecycle.

8.2 Monitoring plan

The monitoring plan is structured around identified impact domains and specifies the following for each parameter:

- i. *Monitoring Indicators*: Quantitative and qualitative metrics relevant to each impact area.
- ii. *Methodologies*: Sampling protocols, analytical techniques, and observational tools (e.g., GIS overlays, visual inspections, structured surveys).
- iii. *Monitoring Frequency*: Defined intervals based on risk level and regulatory requirements.
- iv. *Responsible Entities*: Designated institutions or personnel accountable for data collection, analysis, and reporting.

For parameters requiring laboratory analysis (e.g., water quality), standardized sampling and testing procedures will be employed. For qualitative indicators (e.g., GBV, child labour), participatory assessments, stakeholder interviews, and photographic documentation will be utilized.

Effective monitoring is contingent upon robust data management systems. Therefore, the plan includes provisions for structured record-keeping, data validation, and reporting protocols to ensure transparency, traceability, and continuous learning. Table 15 presents the detailed Environmental and Social Monitoring Plan.

Table 15: Environmental and Social Monitoring Plan

Project Phase	Social/Environmental Issue	Monitoring Indicator	Monitoring tools and techniques	Monitoring Frequency	Monitoring Agent	Estimated cost (USD)
Preconstruction, Construction & Operation	GBV and its different forms of manifestations e.g., Sexual exploitation, abuse and harassment	<ul style="list-style-type: none"> • # Of GBV cases received • Existence of written protocols for the assistance and care of GBV cases • # Of GBV service providers trained 	<ul style="list-style-type: none"> • Interviews • Document reviews e.g., Complaints register & reports 	Quarterly	<ul style="list-style-type: none"> • GBV service providers • NGOs • PCU 	\$1000
Construction/ Operation	Child labor	<ul style="list-style-type: none"> • # of cases reported • Employment records 	<ul style="list-style-type: none"> • Review of records • Complaints registers 	Quarterly	<ul style="list-style-type: none"> • Traditional Authorities • Associations 	\$1000
Construction	Labour and Working conditions	<ul style="list-style-type: none"> • # Of Accidents/incidences reported • Adequacy of PPE • Dangerous equipment 	<ul style="list-style-type: none"> • Review of E&S records and employment contracts 	Monthly	<ul style="list-style-type: none"> • Contractor(s) 	Part of OHS Inspections

			<ul style="list-style-type: none"> Physical inspections & audits 			
Construction/ Operation	Water use conflicts	<ul style="list-style-type: none"> # Of complaints received Site inspections 	<ul style="list-style-type: none"> Review of complaints registers 	Monthly	<ul style="list-style-type: none"> Traditional Authorities Local councils 	\$300
Construction/ Operation	Water and Sanitation problems	<ul style="list-style-type: none"> Quality of portable water 	<ul style="list-style-type: none"> Water quality records 	Quarterly	<ul style="list-style-type: none"> Local Partners 	1000.00
Construction/ Operation		<ul style="list-style-type: none"> Prevalence of water borne diseases 	<ul style="list-style-type: none"> Interviews Stakeholder meetings 	Quarterly	<ul style="list-style-type: none"> Local clinics 	\$1000
Construction/ Operation		<ul style="list-style-type: none"> Number of cases recorded 	<ul style="list-style-type: none"> Clinical records 	Quarterly	<ul style="list-style-type: none"> Local clinics 	\$1000
Construction/ Operation	Loss of biodiversity	<ul style="list-style-type: none"> Area of land cleared 	<ul style="list-style-type: none"> Visual assessments 	Quarterly	<ul style="list-style-type: none"> DNPAIA 	\$100.00
Construction/ Operation	Waste management	<ul style="list-style-type: none"> Types/quantity of waste generated/disposed Availability and use of waste bins 	<ul style="list-style-type: none"> Waste records 	Monthly	<ul style="list-style-type: none"> Contractors Farmer Associations 	\$100.00
Construction/ Operation	Land pollution from fuel and oil spills	<ul style="list-style-type: none"> # of oil spills 	<ul style="list-style-type: none"> Site inspections Site audits 	Quarterly	<ul style="list-style-type: none"> Contractor 	\$2000.00

