AFB/PPRC.37/23
16 March 2026

Adaptation Fund Board
Project and Programme Review Committee
Thirty seventh Meeting
Bonn, Germany, 7-8 April 2026

Agenda Item 6 (a)

PROPOSAL FOR ANGOLA, NAMIBIA

Background

1. The strategic priorities, policies and guidelines of the Adaptation Fund (the Fund), as well as its operational policies and guidelines include provisions for funding projects and programmes at the regional, i.e. transnational level. However, the Fund has thus far not funded such projects and programmes.

2. The Adaptation Fund Board (the Board), as well as its Project and Programme Review Committee (PPRC) and Ethics and Finance Committee (EFC) considered issues related to regional projects and programmes on a number of occasions between the Board's fourteenth and twenty-first meetings but the Board did not make decisions for the purpose of inviting proposals for such projects. Indeed, in its fourteenth meeting, the Board decided to:

> *(c) Request the secretariat to send a letter to any accredited regional implementing entities informing them that they could present a country project/programme but not a regional project/programme until a decision had been taken by the Board, and that they would be provided with further information pursuant to that decision*
>
> *(Decision B.14/25 (c))*

3. At its eighth meeting in March 2012, the PPRC came up with recommendations on certain definitions related to regional projects and programmes. However, as the subsequent seventeenth Board meeting took a different strategic approach to the overall question of regional projects and programmes, these PPRC recommendations were not included in a Board decision.

4. At its twenty-fourth meeting, the Board heard a presentation from the coordinator of the working group set up by decision B.17/20 and tasked with following up on the issue of regional projects and programmes. She circulated a recommendation prepared by the working group, for the consideration by the Board, and the Board decided:

> *(a) To initiate steps to launch a pilot programme on regional projects and programmes, not to exceed US$ 30 million;*
>
> *(b) That the pilot programme on regional projects and programmes will be outside of the consideration of the 50 per cent cap on multilateral implementing entities (MIEs) and the country cap;*
>
> *(c) That regional implementing entities (RIEs) and MIEs that partner with national implementing entities (NIEs) or other national institutions would be eligible for this pilot programme, and*

(d) To request the secretariat to prepare for the consideration of the Board, before the twenty-fifth meeting of the Board or intersessionally, under the guidance of the working group set up under decision B.17/20, a proposal for such a pilot programme based on consultations with contributors, MIEs, RIEs, the Adaptation Committee, the Climate Technology Centre and Network (CTCN), the Least Developed Countries Expert Group (LEG), and other relevant bodies, as appropriate, and in that proposal make a recommendation on possible options on approaches, procedures and priority areas for the implementation of the pilot programme.

(Decision B.24/30)

5. The proposal requested under (d) of the decision above was prepared by the secretariat and submitted to the Board in its twenty-fifth meeting, and the Board decided to:

(a) Approve the pilot programme on regional projects and programmes, as contained in document AFB/B.25/6/Rev.2;

(b) Set a cap of US$ 30 million for the programme;

(c) Request the secretariat to issue a call for regional project and programme proposals for consideration by the Board in its twenty-sixth meeting; and

(d) Request the secretariat to continue discussions with the Climate Technology Center and Network (CTCN) towards operationalizing, during the implementation of the pilot programme on regional projects and programmes, the Synergy Option 2 on knowledge management proposed by CTCN and included in Annex III of the document AFB/B.25/6/Rev.2.

(Decision B.25/28)

6. Based on the Board Decision B.25/28, the first call for regional project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Fund was sent out on 5 May 2015.

7. At its twenty-sixth meeting the Board decided *to request the secretariat to inform the Multilateral Implementing Entities and Regional Implementing Entities that the call for proposals under the Pilot Programme for Regional Projects and Programmes is still open and to encourage them to submit proposals to the Board at its 27th meeting, bearing in mind the cap established by Decision B.25/26.*

(Decision B.26/3)

8. At its twenty-seventh meeting the Board decided to:

(a) Continue consideration of regional project and programme proposals under the pilot programme, while reminding the implementing entities that the amount set aside for the pilot programme is US$ 30 million;

(b) Request the secretariat to prepare for consideration by the Project and Programme Review Committee at its nineteenth meeting, a proposal for prioritization among regional project/programme proposals, including for awarding project formulation grants, and for establishment of a pipeline; and

(c) Consider the matter of the pilot programme for regional projects and programmes at its twenty-eighth meeting.

(Decision B.27/5)

9. The proposal requested in (b) above was presented to the nineteenth meeting of the PPRC as document AFB/PPRC.19/5. The Board subsequently decided:

a) With regard to the pilot programme approved by decision B.25/28:

(i) To prioritize the four projects and 10 project formulation grants as follows:

1. If the proposals recommended to be funded in a given meeting of the PPRC do not exceed the available slots under the pilot programme, all those proposals would be submitted to the Board for funding;

2. If the proposals recommended to be funded in a given meeting of the PPRC do exceed the available slots under the pilot programme, the proposals to be funded under the pilot programme would be prioritized so that the total number of projects and project formulation grants (PFGs) under the programme maximizes the total diversity of projects/PFGs. This would be done using a three-tier prioritization system: so that the proposals in relatively less funded sectors would be prioritized as the first level of prioritization. If there are more than one proposal in the same sector: the proposals in relatively less funded regions are prioritized as the second level of prioritization. If there are more than one proposal in the same region, the proposals submitted by relatively less represented implementing entity would be prioritized as the third level of prioritization;

(ii) To request the secretariat to report on the progress and experiences of the pilot programme to the PPRC at its twenty-third meeting; and

b) With regard to financing regional proposals beyond the pilot programme referred to above:

(i) To continue considering regional proposals for funding, within the two categories originally described in document AFB/B.25/6/Rev.2: ones requesting up to US$ 14 million, and others requesting up to US$ 5 million, subject to review of the regional programme;

(ii) To establish two pipelines for technically cleared regional proposals: one for proposals up to US$ 14 million and the other for proposals up to US$ 5 million, and place any technically cleared regional proposals, in those pipelines, in the order described in decision B.17/19 (their date of recommendation by the PPRC, their submission date, their lower "net" cost); and

(iii) To fund projects from the two pipelines, using funds available for the respective types of implementing entities, so that the maximum number of or maximum total funding for projects and project formulation grants to be approved each fiscal year will be outlined at the time of approving the annual work plan of the Board.

(Decision B.28/1)

10. At its thirty-first meeting, having considered the comments and recommendation of the Project and Programme Review Committee, the Adaptation Fund Board (the Board) decided:

(a) To merge the two pipelines for technically cleared regional proposals established in decision B.28/1(b)(ii), so that starting in fiscal year 2019 the provisional amount of funding for regional proposals would be allocated without distinction between the two categories originally described in document AFB/B.25/6/Rev.2, and that the funding of regional proposals would be established on a 'first come, first served' basis; and

(b) To include in its work programme for fiscal year 2019 provision of an amount of US$ 60 million for the funding of regional project and programme proposals, as follows:

(i) Up to US$ 59 million to be used for funding regional project and programme proposals in the two categories of regional projects and programmes: ones requesting up to US $14 million, and others requesting up to US$ 5 million; and

(ii) Up to US$ 1 million for funding project formulation grant requests for preparing regional project and programme concepts or fully-developed project and programme documents.

(Decision B.31/3)

11. The following fully-developed project document titled "Building Inclusive Resilience to Climate Change for Semi-Nomadic Agro-Pastoral Communities in the Transboundary Kunene

River Basin" was submitted for Angola, Namibia by the International Fund for Agricultural Development (IFAD), which is a Multilateral Implementing Entity of the Adaptation Fund.

12. This is the fourth submission of the regional fully-developed project proposal using the two-step submission process.

13. It was first submitted as a project concept in the fortieth meeting and was not endorsed by the Board.

14. It was last resubmitted as a project concept in the forty-first meeting and the Board decided:

> *(a) Endorse the concept note as supplemented by the clarification responses provided by the International Fund for Agricultural Development (IFAD) to the request made by the technical review;*
>
> *(b) Request the secretariat to notify IFAD of the observations in the review sheet annexed to the notification of the Board's decision, as well as the following issues:*
>
> *(i) The fully-developed proposal should include more detailed information on indigenous and marginalized communities;*
>
> *(ii) The fully-developed project proposal should document the comprehensive and gender responsive consultations process to be undertaken during the proposal development phase;*
>
> *(c) Approve the project formulation grant of US$ 50,000;*
>
> *(d) Request IFAD to transmit the observations under subparagraph (b) to the Governments of Angola and Namibia; and*
>
> *(e) Encourage the Governments of Angola and Namibia to submit, through IFAD, a fully-developed project proposal that would also address the observations under subparagraph (b), above.*
>
> **(Decision B.41/12)**

15. The current submission was received by the secretariat in time to be considered in the forty-sixth Board meeting. The secretariat carried out a technical review of the project proposal, with the diary number AF00000336, and completed a review sheet.

16. In accordance with a request to the secretariat made by the Board in its 10th meeting, the secretariat shared this review sheet with IFAD, and offered it the opportunity of providing responses before the review sheet was sent to the PPRC.

17. The secretariat is submitting to the PPRC the summary and, pursuant to decision B.17/15, the final technical review of the project, both prepared by the secretariat, along with the final submission of the proposal in the following section. In accordance with decision B.25.15, the proposal is submitted with changes between the initial submission and the revised version highlighted.