Operation	Soil erosion	<ul style="list-style-type: none"> • Vegetation cover 	<ul style="list-style-type: none"> • Site visits 	Annually	<ul style="list-style-type: none"> • DNPAIA 	\$200.00
Operation	Soil and water pollution from chemical use (pesticides & fertilizers)	<ul style="list-style-type: none"> • Pesticides residues in soil & water • Nitrogen & Phosphors 	<ul style="list-style-type: none"> • Laboratory analyses 	Quarterly	<ul style="list-style-type: none"> • DNPAIA 	\$2000.00
Operation	Agro-chemical use	<ul style="list-style-type: none"> • Type and quantity of agrochemicals used by farmers • # of weed and pest management practices implemented 	<ul style="list-style-type: none"> • Measurements • Visual assessments 	Monthly	<ul style="list-style-type: none"> • Cooperatives and Associations • DNPAIA 	\$500.00

9. Capacity development and training

9.1 Introduction

Strengthening stakeholder capacity to implement, monitor, and report on the Project ESMP is vital for ensuring compliance and minimizing environmental and social risks. Informed stakeholders enhance transparency, accountability, and community engagement, leading to better decision-making and project outcomes. Capacity building also enables timely issue resolution and supports consistent application of safeguards, contributing to the long-term sustainability of the project.

9.2 Capacity Strengthening Plan

To support effective implementation of project activities, the PCU will execute a capacity building plan to ensure full compliance with the ESMP. As outlined in Table 16, the plan includes targeted training sessions for key stakeholders such as the PCU, Responsible Parties, local authorities, community structures, contractors, and beneficiaries to enhance awareness and operational capacity for ESMP delivery.

Table 16: Environmental and Social Training Plan

s/n	Category of Activity	Title of Workshop	Target Audience	Duration (Days)	Main Facilitator (s)	Cost (USD)
1	Workshop (Virtual)	Environmental and Social Technical Specifications and the Procurement Process	PCU	1	UNDP	0.00
2	Workshop (Virtual)	Orientation training for Contractors on ESMP implementation, Monitoring and Reporting	Contractors	1	Safeguards Specialist (PCU)	0.00
3	Workshop	The Concept and Practice of Environmental and Social Safeguards. Key subtopics include: ✓ Good practices on handling and	Responsible Parties, Government Agencies and local authorities	2	PCU, UNDP	6 000.00

		<p>storage of pesticides including empty pesticide containers</p> <ul style="list-style-type: none"> ✓ Good practices on soil and water conservation ✓ Impacts of agrochemical use on human health and the environment ✓ Preventing Gender Based Violence (GBV) including Sexual Exploitation, Abuse and Harassment (SEAH) ✓ Project Grievance Redress Mechanism (GRM) ✓ Understanding and managing risks of child labour 				
4	Workshop	Training of Grievance Management Committees on Grievance management and conflict resolution	GRM committee members	2	<ul style="list-style-type: none"> • PCU • UNDP 	6 000.00

5	Meetings	Sensitization of local communities on the Project GRM	Local community members	1	• PCU	3 000.00
Total						15 000.00

10. ESMP implementation budget

10.1 ESMP implementation budget

The Project will allocate a budget of USD 52,000 (see Table 30) to implement the ESMP measures for managing moderate-level environmental and social risks. This budget is commensurate with the project's risk profile and ensures adequate resources for stakeholder training, soil and water conservation, waste management, stakeholder engagement, rollout of the Grievance Redress Mechanism (GRM), and environmental and social monitoring. The moderate risk categorization reflects manageable impacts with well-defined mitigation pathways. Costs for construction-phase mitigation such as health and safety and contractor training will be included in works contracts. These include stakeholder training, soil and water conservation, waste management, stakeholder engagement, rollout of the Grievance Redress Mechanism (GRM), and environmental and social monitoring. Costs for mitigation during construction such as health and safety and contractor training will be included in works contracts.

10.2 ESMP Cost estimation

The total cost for implementing the ESMP is USD 52,000.00 as illustrated in Table 17

Table 17: ESMP implementation budget

S/n	Management/ Mitigation Aspect	Estimated cost (USD)	Source of Funds
1	Training and Capacity Building	15 000.00	Project
2	Waste Management	2 000.00	Contractor (Part of Contract)
3	Health and Safety Management	10 000.00	Contractor (Part of Contract)
4	Rollout of the Grievance Redress Mechanism	14 000.00	Project
5	Stakeholder Engagement on Safeguards	6 000.00	Project
6	Environmental and Social Monitoring (ESMP audits & GRM audits)	5 000.00	Project
	Total	52 000.00	

11. Stakeholder engagement

11.1 Stakeholder Consultation Process

Stakeholders were engaged through an inclusive, participatory, and culturally sensitive process that ensured meaningful consultation and integration of their inputs into project planning and implementation. The process began with comprehensive stakeholder mapping and analysis, identifying key actors based on their influence, interest, and relevance. Tailored engagement methods were applied using a multi-tiered strategy that combined formal and informal mechanisms to reach stakeholders at all levels including government entities, local authorities, traditional leaders, civil society, international partners, and community members, especially vulnerable groups.

Table 18 outlines the engagement activities conducted during the ESIA process. Engagement tools included interviews, workshops, public meetings, FGDs, and questionnaires. Activities in Angola were carried out between March and August 2025, focusing on pilot sites in the Cuvelai and Kunene River Basins, and aligned with international best practices and UNDP's Social and Environmental Standards

Table 18: Stakeholders consulted during the ESIA process

Village	Date of Consultation	Stakeholders Consulted	Method of Engagement
Onanghema (Nehone)	09 March 2025	Community members, cooperative leaders	Focus group discussion, interviews, direct observation
Cuvelai Town (Mukolongondjo)	10 March 2025	Government officials (GABHIC, Dept. of Agriculture & Water)	Stakeholder meeting at government offices
Okapangu Evale (Nehone)	10 March 2025	Disaster management committee, community members	Focus group discussion, interviews
Kapelongo (Matala)	12 March 2025	Agostinho Materno Cooperative members	Stakeholder meeting, interviews
Gove (Cuima - Huambo)	Not validated	Blue Water Cooperative members	Initial dialogue inconclusive

11.2 Concerns from stakeholders

Table 19 summarizes the main concerns raised by different stakeholder groups during consultations for the Project.

Table 19: Key issues identified by each group.

Stakeholder Group	Main Concerns
Community Members	<ul style="list-style-type: none"> • Water scarcity during dry season • Long distances to fetch water • Vandalism of water infrastructure • Delayed project implementation and unmet expectations
Women-Headed Households	<ul style="list-style-type: none"> • Limited access to water for domestic use and livestock • Safety concerns during water collection • Lack of representation in cooperative leadership • Need for gender-sensitive infrastructure
Elderly & Vulnerable Groups	<ul style="list-style-type: none"> • Difficulty accessing distant water sources • Health risks due to poor water quality • Limited access to clinics during floods • Need for inclusive benefit-sharing and support during droughts
Traditional Leaders	<ul style="list-style-type: none"> • Desire for structured engagement and recognition of local governance • Need for community ownership of infrastructure • Concerns about conflict resolution over water use and land allocation
Cooperative Members	<ul style="list-style-type: none"> • Lack of irrigation infrastructure and mechanization • Poor market access for produce • Breakdown of cold storage facilities • Need for training and support in cooperative governance and planning
Local Government Officials	<ul style="list-style-type: none"> • Coordination challenges between departments • Need for community sensitization on early warning systems • Security and maintenance of infrastructure • Integration of disaster management structures
Youths	<ul style="list-style-type: none"> • Lack of awareness about infrastructure purpose (e.g., vandalism of early warning systems)

Stakeholder Group	Main Concerns
	<ul style="list-style-type: none"> <li data-bbox="565 239 1252 310">• Need for training in water system maintenance and disaster response

11.3 Stakeholder Engagement Programme

The PCU shall ensure that stakeholders are continuously and meaningfully engaged on activities involving the development of the project. This section summarizes the plan for engaging project stakeholders including vulnerable groups throughout the life of the project. The programme lays out a plan for stakeholder engagement including public information disclosure throughout the entire project cycle.

11.3.1 Stakeholder Engagement Plan

Stakeholders shall be engaged in accordance with the Stakeholder Engagement Plan (SEP) throughout the project development cycle (Table 20).