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regional Project

Countries/Region: Angola and Namibia
Project Title: Building Inclusive Resilience to Climate Change for Semi-Nomadic Agro-Pastoral Communities in the Transboundary Kunene River Basin
Thematic Focal Area: Disaster risk reduction and early warning systems
Implementing Entity: International Fund for Agricultural Development (IFAD)
Executing Entities: Ministry of Environment, Angola; Ministry of Environment, Forestry and Tourism, Namibia; Regional, Food and Agriculture Organisation (FAO)
AF Project ID: AF00000336
IE Project ID:
Requested Financing from Adaptation Fund (US Dollars): 24,550,836
Reviewer and contact person: Estefanía Jiménez
Co-reviewer(s):
IE Contact Person:

Technical Summary	The project Building Inclusive Resilience to Climate Change for Semi-Nomadic Agro-Pastoral Communities in the Transboundary Kunene River Basin aims to support the climate change adaptation and resilience of the semi-nomadic agro-pastoral populations of the Kunene River Basin. This will be done through the four components below: Component 1: Co-design and implementation of a Plan for Disaster Risk Reduction through Ecosystem-based Adaptation in the Kunene River Basin (KRB: EbA-DRRP) (USD 1,750,000). Component 2: Implementation of a satellite-based Multi-Hazard Early Warning System for the Kunene River Basin (KRB: MH-EWS) (USD 3,626,000). Component 3: Inclusive community-based adaptation actions (USD 13,200,000). Component 4: Awareness-raising and knowledge-sharing on climate change adaptation in the Kunene River ecosystem (USD 985,000)

	Requested financing overview: Project/Programme Execution Cost: USD 2,231,894 Total Project/Programme Cost: USD 22,318,942 Implementing Fee: USD 2,231,894 Financing Requested: USD 24,550,836 The initial technical review raises several issues, such cost effectiveness, full cost of adaptation reasoning, further elaboration of ESMP M&E Plan, budgeting, as is discussed in the number of Clarification Requests (CRs) and Corrective Action Request (CAR) raised in the review. The second technical review finds that there has been an improvement of the first technical review as many of the issues raised in the first technical review have been addressed. There are a few remaining CARs and CRs still to be addressed related to the project alignment with AF RF, particularly the Output Indicators and consistency of presented information, Justification of funding, Risk Assessment, IE and EE fees exceeding the cap and the representation of rounded figures in the Disbursement table;as is discussed in Clarification Requests (CRs) and Corrective Action Requests (CAR) raised in the review. The third review finds that most of the issues raised in the second technical review have been addressed. There are, however, a few remaining issues Alignment with AF RF, core indicators, breakdown of IE and EE fees as is discussed in the Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review. The fourth technical review finds that all issues raised have been addressed. *Please be advised that the findings of the AFB Secretariat's review of the funding proposal(s) do not reflect, indicate, or prejudge the outcome of the reaccreditation process currently underway. The Implementing Entity (IE) shall acknowledge that the funding proposal will not be approved by the Board if the IE's accreditation has expired, and reaccreditation has not been achieved at the time of the Board's decision. Notwithstanding this potential risk, the IE has elected to proceed with the development of the funding proposal.*
Date	March 9, 2026

Review Criteria	Questions	First Technical Review Comments February 28, 2025	Second Technical Review Comments January 24, 2026	Third Technical Review	Fourth Technical Review

				Comments March 2, 2026	Comments March 9, 2026
Country Eligibility	1. Are all the participating countries party to the Kyoto Protocol and/or the Paris Agreement?	**Yes.**	-	-	-
	2. Are all the participating countries developing countries particularly vulnerable to the adverse effects of climate change?	**Yes.** The countries within the Kunene River Basin, specifically Angola and Namibia, are developing nations particularly vulnerable to the adverse effects of climate change.	-	-	-
Project Eligibility	1. Have the designated government authorities for the Adaptation Fund from each of the participating countries endorsed the project/programme?	**Yes.** As per the Endorsement letter dated 19th July 2024 for Angola and 17th July 2024 for Namibia.	-	-	-
	2. Does the length of the proposal amount to no more than one hundred (100) pages for the fully developed project document, and one hundred (100) pages for its annexes?	**Yes.**	-	-	-
	3. Does the regional project / programme support concrete adaptation actions to assist the participating countries in addressing the adverse effects of climate change and build in climate	**Yes.** However, additional clarification is required. The proposal presents a series of adaptation actions			

	resilience, and do so providing added value through the regional approach, compared to implementing similar activities in each country individually?	aimed at improving climate resilience in the Rewa River Catchment, particularly addressing flood risks and water security challenges. The project outlines several interventions, **including watershed restoration, flood control infrastructure, and community-based adaptation planning**. While these activities are relevant, some—such as afforestation and riverbank stabilization—may appear as general environmental conservation unless the climate rationale is more explicitly stated. **CR1:** Please clarify how the proposed activities differ from standard environmental or development projects by explicitly linking them to expected climate change impacts. This could be achieved by incorporating climate scenario modeling or detailing how the interventions are tailored to future climate conditions.	**CR1: Cleared** Part II, Section A has been updated to include information on the proposed activities showing that they go beyond standard environmental or development interventions by directly addressing documented and projected climate risks.	-	-

		The proposal outlines anticipated benefits such as reduced flood damage, improved water security, and strengthened community resilience. However, the expected results are not always quantifiable, making it difficult to assess the scale of impact. **CR2:** Please specify quantifiable indicators for each outcome to allow for clear tracking of adaptation benefits. This could include metrics such as the percentage reduction in flood-related losses, the number of people with improved water access, or ecosystem restoration targets.	**CR2: Cleared** The proposal has been strengthened by specifying quantifiable outcome indicators for each climate-responsive activity, enabling clear tracking of adaptation benefits (see Table 22: Results Framework). These quantifiable metrics have also been integrated into Section II-A (Description of Project Activities), Section II-C (Economic, Environmental and Social Benefits), Section II-D (Cost-effectiveness), and Section II-J (Justification for Funding), ensuring that the full cost of adaptation and associated benefits are reflected throughout the proposal. Some indicators remain non-quantifiable at this stage due to the USP requirements. These will be finalized during	-	-

			the inception phase once baselines are established through the project's initial assessments. The Participatory Needs Assessment, Water Security Assessment, and Ecosystem Goods and Services (EGS) Valuation will generate accurate, context-specific baseline data for selected sites, including existing water availability and use, ecosystem condition and function, ecological thresholds, land-use pressures, and community livelihood dependencies. The monitoring and evaluation system will track these indicators over time, with baseline values established during project inception and updated annually. Finally, the narrative has been strengthened to clarify how the Theory of Change demonstrates		

		CR3: Please refine the Theory of Change to explicitly map out how the proposed activities lead to climate resilience. A visual representation, such as a results chain or logical framework, would improve clarity. Furthermore, consider addressing how uncertainty in climate projections will be managed through adaptive implementation. **CR4:** Please enhance the logical connections between components to ensure a cohesive adaptation strategy. This could involve linking capacity-building efforts more directly to infrastructure investments or explaining how ecosystem restoration complements flood control measures. The proposed interventions contribute to several Adaptation Fund strategic objectives, including	reductions in climate vulnerability over time by linking each intervention to a specific, measurable adaptation benefit and ensuring that these are clearly presented at every opportunity across the proposal. **CR3: Cleared** The ToC which explicitly maps how the proposed activities lead to climate resilience has been added in Annex 4, and information on how uncertainty in climate projections will be managed through adaptive implementation has been included in Part II Section A and B of the proposal. **CR4: Cleared** Part II, Section A and other parts of the	- -	- -

		reducing climate-induced risks and improving ecosystem resilience. However, the alignment with these objectives is not explicitly articulated.	proposal have been updated as follows: Capacity-building efforts under Component 1 and Component 4 have been more directly linked to infrastructure and technology investments in Component 2 and Component 3. For instance, participatory planning processes and training (Component 1 and 4) now explicitly support the effective use and sustainability of early warning systems and water infrastructure introduced in Components 2 and 3. This includes community training on interpreting MH-EWS data and maintaining rainwater harvesting infrastructure. Clarification has also been provided on how ecosystem restoration activities (Component 3), such as rangeland		

			rehabilitation and afforestation, complement flood control and drought mitigation. These interventions are designed to improve water retention, reduce runoff, and enhance landscape stability, thereby reducing the impacts of extreme climate events and address degraded grazing land due to climate impacts and maladaptive activities. Additionally, Section II, B has been updated to explicitly align each component with relevant Adaptation Fund strategic objectives. Component 1 aligns with AF Objective 1 (reducing exposure to climate-related hazards) and Objective 2 (strengthening institutional capacity) by developing an		

		CR5: Please explicitly state how each project component aligns with Adaptation Fund Strategic Objectives, referencing specific goals such as improving resilience of vulnerable communities, enhancing natural systems, and promoting sustainable water resource management Page 14.	integrated, ecosystem-based DRR Plan. Component 2 supports Objective 3 (improving early warning systems and climate information) through installation and use of MH-EWS technology. Component 3 contributes to Objective 4 (increasing adaptive capacity and ecosystem resilience) via livelihood diversification, water access, and ecosystem restoration. Component 4 addresses Objective 2 and 5 by promoting knowledge exchange and capacity building for gender-responsive and community-led adaptation planning. **CR5: Cleared** See page 31 para 14.	-	-

	4. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy of the Fund?	**Yes.** However, additional information is required. The proposal outlines several economic, social, and environmental benefits that align with the Adaptation Fund's Environmental and Social Policy (ESP) and Gender Policy. However, while the proposal presents a strong narrative on benefits, additional quantification of expected benefits is needed. **CAR1:** Please provide the anticipated economic benefits, such as increased agricultural yield or avoided losses due to climate hazards and provide explicit link to baseline figures and projected improvements. **CR6:** Kindly provide more information on the environmental benefits related to ecosystem restoration (e.g., hectares of rehabilitated rangelands and afforested areas) would be strengthened by clearer indicators.	**CAR1: Cleared** Part II, Section C, Table 5 now includes clearer economic, social and environmental benefits, with additional quantification aligned with the Results Framework. **CR6: Cleared** Part II, Section C table outlines this information.	- -	- -