Table 20: Stakeholder Engagement Plan

Project Stage	Topic of Consultation	Target Stakeholders	Method(s) Used	Time Period	Responsibility
Project Preparation	Project concept, objectives, and scope	Government ministries, basin organizations, UNDP, GWPSA	Workshops, bilateral meetings, inception consultations	May–August 2024	GWPSA, UNDP, CUVECOM
Inception Phase	Validation of stakeholder mapping and engagement strategy	Local authorities, civil society, academia, private sector	National workshops, focus groups, surveys	September–December 2024	PCU, National Stakeholder Committees
Implementation – Component 1 & 2	Transboundary water management planning	CUVECOM, PJTC, Ministries of Water and Environment	Technical working groups, basin forums, bilateral meetings	2025–2026	CUVECOM, GWPSA, PCU
Implementation – Component 3	Governance structure and data sharing protocols	Government agencies, basin commissions	Workshops, stakeholder coordination committees	2025–2027	CUVECOM, GWPSA
Implementation – Component 4	Capacity building in Angola	Angolan ministries, academic institutions	Training sessions, technical workshops	2025–2026	GWPSA, Angolan Technical Officers
Implementation – Component 5	Community-based water interventions	Local communities, traditional leaders, cooperatives	Village meetings, focus groups, participatory planning	2025–2028	PCU, Local Facilitators
Implementation – Component 6	Knowledge sharing and replication	All stakeholders, regional bodies	Exchange visits, media outreach, publications	2026–2029	GWPSA, PCU

Project Stage	Topic of Consultation	Target Stakeholders	Method(s) Used	Time Period	Responsibility
Monitoring & Evaluation	Feedback on project performance and safeguards	All stakeholder groups	Surveys, stakeholder forums, grievance redress mechanisms	2025–2029	PCU, UNDP, GWPSA
Closure Phase	Sustainability and exit strategy	Government ministries, basin organizations, communities	Final workshops, reports, stakeholder consultations	Post Operational Period	GWPSA, UNDP, CUVECOM

11.3.2 Responsibilities for SEP implementation

The PCU has the overall responsibility in implementing the SEP. The roles and responsibilities for stakeholder engagement are summarised in Table 21.

Table 21: Responsibilities for SEP implementation

Function	Responsibility
Project Manager	<ul style="list-style-type: none"> Responsible for approving the SEP, including the budget required for implementation
Safeguards Officer	<ul style="list-style-type: none"> Provide oversight in the implementation of the SEP Manage interactions with key stakeholders in the project area Facilitate the resolution of all grievances related to the Project in accordance to the Grievance Mechanism Prepare quarterly SEP Implementation progress reports and submit it to the Project Manager
Contractor SHE Officer	<ul style="list-style-type: none"> Implement the SEP in the area during the construction period Coordinate with leadership of the village development committees Receive and acknowledge all sort of project-related grievances and maintain a proper log of the grievance Hold FGDs in local language to explain printed disclosure materials for people who are not literate or problem in reading/understanding Communicate urgent issues and grievances to the PCU in a timely manner.

11.3.3 Monitoring and reporting

The Safeguards Officer within the PCU shall be responsible for systematically recording stakeholder feedback and comments throughout the project lifecycle. A Grievance Log Register will be maintained (*refer to Annex 6*) to document all grievances, concerns, and suggestions raised by stakeholders.

Urgent issues requiring immediate attention will be escalated to the Project Coordinator with the proposed resolution communicated in writing. Stakeholders will also be able to submit feedback through various uptake points provided in project brochures and other outreach materials.

The Safeguards Officer will analyse stakeholder engagement data to identify key issues, emerging trends, community suggestions and aspirations. This analysis will inform adaptive project management and ensure that stakeholder concerns are addressed proactively. An annual Stakeholder Engagement Report will be produced during project implementation. This report will include:

- i. Number and types of stakeholder consultations conducted
- ii. Methods of engagement used (e.g., public meetings, focus groups, surveys)
- iii. Key issues raised during consultations
- iv. Summary of grievances received and details of how they were resolved

13.3.4 Resources for stakeholder engagement

Table 22 provides the estimated budget for stakeholder engagement activities.

Table 22: Estimated budget for stakeholder engagement

Activity	Cost Centre	Quantity	Indicative Cost (USD)
Sharing Project Environmental and Social Risks through disclosure of ESIA report	Maintaining Project Website	1	1 000.00
	Printing summary ESIA booklets translated into local languages	ESMP booklets (500)	1 000.00
Publicizing Project GRM through printing of GRM communication materials	Design, layout, translation and printing of GRM communication materials (Manual, Brochure, GRM forms, Grievance Logbooks)	Manuals (200) Brochures (800) Grievance Logbooks (5)	4 000.00
Training of Stakeholders on the implementation of safeguards instruments	Workshops (Virtual/Physical)	1	15 000.00

Activity	Cost Centre	Quantity	Indicative Cost (USD)
Total			21 000.00

12. Environmental and social compliance framework

12.1 Compliance with legal and contractual requirements

The compliance framework is designed to ensure that the project's environmental and social risks are effectively managed throughout implementation. Regular monitoring and audit procedures will verify adherence to both contractual safeguard requirements and national environmental and social protection laws. All civil works associated with the project shall adhere to both the contractual environmental protection and pollution control requirements and the national environmental and social protection laws of the Republic of Angola. Compliance with these standards is essential to ensure that construction activities do not result in adverse environmental or social impacts.

The PCU will be responsible for conducting regular environmental and social audits to monitor the implementation of civil works. These audits will assess adherence to applicable legislation and contractual obligations, enabling early identification and prevention of potential violations. Contractors are required to submit monthly ESMP implementation progress reports to the PCU. These reports must include updated information on environmental and social performance, mitigation measures, and any incidents or non-compliance issues encountered.

Upon review of these submissions, the PCU will provide feedback to the contractor, identifying any deviations from contractual or legislative requirements. Where non-compliance is observed, the contractor will be instructed to take immediate corrective actions. In cases of serious or repeated violations, the PCU reserves the right to order a temporary suspension of works until compliance is restored. This monitoring framework ensures accountability, promotes continuous improvement, and safeguards environmental and social integrity throughout the project lifecycle.

12.2 Enforcement of safeguards standards

In the event that the PCU identifies a breach of environmental and social measures outlined in the contractor's contractual obligations, appropriate corrective actions will be initiated. In severe or repeated cases, disciplinary measures may be enforced to ensure compliance and accountability. If a violation is detected during a site inspection, the Project Coordinator will be formally notified, and the required corrective actions will be communicated to the contractor in writing. The contractor will then engage with the PCU to agree on a realistic and time-bound corrective action plan.

In cases where a violation is reported by an external entity (e.g., community members, local authorities), the PCU will conduct a verification site visit. If the violation is confirmed, a formal warning will be issued, and a deadline for implementing corrective measures will be established. The PCU will revisit the site on the agreed deadline to assess progress.

Should the contractor fail to implement the required mitigation measures within the stipulated timeframe, the PCU will issue a written notification of disciplinary action, with copies submitted to the National Project Focal Point for further oversight and record-keeping.

Additionally, the UNDP Country Office will provide a second layer of oversight, including field visits to support and verify the implementation of the ESMP and the Grievance Redress Mechanism (GRM). This multi-tiered oversight framework ensures transparency, accountability, and continuous improvement in environmental and social performance throughout the project lifecycle.

12.3 Reporting arrangements

A structured system for reporting on the implementation of ESMP commitments shall be established and maintained throughout the project lifecycle. This reporting mechanism will apply to both the Contractor and the PCU ensuring transparency, accountability and continuous improvement in environmental and social performance. Each party will be responsible for submitting periodic reports detailing the actions undertaken during the reporting period to implement the ESMP. These reports will be aligned with the reporting matrix outlined in Table 23.

Table 23: Reporting Matrix

Report	Responsibility	Destination	Content
Monthly ESMP implementation Report	Contractor's SHE officers	PCU	<ul style="list-style-type: none"> • Monthly summary of all events • Training and sensitisation activities • Program for the following month
Annual Progress Report	PCU	GEF	<ul style="list-style-type: none"> • Monthly summary of all events, compliance and monitoring results should form a major part of the reports to be submitted

13. Grievance redress mechanism

This section describes the Project-Level Grievance Redress Mechanism (GRM) designed to provide community members and stakeholders affected by the project with a clear, accessible, and responsive pathway for raising concerns or complaints. The GRM fosters transparency, accountability, and trust, and is aligned with international best practices for environmental and social safeguards.

The Safeguards Officer within the PCU holds overall responsibility for coordinating the GRM. This includes rolling out the GRM across project sites and continuously monitoring its efficiency and effectiveness.

The GRM is inclusive in scope, covering both sensitive and non-sensitive grievances. It is open to project beneficiaries, local community members, and third parties such as service providers, contractors, and other stakeholders who may be affected by project activities.

13.1 GRM for non-sensitive cases

The mechanism for handling non-sensitive grievances mechanism is structured in six escalating tiers (explained below), each offering a higher level of authority and oversight to ensure fair resolution. This tiered GRM ensures that grievances are addressed at the lowest appropriate level with clear pathways for escalation.