		The proposal provides an estimate of 54,200 direct beneficiaries and an additional 119,400 indirect beneficiaries. The focus on semi-nomadic agro-pastoral communities, particularly female-headed households and indigenous groups, is also commendable. **CR7:** Please enhance clarity of the proposal through specific disaggregation of beneficiary data, including the distribution of benefits across different social and economic groups. The proposal acknowledges the vulnerability of indigenous semi-nomadic pastoralists and highlights targeted interventions, such as access to potable water, sustainable grazing land, and disaster risk reduction measures. While the proposal mentions indigenous knowledge integration, details on how this will be operationalized in decision-making processes are limited.	**CR7: Cleared** Part III, Implémentation arrangements, Section E and Table 22. provide the additional information requested. Details on overcoming barriers and proactive measures for engagement are also updated in Activity 1.1.1.1 and 1.1.1.2, 1.1.2.1. This is also addressed on 1.2.1.1, 1.2.1.2 and 1.2.1.3.	-	-

		CR8: Please provide additional clarity on how the project will overcome barriers to participation for highly marginalized groups, such as indigenous elders, persons with disabilities, and youth.	**CR8: Cleared** See response below provided by the IE: The project is designed to take a hand-on, inclusive approach that recognizes the diverse realities and needs of communities across the KRB. With the largest target beneficiary group being semi-nomadic indigenous pastoralist, it is built on the principles of FPIC and shaped by ongoing gender and social analysis and will be guided by local experts familiar with the cultural norms of the specific peoples. To encourage and ensure all groups are engaged and can participate meaningfully and benefit fairly, especially those who are often left out, the project will roll	-	-

			out a set of practical measures from inception – described below. These will be applied throughout all components and revisited each year to stay responsive to evolving needs. Key measures to ensure equitable participation and benefit-sharing include Participatory Needs Assessment (Component 1): Conducted during inception, this assessment will identify differentiated vulnerabilities, priorities, and adaptive capacities. Findings will inform the design of a culturally relevant, gender-responsive, ecosystem-based DRR Plan and guide the selection of EbA actions under Component 3. Culturally Appropriate and Accessible Engagement: Part II. C,		

			Table 18 and Part II section I.: Mobile outreach and consultations will reach remote and semi-nomadic populations. Part 11, section C&I Meetings will be scheduled at times/locations accessible to women and elders, with transport support provided as needed. Information will be delivered in local languages and formats suitable for low-literacy audiences, using tools such as visual aids, community radio, and SMS. Part III Section A: Inclusive Governance and Capacity Building: Targets will be set for inclusive representation in project committees, with reserved seats for Indigenous women and youth.		

		CR9: The proposal discusses economic, social, and environmental benefits but requires further quantification in several areas.	Tailored training will strengthen leadership, monitoring, and climate-smart practices among marginalized groups, with special modules for women and youth in pastoralist communities. Section II, A. Participatory Scenario Planning approach to engage diverse community members. Section III, Implementation Arrangements discusses - Monitoring, Evaluation and Feedback: Gender, ethnicity and age-disaggregated indicators, possibly community scorecards, and participatory storytelling methods will be used to assess inclusion and impact. Measures are detailed in the project's E&S Risk Management Plan Table 15 and operationalized		

		1. **Economic:** The project projects an annual income increase of USD 150 per direct beneficiary due to agricultural and livelihood diversification, please provide further details on how these estimates were derived and their comparability with baseline conditions are necessary. **Social:** The emphasis on strengthened social cohesion through participatory conservation planning and land-use strategies is well presented, please enhance and provide more information on the monitoring mechanisms for measuring cohesion outcomes. 2. **Environmental:** The proposal references the restoration of 20,000 hectares of rangeland and afforestation of 2,000 hectares. While	throughout all components, ensuring that marginalized groups are not only reached but meaningfully included. **CR9: Cleared** based on responses provided by the IE below: Table 5 has been revised and updated to focus on quantifiable and evidence-based data for economic, social and environmental benefits. 1. Economic: To keep the data evidence-based and measurable, the earlier estimate of a USD 150 income increase per beneficiary was removed – based on other studies. This figure will be revisited after the baseline studies and participatory assessments planned for the project's	-	-

		these figures are promising, please conduct an ecosystem evaluation study to assess the long-term sustainability of these interventions.	inception phase. These will help establish a clearer picture of household income, livelihoods, and economic potential, allowing for more accurate and relevant income projections to be included in the project's M&E framework. 2. Social: This approach is operationalised in Part II, Section A (Activities 1.1.1.1–1.1.1.2), Section I (Stakeholder Consultation), Part III Section A (Implementation Arrangements), Part III Section D (Monitoring & Evaluation), and Part II Section H (Learning & Knowledge Management), where participatory consultations, Indigenous-led processes, community monitoring tools, and documentation of		

			lessons learned are explicitly described Participatory consultation, engagement, workshops and awareness raising will use culturally and gender supportive approaches – incorporating various tools such as focus group discussions, and community scorecards. Local indigenous experts will be used to and co-created knowledge hubs, participatory planning, and Indigenous-led monitoring processes will promote engagement and sharing of knowledge. All findings will be documented in progress reports, with lessons feeding into the Learning and Knowledge Management. This information has been updated in the activities throughout the components.		

			3. Environmental Before conducting an ecosystem evaluation to assess the long-term sustainability of restoring 20,000 hectares of rangeland and planting 2,000 hectares of trees, the project must first establish an accurate, context-specific baseline in selected areas that are to be determined. For this reason, the project begins with a Water Security Assessment, an Ecosystem Goods and Services (EGS) Valuation, and a Community Needs Assessment. These assessments provide essential information on existing water availability and use, ecosystem condition and function, ecological thresholds, land-use pressures, and community livelihood dependencies.		

			The ecosystem evaluation requested will be fully integrated into the Water Security Assessment and EGS Valuation, both of which include ecosystem condition analysis, carrying-capacity assessment, and long-term sustainability modelling. Embedding the evaluation within these studies avoids duplication and ensures that sustainability analysis is grounded in robust biophysical and socio-economic data. By sequencing the work in this way, and by complementing the assessments with continued stakeholder engagement, the project ensures that the restoration strategy is ecologically sound, socially inclusive, and tailored to the realities of the Kunene Basin. This integrated approach strengthens the long-term		

			effectiveness and sustainability of the proposed rangeland restoration and afforestation interventions.		
	5. Is the project / programme cost-effective and does the regional approach support cost-effectiveness?	**Unclear.** The proposal outlines a clearly articulated intervention that aims at building the climate resilience of semi-nomadic agro-pastoral communities of the Kunene River Basin. However, the approach proposed does not clearly articulate cost-effectiveness. **CR10:** Please provide a logical explanation on how the proposed approach was selected, based on an economic, social, and environmental sustainability perspective. Please also provide a more detailed cost-effective analysis, including alternative adaptation strategies that could have been implemented in the exact geographical and sectoral context. This should contain	**CR10: Cleared** Part II, Section D has been updated.	-	-

		qualitative and, where possible, quantitative justification.			
	6. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments? If applicable, it is also possible to refer to regional plans and strategies where they exist.	**Yes.** However, additional information is required. The proposal outlines key adaptation interventions relevant to the context of semi-nomadic agro-pastoral communities in the Kunene River Basin. However, it does not provide sufficient reference to national or sub-national adaptation and development strategies, including Angola and Namibia's NDCs, or broader development planning frameworks. However, to strengthen coherence with national frameworks, the following clarifications are requested. **CAR2:** -Kindly strengthen linkages between project activities and national SDG strategies (e.g., Angola's Long-Term Development Strategy) by mapping specific outputs to SDG targets (e.g., SDG 2, 6, 13).	**CAR2: Cleared** Part II, Section E has been updated, and specific SDGs have been mapped.	-	-

	7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	**Yes.** However, additional information is required. **CR11:** The proposal presents a strong case for enhancing climate resilience in the Kunene River Basin. Whereas there is a long listing of standards for each country the section does not explain how each of these will be specifically adhered to. Please address. **CR12:** Please clearly identify relevant national technical standards that apply to project activities, such as water management regulations, building codes, and land use or tenure laws. Please explain the compliance measures taken for each applicable standard, including environmental permits, water use licenses, and other required authorizations.	 **CR11: Cleared** Part II, Section F. A column has been added to the table "How Compliance will be Achieved" **CR12: Cleared** The relevant national technical standards that apply to project activities have been included in the table in Part II, Section F.	 **-** **-**	 **-** **-**