Tier 1: Village/Community Level

At the grassroots level, grievances are first raised within the community or village. This is the most accessible and immediate platform for affected individuals. Community members can approach Grievance Management Committees (GMCs), village leadership, locally trusted committee members, focal persons at clinics or local NGOs especially those dealing with GBV. These focal points are expected to be gender-sensitive and victim-friendly, ensuring inclusivity and safety. The project team will provide training to these focal persons and support structures on grievance handling. If the issue cannot be resolved at this level, it is escalated to the next tier.

Tier 2: District Level

If local resolution fails, the grievance is referred to the district-level focal points, which may include Ward Councillors, District Officers, Traditional Authorities and Project Team Liaison Officers. These actors are better positioned to handle more complex or cross-community issues. The project will ensure that these actors are trained and sensitized on the GRM process. If the grievance remains unresolved, it moves to the project's technical leadership.

Tier 3: Project Technical Officers & Programme Coordinator

At this level, the grievance is handled by the CUVKUN Project Technical Officers and the Programme Coordinator. These officers are responsible for consolidating grievances from multiple districts, escalating unresolved or serious issues and liaising with the National Focal Point. This tier ensures that grievances are addressed with technical insight and project-wide coordination. If resolution is still not achieved, the matter is referred to the project's executing agency.

Tier 4: GWPSA (GEF Project Executing Agency)

The Global Water Partnership Southern Africa (GWPSA) provides oversight and accountability. Grievances can be escalated directly by individuals or through lower-tier representatives. GWPSA ensures that grievances involving sub-partners or systemic issues are addressed transparently.

Tier 5: UNDP National Office

If the grievance involves GWPSA or remains unresolved, it can be escalated to the UNDP National Office, which serves as the GEF Agency. This tier provides an independent review of the case.

Tier 6: UNDP Regional / Corporate Accountability

As the final level, grievances can be submitted to the UNDP Regional Office or through the UNDP Corporate Accountability Mechanism. This tier ensures the highest level of impartiality and oversight. If affected parties remain dissatisfied and the issue cannot be resolved within the project's proposed grievance resolution process, the Project will refer the dispute to arbitration within 30 days. If there is no consent for arbitration, the aggrieved party has the liberty to take the matter to the court of jurisdiction. The court serves as the final instrument for resolving grievances that the project GRM has not been able to address.

13.2 GRM for sensitive cases

The project will establish a dedicated mechanism for receiving and addressing complaints related to Gender-Based Violence (GBV) and Sexual Exploitation, Abuse, and Harassment (SEAH). Figure 7 provides a simplified illustration of how GBV and SEAH cases will be managed. The GEF project will adopt a survivor-centered approach in responding to GBV cases through the SEAH/GBV Grievance Redress Mechanism and will expect all partners to adopt or enhance this approach. The resolution process for GBV/SEAH cases will prioritize the survivor's needs, wishes, and rights, aiming to empower them and facilitate their healing and recovery. In responding to any allegations of SEAH, the project will be guided by the Accountability and Response Framework provided (Annex 7).