	8. Is there duplication of project / programme with other funding **sources**?	**Yes.** However, additional information is required. This proposal presents a bold initiative targeting climate change adaptation in the Kunene River Basin. It doesn't sufficiently consider possible overlaps with other projects or funding streams. Beyond ensuring that the project is unique, it is equally important to show its complementarity and synergy with various past or present initiatives in the region. **CR13:** Identify relevant ongoing or recently completed adaptation projects in Angola and Namibia that focus on water security, climate resilience, disaster risk reduction, and agro-pastoralist livelihoods. Please indicate any overlap, and if any, how the project distinguishes itself or complements these projects. Part II, G. **CR14:** Please provide a list of ongoing or recently	**CR13:Cleared** Part II G has been updated to indicate overlaps and information on how the project distinguishes itself or complements the projects **CR14: Cleared**	**-** **-**	**-** **-**

		completed projects in Angola and Namibia with respect to water security, climate resilience, disaster risk reduction, and agro-pastoralist livelihoods. Part II, G. Table 10.	The section Part II, G now Table 12 has been updated		
	9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	**Yes.** However, additional information is required. The proposal presents a well-structured adaptation intervention; however, it does not explicitly outline a dedicated learning and knowledge management (KM) component. **CR15**: Additionally, specify how these activities will contribute to improving adaptation strategies beyond the project's direct beneficiaries.	**CR15: Cleared** See response below: Updates have been made to Part II, Section H (Learning and Knowledge Management), complemented by the Results Framework (Part III, Section E). The project's KM approach extends well beyond direct	-	-

			beneficiaries by generating evidence on EbA practices, MH-EWS operations, and sustainable water and rangeland management, and sharing this through case studies, guidelines, and capacity-building with government, basin institutions, and regional partners. South–South exchanges with the Niger Basin Authority and engagement with FAO, IFAD, and SADC networks ensure that successful models and innovations, particularly those led by women and youth, are disseminated and can be replicated across other basins and adaptation programs. In this way, the integrated KM system strengthens institutional capacity, informs policy processes, and enhances adaptation strategies at local,		

			national, and regional levels.		
	10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations?	**Yes.** However additional information is required. The descriptive report throws more light on stakeholder engagement but does not sufficiently show that an extensive consultative process responsive to gender has been undertaken; however, more work would still be required to assure the whole project would be inclusive, representative of local needs, and in alignment with what is prioritized by both the direct and indirect beneficiaries, including women, indigenous populations, and other vulnerable groups. **CAR3:** In I. Stakeholder consultation, please describe the stakeholder consultation process very clearly, including all consulted stakeholders, among them marginalized and indigenous communities, and their participation include a	**CAR3: Cleared** Part II Section I revised to include description of the stakeholder consultation process and integration of stakeholder inputs into the project design and decision-making. List of	-	-

		gender-responsive approach, assuring women's participation, and hereby clarifying how stakeholder inputs were integrated into project design and decision-making, assuring that the consultations were meaningful and inclusive. 2. Please furnish a brief on the stakeholder consultation which includes a list of consulted groups, marginalized and indigenous communities, and their participation include a gender-responsive approach, assuring women's participation broadly analyze key issues raised, and how these key issues were incorporated into the project design. One other imperative is to expand on gender considerations with sufficient clarity vividly during the consultation Both in Section I and Annex K. .	consulted groups and persons included, as well as gender issues in Annex 8.		
	11. Is the requested financing justified based on full cost of adaptation reasoning?	**Not demonstrated.** Although the proposal presents an important climate adaptation initiative			

		targeting semi-nomadic agro-pastoral communities in the Kunene River Basin. However, it does not sufficiently establish clear and structured full-cost adaptation reasoning, which is required to justify the financing requested from the Adaptation Fund. **CAR4**: Please provide a structured full-cost adaptation reasoning. Additionally, clarify how the project can fully achieve its adaptation objectives without reliance on co-financing.	**CAR4: Not cleared** The reasoning provided for the full cost financing articulated in Part II Sections D p32 and J is acceptable. However, the following statement in the Justification, "Technical assistance and knowledge support will be leveraged from FAO and IFAD; however, these contributions are non-financial and are not required to achieve the project's adaptation outcomes" is questionable. If the countries do not have the Technical Expertise to achieve the adaptation outcomes, how will they achieve	**CAR4: Cleared** Paragraph 342 in Part II J has been revised to clarify that IFAD's and FAO's contributions are in the form of technical assistance and are non-financial in nature and not counted as co-financing.	-

			them without the assistance? Please clarify.		
	12. Is the project / program aligned with AF's results framework?	**Partially addressed.** The proposal outlines a strong adaptation intervention; however, it does not explicitly demonstrate alignment with the Adaptation Fund's revised strategic results framework (2019). **CR16**: Please indicate how the outcomes and indicators of the project relate to the Adaptation Fund's results framework, with coherence across project components and logical connectivity between the project outputs and the Adaptation Fund's strategic results; all indicators at the project level should be compatible with aggregation into the Adaptation Fund's overall monitoring system.	**CR16: Not cleared** Table 27 in Part III Section F has been updated to show the coherence across project components, outcomes and outputs. However, the titles of some of the components and outcomes in the Table are not consistent with the titles in the Project Components table. For example, Outcome 1.1 in the Project Components table is: " Improved availability and effectiveness of DRR Plan co-designed	**CR16: Not cleared.** While Table 27 has been updated, there are still some inconsistencies which need to be addressed. They are as follows: (1) Key Objective 2 in the Alignment Table is slightly different from	**CR16: Cleared** as per changes made in Table 27.

		CAR5: Please provide a logical framework that outlines the proposed project and its components explicitly, following the Adaptation Fund's strategic results framework (2019).	and implemented by beneficiary communities and stakeholders", In the AF Alignment table it is; "A DRR Plan co-designed and implemented by beneficiary communities and stakeholders" Also there is only partial alignment between the AF outcome and output indicators in the upper and lower sections of the table. For example, the AF Outcome indicators for the Project Objectives are 1, 2, 3 and 6 but in the lower part of the table, the indicators are for Outputs 1,2,8 and 3. Please address. **CAR5: Not cleared** Please revise the table using Results Framework Alignment Table (Amended in November 2025) (77 kB, DOC)	the one in Table 2 (page 11). (2) Outcome 1.1 in the Alignment Table is different from its counterpart in the Project Results Framework (Table 2, page 80) (3) some of the project indicators in the Alignment table are different from those in the Project Results Framework Table (4) The grant amounts for each component in the AF alignment table do not coincide with	

		This should clarify how the outcomes, outputs, and indicators in the result framework relate to the impact areas of the Fund and its reporting system. If necessary, the logical framework can be revised to better communicate the strategic objectives of the Adaptation Fund so that it keeps a clear link to the Adaptation Fund core indicators.	**CAR6:** **1.** The core indicator on total beneficiaries should present an aggregated figure for both countries, clearly shown in the table alongside the country-level disaggregation. This will strengthen performance tracking and help reduce errors in future reporting of numbers. Please address. **2.** In addition, many core indicators rely on percentages of the targeted population rather than actual numbers, which limits the accuracy and usefulness of tracking. It is advisable to provide the absolute figures. For example, the	the amounts in the Project Components and Financing Table nor the Project Budget (Table 28) (5) Some of the indicators mentioned in Table 27 do not coincide with the AF Indicators provided in the Guidance note (e.g. AF Output indicator 2.2.1 for Project Outome 2.2 and AF Outcome indicator 2.2 for Key Objective 2, to name a few). (6) Please ensure that all the Fund Outcomes associated with the listed	

			actual number representing 80% of the targeted population expected to benefit from the EWS. The same recommendation applies to all indicators currently expressed only as percentages instead of actual beneficiary count. Please address.	Fund outputs in the lower section of the table are reflected in the upper section of the table. (7) Please provide grant amount not per component but per outcome or output of the AF. Please do not lump the figures for the various outcomes and outputs. Please review our updated guideline and ensure consistency: https://www.adaptation-fund.org/wp-content/uploads/2025/11/Alignment-with-	

				Adaptation-Fund-Results-Framework-Template-and-guidance-Nov-2025.docx **CAR6: Not Cleared.** Tables 23, 24 and 25 have been revised to include, where appropriate, the aggregated figure for both countries alongside the country-disaggregation and the actual number of beneficiaries has been included along with the percentages. However, for some indicators, the	**CAR6: Cleared.** Tables 23–26 have been revised to fully disaggregate all beneficiary-related indicators by country (Angola and Namibia)

				numbers have not been disaggregated by country [e.g. for EWS - 80% of target population can correctly interpret forecast and know action steps (666,623) and for Drought resilience improvement: -80% of target population can correctly interpret forecast and know action steps (666,623)] Please disaggregate the number of beneficiaries by country.	
	13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	**Partially addressed** The proposal outlines important adaptation interventions for the semi-nomadic agro-pastoral			

		communities in the Kunene River Basin, but it does not provide a clear and structured plan for ensuring the sustainability of project outcomes beyond the project's lifespan. **CR17:** Clearly explain how the adaptation benefits will be sustained after the project ends. This should include mechanisms for long-term maintenance of installed infrastructure (e.g., water supply systems, grazing land restoration, climate-resilient agricultural practices). Please provide a financial sustainability plan, clarifying how future maintenance, repairs, and necessary upgrades will be financed without ongoing reliance on donor funding. **CAR6:** Please provide a structured sustainability plan, detailing how the project's benefits will be maintained, replicated, and scaled up after the project ends. Specifically, clarify governance arrangements, financial sustainability	**CR17: Cleared** See paragraph 260 **CAR6: Cleared** Part II, Section K has been updated to include suggested revisions	-	-

		mechanisms, and strategies for ensuring continued community engagement in adaptation efforts.			
	14. Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**Partially addressed.** The proposal presents an adaptation initiative for the Kunene River Basin. The Project is categorized as B. The project is stated as containing USP as some locations are to be determined during the first year of the project. **CAR7:** 1. The risk assessment based on the AF risk screening needs to be amended to ensure that ESPs 1, 4 and 6 are further assessed. 2. Please ensure a proper checklist/framework by which the USPs will be assessed will be included in the re-submission. Please update the ESMP at Annex 9to ensure that the USPs will also be guided by the ESMP and that appropriate	**CAR7: Not Cleared** 1. **Not cleared:** Although the Part II Section L the third column of Table 15 has been updated, the second column should also be updated to show that ESPs1, 4 and 6 will be further assessed, Please insert a tick or X in the respective rows. 2. **Cleared:** USP ESP Screening checklist included in Annex 10 Budget included in Annex 9	**CAR7: Not cleared** The "No further assessment required for compliance" column should only be ticked for those principles for which impacts/risks were not identified. Please amend.	**CAR7: Cleared** as per changes made in Table 15.

		budgetary allocations will be made to support the same. Please include a budget for the ESMP this can be done by adding an extra column to the ESMP at Annex 9 3. Please identify all potential environmental and social risks associated with the project activities, including any potential direct, indirect, transboundary, and cumulative impacts. 4. The proposal, elaborated on gender-specific cultural and legal contexts in which the project will operate requires an explanation of how it will ensure that gender-related risks and opportunities are fully considered. Please address.	3. **Cleared:** Part II, Section L information updated 4. **Cleared:** Part II, Section L updated to include gender specific and legal contexts through gender analysis at and the development of context-sensitive engagement strategies in both Angola and Namibia. This includes working collaboratively with both male and female traditional authorities to secure community-level support for women's active participation and leadership in project governance structures. In addition to meeting representation targets, the project will strengthen the agency of women by fostering female leadership roles		

			The project's MEL system will also track progress on gender results indicators aligned with the Gender Action Plan, using sex- and age-disaggregated data, and periodic gender audits will assess impacts and unintended consequences. Special measures will be taken to prevent and address any social backlash or burden displacement risks that may emerge, ensuring a do-no-harm approach to gender empowerment.		
	15. Does the project promote new and innovative solutions to adaptation to climate change, such as new approaches, technologies and mechanisms?	**Not clear.** **CAR8:** Please clarify how the proposal will promote new and innovative solutions to climate change adaptation that can contribute to one of the following:	**CAR8: Cleared** See Part II Section B pp 72 - 74	-	-

		a. Rolling out innovative adaptation practices, tools and technologies that have demonstrated success in one country to new countries/regions. b. Scaling up viable innovative adaptation practices, tools and technologies that have demonstrated viability at a small scale, through piloting at larger scales. c. Developing, encouraging and accelerating new innovative adaptation practices, tools and technologies or. d. Generating an evidence base of effective, efficient adaptation practices, products and technologies.			
Resource Availability	1. Is the requested project / programme funding within the funding windows of the programme for regional projects/programmes?	**Yes.**	-	-	-
	2. Are the administrative costs (Implementing Entity Management Fee and Project/ Programme Execution Costs) at or below 10 per cent of the	**Yes.**	-	-	-

	project/programme for implementing entity (IE) fees and at or below 10 per cent of the project/programme cost for the execution costs?				
Eligibility of IE	1. Is the project/programme submitted through an eligible Multilateral or Regional Implementing Entity that has been accredited by the Board?	**Yes.** IFAD's accreditation is valid until 21 December 2025.	**No.** IFAD's accreditation has now expired. *Please be advised that the findings of the AFB Secretariat's review of the funding proposal(s) do not reflect, indicate, or prejudge the outcome of the reaccreditation process currently underway. The Implementing Entity (IE) shall acknowledge that the funding proposal will not be approved by the Board if the IE's accreditation has expired, and reaccreditation has not been achieved at the time of the Board's decision.* *Notwithstanding this potential risk, the IE has elected to proceed with the development of the funding proposal.*	**No.** IFAD's accreditation has now expired. *Please be advised that the findings of the AFB Secretariat's review of the funding proposal(s) do not reflect, indicate, or prejudge the outcome of the reaccreditation process currently underway. The Implementing Entity (IE) shall acknowledge that the funding*	**No.** IFAD's accreditation has now expired. *Please be advised that the findings of the AFB Secretariat's review of the funding proposal(s) do not reflect, indicate, or prejudge the outcome of the reaccreditation process currently underway. The Implementing Entity (IE) shall acknowledge that the funding proposal will not be approved by the Board if the IE's accreditation has expired, and reaccreditation*

				proposal will not be approved by the Board if the IE's accreditation has expired, and reaccreditation has not been achieved at the time of the Board's decision. Notwithstanding this potential risk, the IE has elected to proceed with the development of the funding proposal.	*has not been achieved at the time of the Board's decision. Notwithstanding this potential risk, the IE has elected to proceed with the development of the funding proposal.*
Implementation Arrangements	1. Is there adequate arrangement for project / programme management at the regional and national level, including coordination arrangements within countries and among them? Has the potential to partner with national institutions, and when possible, national	**Yes.** However additional information is required. **CR18**: Please give more details on how gender-responsive elements are integrated in the implementation arrangements, including the decision-making structures,	**CR18: Cleared** Part III, Section A, has been updated to include information on how gender-responsive elements are integrated	-	-

	implementing entities (NIEs), been considered, and included in the management arrangements?	leadership roles, and gender-disaggregated monitoring.	into the implementation arrangements.		
	2. Are there measures for financial and project/programme risk management?	**Partially addressed** The proposal lays out a compellingly structured adaptation initiative; however, it does not contain a full-suited template for risk assessment. To comply with the Adaptation Fund's risk management policy, the proponent will need to detail major risk factors relating to the financial, environmental, social, and institutional aspects and to submit a risk assessment table with the associated levels of risk and mitigation strategies. **CAR9:** 1. Please provide a structured risk assessment in a table format outlining major financial, environmental, social, and institutional risks, their significance, and corresponding	**CAR9: Not cleared** 1. Please organize the table so that the various risks are grouped into financial, environmental, social and institutional	**CAR9: Cleared** 1. The Project and financial risk managem ent table	**-**

		mitigation strategies in one table. 2. The proposal should also include some monitoring mechanisms for tracking and responding to emerging risks throughout project implementation.	categories with their respective corresponding significance and mitigation strategies. 2. The ESMP (Annex 9) provides indicators for monitoring the risks and responding to emerging risks, including the agencies responsible for risk mitigation.	has been organized into financial, environmental, social and institutional categories with their respective significance and mitigation strategies. See Table 17 (pages 67 – 69)	
	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy of the Fund? Proponents are encouraged to refer to the Guidance document for Implementing Entities on compliance with the Adaptation Fund Environmental and Social Policy, for details.	**Yes.** However, additional information is required. **CAR10:** Make sure to have a detailed ESMP that describes all identified risks and measures to mitigate those risks.	**CAR10: Cleared** A detailed ESMP has been added to Annex 9	-	-
	4. Is a budget on the Implementing Entity	The proposal provides a general budget structure but does not explicitly present			

	Management Fee use included?	an Implementing Entity Management Fee. It is important to ensure transparency in the allocation of the IE fee to comply with the Adaptation Fund's financial requirements. **CAR11**: Please provide a detailed budget breakdown of the Implementing Entity Management Fee, specifying allocations for corporate activities and project cycle management. Ensure that the total IE fee aligns with the overall budget and equals 10%. Response: A detailed breakdown of the Implementing Entity Management Fee is provided in Part III, Section G (Project Budget, Table 21, which itemises IE fee allocations across corporate oversight and project cycle management functions, including M&E supervision, safeguards compliance, financial oversight, evaluations, and reporting. The total IE fee is calculated on the overall project budget and equals 10%, in line with	**CAR11: Not cleared.** A detailed breakdown of the Implementing Entity Management Fee is provided in Part III Section G, Table 21, which itemizes IE fee allocations across corporate oversight and project cycle management functions, including M&E supervision, safeguards compliance, financial oversight, evaluations, and reporting. However; 1. The total for the M&E functions (USD 1,870,512) does not coincide with the total IE fee in the project budget (USD 2,429,236). Please explain the	**CAR11: Not cleared** While the total for the M&E functions in Table 21 now coincides with the total IE Management Fee in the project budget, Project Components and Financing Table, the sum of the values in the table do not coincide with the Total (i.e. 512,340 + 318.850+289, 422 + 421000 ≠ 1,871,512. Likewise, 231,804 +	**CAR11: Cleared** as per Tables 20, 21 and 28.

		Adaptation Fund financial requirements	difference in amounts. 2. The IE fee exceeds the 10 % cap of the overall budget. Please address.	158920 + 161,000 + 124,000 ≠ 887,724) There is also a discrepancy between the numbers in the Clear and Track Change versions of the Project proposal. Please review the figures and make the relevant changes to the document to ensure that the sum of the individual values in the table coincide with the correct totals. Also ensure that the correct Clean version of the project document is submitted.	

	5. Are an explanation and a breakdown of the execution costs included?	**Partially addressed** The proposal presents an adaptation initiative but does not include a clear and structured explanation of execution costs. A transparent breakdown of these costs is required to demonstrate compliance with the Adaptation Fund's financial policies and to ensure effective project management. **CAR12:** Please provide a detailed breakdown of the execution costs, specifying allocations for staffing, monitoring and evaluation, reporting, stakeholder consultations, communication, and travel. Ensure that execution costs are aligned with Adaptation Fund guidelines and do not exceed 10% of the total project budget, including the fee. Part III, G. Table 26	**CAR12: Not Cleared.** Part II G Table 29 presents the breakdown of the execution costs which itemises allocations for staffing, monitoring and evaluation, reporting, stakeholder consultations, communication, and travel. The execution costs are calculated on the total project budget and exceed the 10% ceiling.	**CAR12: Not Cleared** Although Table 29 (page 105) has been revised to calculate execution costs exclusively on the Adaptation Fund grant amount and to ensure compliance with the 10%	**CAR12: Cleared** as per changes made in Table 29.