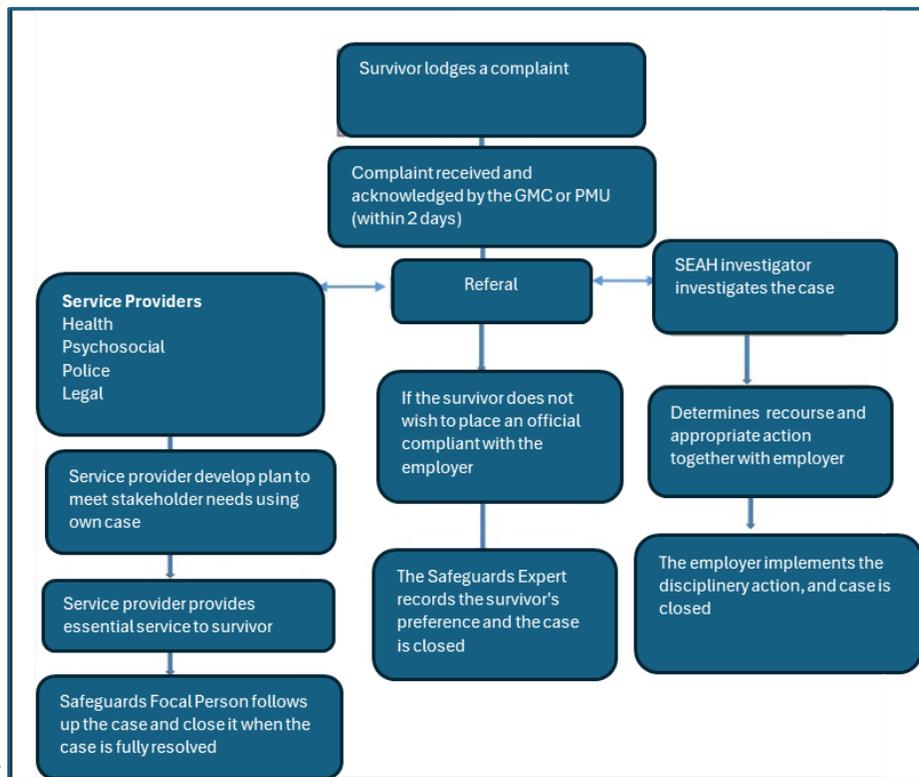


Figure 7: Handling Sensitive cases

13.2 Rolling out the project GRM

The Safeguards Officer within the Project Coordination Unit (PCU) will lead the rollout of the Grievance Redress Mechanism (GRM) across the project implementation areas, including all construction sites. The rollout will involve the following key activities:

- (a) *Development of GRM Communication and Learning Materials:* GRM communication materials including manuals, brochures, and posters will be developed or updated and disseminated to stakeholders at provincial, district, and community levels. These materials will provide clear guidance on grievance reporting procedures, roles and responsibilities, and available redress channels.
- (b) *Community and Workforce Sensitization:* Community members and contractor personnel will be sensitized on the availability and use of the project GRM. Communication materials will include information on the GRM structure, reporting procedures, and the roles of various actors in grievance handling. This will also cover the GCF's Independent Redress Mechanism (IRM), UNDP's Social and Environmental Compliance Unit (SECU), the Stakeholder Response Mechanism (SRM), and the Project-Level GRM. Posters with contact details (e.g., email, telephone, social media) for grievance submission will be displayed at project sites.
- (c) *Establishment of Local GRM Committees:* Grievance Management Committees will be

established at each pilot site through an inclusive and participatory process. Community members will nominate committee members, with traditional leaders and local councillors serving as ex officio members. The composition of each committee will ensure at least 40% representation of women.

- (d) *Capacity Building of GRM Committees:* Committee members will receive training on grievance intake, logging procedures, feedback provision, and grievance resolution or escalation. Roles and responsibilities—including those of the chairperson and secretary—will be clearly defined. Each committee will be provided with a GRM complaints register for systematic documentation.
- (e) *Sensitization of Project Focal Points and District Stakeholders:* Project focal persons and district-level stakeholders will be oriented on the GRM structure, procedures, and their respective roles in grievance management. This will ensure coordinated and effective grievance handling at all levels.
- (f) *Monitoring GRM Functionality:* The effectiveness of the GRM will be monitored using a human-rights-based approach. The mechanism will be assessed against six core principles namely; accessibility, transparency, responsiveness, legitimacy, timeliness, and fairness and equity. Data collection methods will include focus group discussions (FGDs), document reviews, field observations, and public meetings.

13.3 UNDP Accountability Mechanism

In addition to the project-level GRM and national grievance redress mechanisms, complainants have the option to access UNDP's Accountability Mechanism, which include the Social and Environmental Compliance Unit (SECU) and the Stakeholder Response Mechanism (SRM).

Stakeholder Response Mechanism (SRM)

The Stakeholder Response Mechanism helps project-affected stakeholders, governments and others partners jointly resolve concerns and disputes. It is available when implementing partner and UNDP project-level stakeholder engagement processes have not successfully resolved issues of concern. UNDP Country Office management normally leads in stakeholder response; a headquarters function will also support the SRM.

Any person or community potentially affected by a UNDP-supported project may file a request for a response from the Stakeholder Response Mechanism if they have raised their concerns with Implementing Partners and/or with UNDP through standard channels for stakeholder consultation and engagement and have not been satisfied with the response. The project GRM can also escalated unresolved grievances to SRM. The SRM Steering Committee will receive and respond to the submitted grievance. Any grievance that the CO fail to resolve will be escalated to Corporate SRM at UNDP Headquarters.

Social and Environmental Compliance Unit (SECU)

UNDP established SECU to ensure accountability to individuals and communities. SECU responds to complaints that UNDP may not be meeting its social and environmental commitments. Any person or community who believes the environment or their wellbeing may be affected by a UNDP-supported project or programme may file a complaint. A representative, such as a civil society organization, may also file a complaint on behalf of affected communities. People who file complaints may request that SECU protect their names and identities.

Where to File the Request

Aggrieved stakeholders can submit grievances to SECU or requests to SRM through the UNDP Country Office or directly to UNDP Headquarters in New York. Requests can be made through online, email, toll-free telephone hotline (in any language), mail, or an in-person meeting with the Country Office Designee,

- **By phone** Call (costs are incurred by caller) using 001 (917) 207 4285. Skype is an affordable way to place such a call.
- **Submitting a Request by Post (in any language)** to: Attn: SECU/SRM, OAI, UNDP, 1 U.N. Plaza, 4th Floor New York, NY USA 10017
- **Submitting a Request by Email (in any language)** to: secuhotline@undp.org / stakeholder.response@undp.org
- **Social Media Apps.** Grievances can be sent through WhatsApp, Viber and Signal using 001 (917) 207 4285, or through our WeChat account @SECUSR

13.4 Cost of Implementing GRM

A budget estimate of USD 14000.00 is proposed for operationalizing the GRM presented in this report. A summary breakdown is provided in Table 24.

Table 24: Budget for implementing project GRM

TASK	AMOUNT (USD)	PERSON RESPONSIBLE
Preliminary stakeholder engagements/awareness raising	2000.00	<ul style="list-style-type: none"> • GRM Coordinator
Preparation, design and translation of GRM communication materials (awareness and instructive materials), including complaint boxes	3000.00	<ul style="list-style-type: none"> • GRM Coordinator • Communication Consultant
Training of GRM committees and other stakeholders	5000.00	<ul style="list-style-type: none"> • GRM Coordinator

Support to GRM committees (grievance log sheets, pens, minute books, airtime data)	1000.00	<ul style="list-style-type: none"> • GRM Coordinator
Conduct GRM evaluation	3000.00	<ul style="list-style-type: none"> • M&E Specialist
TOTAL	14000.00	

14. Conclusion

The ESIA study for the Angola pilot sites under the CUVKUN Project has comprehensively evaluated the potential environmental and social risks and benefits associated with proposed interventions aimed at enhancing water security and community resilience. These interventions ranging from borehole rehabilitation and solar-powered desalination in Nehone, to flood early warning systems in Evale and Cuvelai, irrigation infrastructure in Kapanda and canal gates repairs in Kapelongo are expected to deliver transformative outcomes in climate adaptation, food security, and livelihoods.

The assessment confirms that while the project carries a moderate risk rating, the identified risks are site-specific, reversible, and manageable through the robust mitigation strategies outlined in the ESMP. The ESMP includes detailed provisions for stakeholder engagement, grievance redress, occupational health and safety, biodiversity conservation, pollution control, and gender inclusion. Stakeholder consultations have been central to the ESIA process, ensuring that community voices especially those of women, youth, and vulnerable groups are reflected in project design and implementation. The project's Grievance Redress Mechanism (GRM) and Stakeholder Engagement Plan (SEP) provide inclusive platforms for feedback, dispute resolution, and continuous learning.

With a dedicated ESMP implementation budget of USD 52,000, and additional allocations for stakeholder engagement and grievance management, the project is well-positioned to uphold environmental and social safeguards throughout its lifecycle. The moderate risk categorization reflects the project's manageable risk profile, with environmental and social impacts that are localized, temporary, and effectively mitigated through the comprehensive safeguard framework established. Provided that the recommended measures are rigorously applied and monitored, the anticipated benefits of the project are expected to significantly outweigh the potential adverse impacts. It is therefore recommended that the proposed interventions be approved for implementation.

15. List of annexes

Annex 1: Construction Safety Management Guidelines



Annex

1_Construction Safety

Annex 2: Labour Management Procedure



Labour Management
Procedure.docx

Annex 3: Gender Action Plan



Final GESI Action
Plan CUVKUN RAS co

Annex 4: Accountability and Response Framework



Accountability and
Response Framework

Annex 5: FDG Guide, Attendance Registers and Minutes of Stakeholder Meetings

Field Data Tool	Attendance Registers	Minutes of Meetings
 ESIA data tool_OD.docx	 Angola Attendance Registers.docx	 Minutes of Field Activities.docx

Annex: 6 Grievance Log Register



Grievance log
Register.xlsx



CUVKUN

Enhanced Water Security and Community Resilience in the
Adjacent Cuvvelai & Kunene Transboundary River Basins

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