				ceiling, there are some errors in the Table which would affect the calculation of the total amounts. Specifically, Column 11 of the table, titled Total Qty is the sum of the preceeding 5 columns (Qty/Yr1, Qty/Yr2,…Qty /Y5). Thus the total number of months over 5 years should be 60 not 48 as is indicated in Column 11 and consequently, the Total Cost is calculated based on 48 rather than 60 months for the first 9 rows of the table. Thus the	

				totals are incorrect. Please revise the total number of months and total costs accordingly to ensure that the totals coincide with the Total EE Cost.	
	6. Is a detailed budget including budget notes included?	**Yes.** **CR19:** However, amendment is required. 1. Please present a combined budget with two columns for each country as opposed to two 2 budgets. 2. Please ensure that the IE and EC applied are towards the overall sum which can be capped at 10% for a regional proposal and not to the cost for each at 8.5% each.	**CR19: Not cleared.** 1. **Cleared:** Combined budget for the two countries is presented in Table 28 however, 2. **Not Cleared:** The EE Total presented in the Detailed budget (USD 2,429,236) does not coincide with the amount in the Project Component Table (Table 4) (USD 2,440,600) for the Project Execution Budget (Table 29) (USD	**CR19: Cleared** The figure has been amended to reflect USD 2,231,894 and the value are consistent in all tables. **Please see CAR 12 above to ensure the breakdown of the Total EE cost results in the same total as**	-

			2,440,600). Please address. 3. The IE and EE fees exceed the 10 % cap please adjust the budget accordingly.	**the other tables.**	
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators, in compliance with the Gender Policy of the Fund?	**Yes.** However, additional information is required. The project provides only a general summary regarding monitoring and evaluation (M&E) but has not presented a comprehensive and budgeted M&E plan complying with the guidelines of the Adaptation Fund. **CAR13:** 1. Please include a complete M&E plan where all monitoring activities are explicitly funded and include a description of how the M&E plan will track and manage environmental and social risks to ensure compliance with the Adaptation Fund's	**CAR13: Cleared** **1.** A complete and fully funded M&E plan is provided in Part III, Section D (Monitoring, Evaluation and Reporting, detailing all monitoring activities, roles, and processes. Environmental and social risk	-	-

		Environmental and Social Policy (ESP). 2. Please also ensure a commitment to sex-disaggregated data and gender-responsive indicators.	monitoring in line with the Adaptation Fund ESP is embedded within the M&E system and linked to Part II, Section L and Annex 9 (ESMP), with USP screening provided in Annex 10. Funding for all M&E activities is included under Part III, Section G (Project Budget) and IE-funded supervision is detailed in Table 21. **2.** Commitments to sex-disaggregated data and gender-responsive indicators are explicitly reflected in Part III, Section D and Section E (Results Framework, Table 22)		
	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	**Yes.** However, additional information is required. While the proposal seems to present a generic M&E framework, there is no			

		explanation to properly describe how the implementing entity (IE) fees would be allocated to M&E supervision, nor does it clearly state how IE fees will support M&E oversight. **CAR14:** Please explain in detail how the Implementing Entity (IE) fees will be allocated towards M&E supervision to furnish confirmation related to the financial policies of the Adaptation Fund. A detailed breakdown of how the Implementing Entity (IE) fee will support M&E supervision has now been included. IFAD's IE fee covers supervisory functions that are additional to project-financed M&E activities, including quality assurance of the M&E framework, oversight of data collection methods, compliance monitoring with AF policies, financial supervision of M&E expenditures, and quality assurance for the mid-term and final evaluations. A dedicated table specifying the exact IE fee allocations	**CAR14: Cleared** A detailed breakdown of how the Implementing Entity (IE) fee supports M&E supervision is provided in Part III, Section G (Project Budget), Table 21. This table itemises IE fee allocations across specific supervisory functions, including quality assurance of the M&E framework, oversight of data collection, compliance monitoring with the Adaptation Fund's Environmental and Social and Gender Policies, : financial supervision of M&E expenditures, and quality assurance for the mid-term and final evaluations. Additional narrative explaining	-	-

		to each M&E supervision function has been inserted in the proposal, in line with Adaptation Fund financial policy requirements.	these supervisory roles is provided in Part III, Section D.		
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	**Yes.** However additional information is required. The proposal identifies all 5 of the Afs core indicators below the results framework. **CAR15**: **1.** Please ensure that the project results framework is explicitly aligned with the Adaptation Fund's results framework by including at least one core outcome indicator (number of beneficiaries) and a second core indicator where relevant within the results framework. **2.** Please include core indicator tables as per the specified template for each core indicator identified as per the template at Methodologies for reporting Adaptation	**CAR15:** 1. **Cleared:** Results Framework, including Milestones, Targets and Indicators in Table 22 in Part III Section E has been updated. 2. **Cleared:** Core indicator tables template has been added to Section E as Table 23. 3. **Cleared:** These numbers have been corrected. 4. **Not Cleared** The AF Output Indicator for Component 3 does not coincide with the Outcome	**CAR15: Not cleared** 5. Please see CR16 in relation to this response.	**CAR15: Cleared** as per changes made in Table 27.

		Fund core impact indicators (**For fully-developed proposals**) (78 kB, DOC). **3.** At table F, please correct the total presented at the top right-hand side for grant amount. It currently reads as $11,705, 000 but should be $11, 454, 456. **4.** At Table 19 ~~F~~ please note that the outcome and outputs are supposed to correspond. Currently outcomes are different from outputs. Outputs should be associated with outputs. Please amend Table 19 ~~F~~ to reflect this.	Indicator for Objective 3.		
	10. Is a disbursement schedule with time-bound milestones included?	**Yes.** However, amendments are required. **CAR16:** Please remove the commas included which seem to represent decimal points in the budget and present a rounded budget.	**CAR16: Not cleared** Commas not removed. Please round the budget amounts in the table	**CAR16: Cleared** as per changes in Table 30.	-

ADAPTATION FUND

FULLY DEVELOPED PROPOSAL FOR REGIONAL PROJECT

PART I: PROJECT INFORMATION

Title of Project:	**Building Inclusive Resilience to Climate Change for Semi-Nomadic Agro-Pastoral Communities in the Transboundary Kunene River Basin**
Countries:	**Angola and Namibia**
Thematic Focal Area[1]:	**Disaster risk reduction and early warning systems**
Type of Implementing Entity:	**Multilateral Implementing Entity**
Implementing Entity:	**International Fund for Agricultural Development**
Executing Entities:	**Ministry of Environment, Angola** **Ministry of Environment, Forestry and Tourism, Namibia** **Regional, Food and Agriculture Organisation**
Amount of Financing Requested:	**$24,550,836 USD**

Letters of Endorsement (LOE) signed for all countries: Yes ☒ No ☐

NOTE: LOEs should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: https://www.adaptation-fund.org/apply-funding/designated-authorities

Stage of Submission:

☒This proposal has been submitted before including at a different stage (pre-concept, concept, fully developed proposal)

☐ This is the first submission ever of the proposal at any stage.

In case of a resubmission, please indicate the last submission date: ~~20/01/2025~~02/24/2026.

[1] Thematic areas are Food security; Disaster risk reduction and early warning systems; Transboundary water management; Innovation in adaptation finance.

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A. Project Background and Context

1. This project is designed to enhance the climate resilience of semi-nomadic agro-pastoral communities and smallholder farmers in the Kunene River Basin (KRB), a transboundary basin spanning approximately 106,500 km² across southern Angola and northern Namibia in Southern Africa. The KRB region faces increasing climate variability, with recurrent droughts, intensifying rainfall events, and growing water scarcity threatening livelihoods, food security, and ecosystems. Despite the basin's regional importance, there is no up-to-date assessment of surface and groundwater resources or of ecosystem goods and services, which undermines coordinated planning and sustainable management.
2. At the regional level, limited technical and financial capacity within the Permanent Joint Technical Commission constrains the ability of both countries to jointly commission climate-informed studies or manage water resources adaptively. At the national and local levels, particularly in rural Angola and northern Namibia, communities lack access to timely climate information, infrastructure for water storage and distribution, and climate-smart agricultural support. The scarcity of meteorological monitoring stations further limits the availability of localized climate data needed to inform effective adaptation planning at both village and basin scales. The project addresses these interlinked challenges by strengthening cross-border data systems, building institutional capacity for climate-resilient water governance, and delivering community-level adaptation interventions tailored to vulnerable agro-pastoral populations.

National Context: Namibia

3. **Geography:** Located in the south-western region of Africa, Namibia covers approximately 824,290 km² and has 1,500 km of coastline along the South Atlantic Ocean. Namibia is bordered by Angola to the north, South Africa to the south, Botswana to the east, and Zambia and Zimbabwe to the northeast. The country is arid, with the Namib Desert stretching along the western coast and the Kalahari Desert covering much of the eastern interior. Conditions become less arid towards the central plateau and the Great Escarpment, which lies between the plateau and the Namib Desert. Namibia's climate is characterized by frequent droughts, erratic and highly variable rainfall, wide temperature fluctuations, and limited water availability.
4. **Economy:** Namibia is an upper middle-income country, due to its mineral wealth and small population. While poverty has declined, job creation remains limited, and socio-economic inequalities from the apartheid era persist. The population was estimated to be approximately 3 million people in 2024, with a growth rate of about 2.2% annually resulting in one of the lowest population densities in Sub Saharan Africa. Half the population currently lives in urban areas, mainly in Windhoek, with urbanization expected to reach 72% by 2050. Namibia's 2024 GDP was $13.37 billion, with a 3.7%% growth rate that year. Unemployment is high at 19.1%). About 51% still live in rural areas and depend on agriculture and natural resources for their livelihoods.
5. **Human Development Index (HDI):** With an HDI of 0.665, Namibia is in the medium human development category. While this reflects steady progress in areas such as education and health, significant inequalities persist, particularly between urban and rural populations. High unemployment, especially among youth and women, and continued dependence on climate-sensitive livelihoods in rural areas, highlight the need for inclusive and climate-resilient development strategies**.**
6. **Food Security:** The country faces persistent food security challenges, due to its arid climate, recurrent droughts, and dependence on rain-fed agriculture. Over 70% of the population relies on subsistence farming and livestock rearing for their livelihoods, making them highly vulnerable to climate shocks. In drought years, household food production drops significantly, increasing reliance on food imports and government assistance. Subsistence farmers face ongoing threats from droughts, floods, poor farming methods, and inadequate access to credit, inputs, irrigation, and extension services are conditions disproportionately affecting women due to barriers in land ownership and decision-making. Malnutrition remains concerning, particularly among children in rural areas. Strengthening climate-resilient agricultural practices and water management are essential to enhancing food security in the country.
7. **Climate:** Namibia is widely recognized as the driest country in Sub-Saharan Africa, with 92% of its land classified as arid, semi-arid or hyper-arid. The country's climate is characterized by low, highly variable rainfall, high evapotranspiration rates, and frequent extreme weather events such as droughts and floods. Annual rainfall averages only 269 mm, with wide spatial variation, from less than 50 mm in the coastal and southern desert regions to around 650 mm in the far north and northeast, where the KRB is situated.
8. The rainfall is highly dependent on the seasonal southward movement of the Inter-Tropical Convergence Zone (ITCZ), typically bringing moisture during the austral summer months (October–April). However, the interannual variability in rainfall is among the highest in the world, largely influenced by climate oscillations such as El Niño–Southern Oscillation (ENSO) and the Subtropical Indian Ocean Dipole.[2] The arid baseline conditions, compounded by erratic rainfall, expose rural communities and key economic sectors—particularly agriculture, livestock, and water supply—to significant climate-related risks.

Recent Climate Trends

9. **Temperature:** Namibia has experienced significant warming over the past six decades. According to the Namibia Meteorological Service and international climate datasets (e.g., CRU, ERA5, CHIRPS), mean temperatures have increased by approximately 1.2°C since the 1960s. Notably, the frequency of hot days (maximum temperature >35°C) has increased, while the occurrence of cold nights (<5°C) has declined. This warming trend is most pronounced during the spring and early summer months (September–November), with inland areas experiencing the greatest temperature increases. These trends are consistent with broader Southern African patterns, where warming is occurring at approximately twice the global average, as highlighted in the IPCC Sixth Assessment Report (AR6).

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[2] Dirkx, E., Hager, C., Tadross, M., Bethune, S., & Curtis, B. (2008). Climate change vulnerability and adaptation assessment Namibia. Final Report. March. URL:http://www.landscapesnamibia.org/mudumu/sites/default/files/resources/Namibia%20Climate%20Change%20Vulnerability%20and%20Adaptation%20Assessment.pdf

10. **Precipitation:** Precipitation patterns in Namibia have become increasingly erratic. Long-term data does not indicate statistically significant decline in total annual rainfall, the timing, intensity, and the distribution of rainfall have shifted considerably. The rainy season is shorter and less predictable, with delayed onset, early cessation, and increased variability. Extreme weather events, such as intense rainfall leading to floods, as well as prolonged dry spells, are occurring more frequently. These changes have negatively affected soil moisture, rangeland conditions, and groundwater recharge.

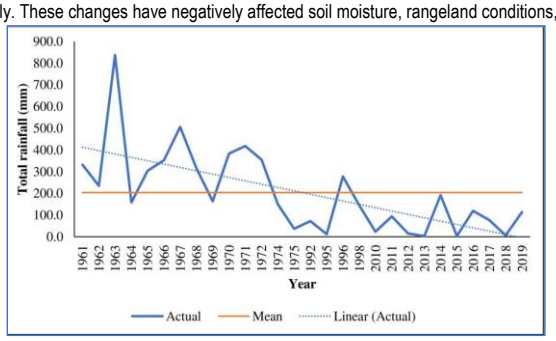

Figure 1: Total annual rainfall at Opuwo, Namibia, 1961-2019

11. Namibia also faces severe water scarcity from a hydrological perspective, caused by high temperatures, intense solar radiation, and low humidity which contributes to extreme evaporation rates, reaching up to 3,800 mm annually in the south and approximately 2,600 mm in the north. In most areas, evaporation exceeds rainfall by a factor of five, underscoring the country's acute water deficit.

Climate Change Projections

12. **Temperature**: Projections from global climate models (CMIP5 and CMIP6), including downscaled data used by the Namibia Meteorological Service and the Climate Service Center Germany (GERICS), indicate Namibia will continue to experience significant warming under all Representative Concentration Pathways (RCPs). Under the high-emissions scenario (RCP8.5), temperatures could rise by 2.5–4.5°C by 2080. [3]

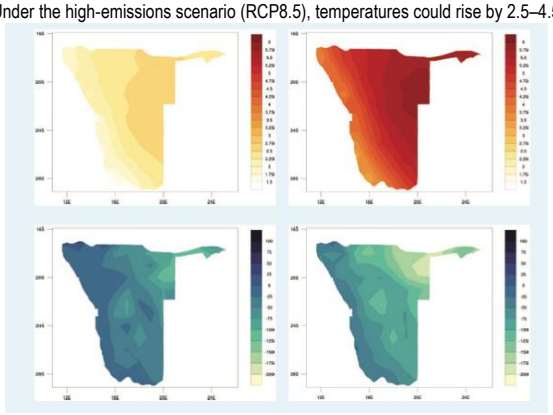

Figure 2: Multi-Model (CMIP5) Ensemble Projected Changes (32 GCMs) in Annual Temperature (top) and Precipitation (bottom) by 2040–2059 (left) and by 2080–2099 (right), Relative to 1986–2005 Baseline under RCP8.5

13. **Precipitation:** Rainfall projections are more uncertain; however, most models agree on a continued increase in rainfall variability and a possible reduction in total rainfall in the interior regions. Notably, dry season rainfall (April–October) may decline by as much as 5%–65%, while wet season rainfall may show localized increases. These changes will likely exacerbate existing pressures on water availability, food production, and ecosystem integrity**.** GERICS analysis projects total precipitation in Namibia could decline by up to 19% by the 2080s.
14. **Impact of Climate Change:** Namibia is regularly affected by a range of climate hazards, with drought being the most frequent and economically damaging. Over 2 million people were affected by the 2019 drought alone, leading the government to declare a state of emergency and roll out subsidies to assist farmers. Droughts typically result in widespread crop failure, livestock mortality, and food insecurity.[4] In recent decades, major drought episodes occurred in 1992–93, 1995, 2001–03, 2013, 2015–16, and 2019, each causing multi-million-dollar economic losses. The annual cost of drought-related damage is estimated at approximately US$175 million, while total economic losses from all climate hazards approach US$3.6 billion annually.

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[3] World Bank Climate Change Knowledge Portal

[4] GFDRR (2018). Namibia Hazard Report. URL: http://thinkhazard.org/en/report/172-namibia/

15. Flooding also poses a significant risk, particularly in northern Namibia and along the border with Angola. Seasonal floods in the Cuvelai and Kunene catchments affect over one million people, damaging infrastructure, displacing households, and heightening the risk of waterborne diseases such as cholera and malaria. Flood damage is estimated at US$100 million annually. Climate change (CC) is expected to amplify both drought and flood risks, due to higher temperatures, increased evapotranspiration, and changes in rainfall timing and intensity. [5]
16. In addition to drought, floods, pest and disease outbreak, Namibia faces increasing wildfire risk, particularly in dry woodland and savannah zones. Annually, wildfire burns 3 to 7 million hectares of land, threatening biodiversity, grazing lands, and livelihoods. [6] These fires are often human induced but are exacerbated by prolonged dry spells and increasing temperatures.

National Context: Angola Background

17. **Geography:** Located on the southwestern coast of Africa, Angola is bordered by Namibia to the south, the Democratic Republic of Congo to the north and northeast, Zambia to the east, and the Atlantic Ocean to the west. The country has diverse landscapes, including coastal plains, high plateaus, and mountainous regions. The western coastal area is marked by a narrow strip of lowlands, while the interior consists mainly of savannas and woodlands. Major rivers basins such as Zaire, Kwanza, and Cuando, Cubango and Cunene cross the country, playing an influential role in agriculture and hydropower.
18. **Economy**: Angola's economy is heavily reliant on oil production, which accounts for most of its GDP and export revenues. This dependence has made the economy vulnerable to external shocks, resulting in repeated episodes of macroeconomic instability hindering sustained growth and exacerbated poverty and inequality. In addition to oil, Angola has significant mineral resources, including diamonds, iron ore, and copper. Agriculture also plays a role, employing a large portion of the population, though it remains underdeveloped due to past conflicts and infrastructure challenges. In recent years, the government has focused on diversifying the economy by investing in sectors such as manufacturing, construction, and services to promote sustainable growth and reduce reliance on oil. Approximately half of Angolans work in agriculture (almost exclusively as subsistence farmers). The country has limited commercial agriculture. Outdated farming practices, poor soil fertility and low access to high-quality seeds and mechanization contribute to low productivity in the sector.
19. Despite some efforts to diversify the economy, most rural populations still lack access to essential services such as clean water, sanitation, and reliable infrastructure, limiting their ability to respond to and recover from climate shocks. High rates of informal employment (70%) and youth unemployment (28%) further compound socio-economic vulnerability, reducing institutional and community capacity for climate adaptation.
20. **Human Development Index (HDI):** The HDI reached 0.616 in 2023, up from 0.591 in 2022, placing the country in the medium human development category and ranking it 150th out of 193 countries. Since 1999, Angola's HDI has risen by more than 60%, from 0.369, reflecting notable progress in life expectancy, education, and income. Despite these gains, Angola's HDI remains below the global average of 0.744. High poverty rates, unequal access to quality education and healthcare, and persistent urban–rural disparities continue to hinder more inclusive development.
21. **Food Security:** Food security in Angola remains a pressing concern, particularly in rural areas where most of the population depends on subsistence agriculture. Despite the country's vast natural resources and agricultural potential, food production is frequently disrupted by climate variability, prolonged droughts, and poor infrastructure. Many households face challenges in accessing adequate and nutritious food due to poverty, limited market access, and insufficient agricultural inputs. According to recent assessments, a significant portion of the population, especially in southern provinces, experiences seasonal or chronic food insecurity. Efforts to improve food security in Angola focus on enhancing agricultural resilience, expanding irrigation, and improving rural livelihoods through targeted social protection programs.
22. **Climate:** Angola's climate is diverse, ranging from arid to tropical, shaped by its geographical features and latitudinal span. The country can be broadly divided into four climatic zones: a tropical humid zone in the north, a dry semi-arid zone in the south and southwest, a highland temperate zone in the central region, and an arid coastal zone in the west. Much of the country's rainfall occurs during the rainy season from October to April, influenced by the Inter-Tropical Convergence Zone (ITCZ). The coastal areas, especially in the southwest, are strongly affected by the cold Benguela Current, which brings dry conditions and suppresses rainfall. Inland, the central plateau experiences more moderate temperatures and higher precipitation. Overall, Angola has high interannual climate variability, and its climate is highly sensitive to global patterns such as the El Niño–Southern Oscillation (ENSO), which can lead to significant droughts or floods.

Recent Climate Trends

23. **Temperature:** The mean annual temperature in Angola has risen by approximately 0.2°C per decade since 1951, amounting to a total increase of around 1.4°C since the mid-20th century. Angola's climate spans a range of zones from arid to temperate and tropical. A comprehensive climate assessment carried out as part of the CCDR examined long-term climate trends and modeled projections through 2060. The analysis confirms a steady warming trend since the mid-century, with a notable acceleration in recent years. These findings are consistent with those of the Intergovernmental Panel on Climate Change (IPCC), which reported mean annual temperatures across Southern Africa rose by 1.04°C to 1.44°C between 1961 and 2015, alongside an increase in the number of hot days.[7]
24. **Precipitation**: Rainfall patterns in Angola are more variable and less predictable than temperature trends, with significant differences in both the direction and intensity of precipitation changes across regions. Notably, southern Angola has borne the greatest impact, experiencing recurring severe droughts over the past 30 years. The country's rainy season typically spans from October to April, driven by the movement of the Inter-Tropical Convergence Zone (ITCZ). Both temperature and rainfall fluctuate on annual and multi-year timescales, influenced by large-scale atmospheric patterns

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[5] Ibid

[6] Ibid

[7] Thiery, W. et al. 2021. "Intergenerational Inequities in Exposure to Climate Extremes." Science 374 (6564): 158–60. doi:10.1126/science. abi7339, 2022. "Africa."

and conditions over the cool South Atlantic Ocean. For instance, parts of southern Angola were unusually dry during the 1980s and 1990s, but saw wetter conditions in the 2000s and 2010s, while other areas experienced the reverse trend.

Climate Change projections:

25. **Temperature:** Temperatures in Angola are expected to continue rising, especially under a high-emissions scenario, while future rainfall patterns remain highly uncertain. The Angola CCDR analyzed two scenarios: a moderate-emissions pathway (RCP4.5) and a high-emissions pathway (RCP8.5). Under both, average annual temperatures across most of the country are projected to increase by 1–1.5°C between 2020 and 2040, compared to the 1981–2010 baseline. Between 2040 and 2060, temperatures could rise by 1.5–2°C under RCP4.5, and by 2–2.5°C under RCP8.5, with parts of the South potentially experiencing warming of 2.5–3°C. These changes have serious consequences for water availability, drought intensity, and extreme heat. According to additional IPCC-cited research, even if global warming is limited to 1.5°C, children born in Angola in 2020 are likely to face 7–8 times more heatwaves over their lifetime than those born in 1960. If global temperatures rise by around 2.4°C, aligned with current climate pledges, this could increase to over 10 times more heatwaves.[8]

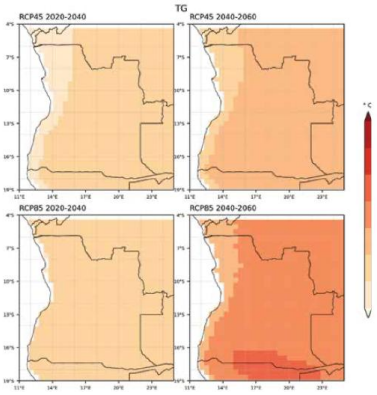

Figure 3: Projected change in mean annual temperature across Angola relative to the 1980–2010 average in 2040–2040 and 2040–2060 in a moderate- and high-emissions scenario (RCP4.5 and 8.5)

26. **Precipitation:** Future rainfall patterns in Angola are projected to vary widely by region. While total annual precipitation may remain relatively stable, the wet season is expected to become shorter but more intense, particularly in western provinces. Most river basins are likely to see reduced water availability, except for the North Coast, where increases are more probable.
27. Heavy rainfall events are projected to become more intense but less frequent, resulting in longer dry periods. The risk of extreme storms, measured by the maximum five-day precipitation index, is expected to rise by 5–10% between 2020 and 2040 compared to the 1981–2010 average, and by 10–15% between 2040 and 2060 under the high-emission RCP8.5 scenario. Similarly, dry spells, tracked by the consecutive dry-day index, are projected to increase nationwide, with southern Angola experiencing the largest rise during 2040–2060 under RCP8.5. According to a recent UN analysis, the proportion of the population affected by droughts could nearly double, from 7.5% (1979–2018 average) to 13% by the end of the 21st century, which is estimated to be approximately 8 million people annually. .[9]

Impact of Climate Change:

28. Angola is already experiencing severe and compounding impacts of CC, which are amplifying existing development challenges and disproportionately affecting the most vulnerable populations. In recent decades, the country has experienced increasingly erratic rainfall, rising average temperatures, prolonged droughts, and intensifying floods; all of which align with projected climate trends. These climate stressors are especially pronounced in southern Angola, including the KRB, where semi-arid conditions and limited infrastructure intersect with high poverty and low adaptive capacity.
29. Angola's most visible impact of CC is the increasing frequency and severity of droughts across the southern provinces. The past decade has seen the worst drought conditions in over 40 years, severely impacting food and water security. As of 2021, more than 3.8 million people were food insecure and 1.2 million faced critical water shortages. Recurrent droughts have led to widespread crop failure, livestock losses, and pasture degradation, disrupting agro-pastoral livelihoods and triggering displacement as families migrate in search of food and livelihoods.
30. Beyond drought, Angola is also exposed to climate-related floods, especially in urban and peri-urban areas where infrastructure is inadequate. High-intensity rainfall events frequently overwhelm drainage systems, damaging homes, transport networks, and increasing the spread of waterborne disease, particularly in informal settlements already strained by population growth and rural-urban migration.
31. Water scarcity is a growing concern, even in years of average precipitation. Degraded water infrastructure, limited hydrological storage, and overexploited groundwater sources leave many communities, particularly in Cunene, Namibe, and Huíla, without reliable access to safe water. During

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[8] Thiery, W. et al. 2021. "Intergenerational Inequities in Exposure to Climate Extremes." Science 374 (6564): 158–60. doi:10.1126/science. abi7339.
See also discussion in Trisos et al., 2022. "Africa."

[9] CIMA and UNDRR. 2019. "Disaster Risk Profile – Angola." Nairobi: CIMA Research Foundation and United Nations Office for Disaster Risk Reduction. http://riskprofilesundrr.org/documents/1850

droughts, up to 80% of boreholes are rendered non-functional, undermining public health, agricultural productivity, and increasing tension over shared resources.

32. CC also threatens Angola's ecosystems. Dry forests, grasslands, and wetlands are increasingly degraded due to prolonged dry spells and shifting climate zones. This reduces biodiversity and weakens essential ecosystem services such as water regulation and carbon storage. These impacts disproportionately affect Indigenous communities and rural women who depend directly on natural resources for food, income, and cultural practices.
33. These risks are intensified by Angola's broader development challenges, including high poverty (32% below the national poverty line), youth unemployment, low rural infrastructure coverage, and widespread reliance on subsistence agriculture. These structural vulnerabilities limit institutional and community capacities to anticipate, withstand, and recover from climate shocks.
34. Critically, climate impacts are not experienced equally. Women, children, elderly persons, and semi-nomadic groups in underserved areas bear the greatest burden. Gender-based responsibilities in food production, water collection, and caregiving heighten exposure to climate stress, while systemic inequalities limit access to resources, decision-making, and resilience-building opportunities. Without gender-responsive and inclusive adaptation measures, CC will deepen existing vulnerabilities.

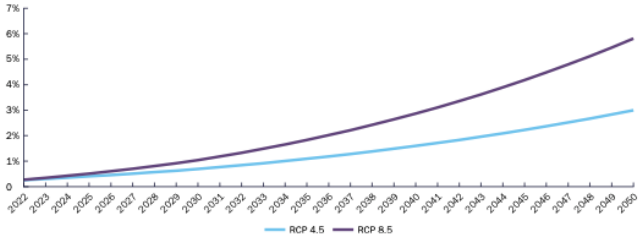

Figure 4: Projected loss of GDP due to climate change impacts under RCP4.5 and RCP8.5 (Source Angola Country Climate and Development Report)

35. National adaptation strategies in both Namibia and Angola consistently prioritize:
    - Water resource management: including transboundary basin cooperation, groundwater recharge, and reservoir improvements.
    - Agriculture and food security: through climate-smart techniques, irrigation infrastructure, and gender-responsive training and finance access.
    - Renewable energy and hydropower resilience: vital for energy security under changing hydrological conditions.
    - Urban resilience and water infrastructure: for flood protection, sanitation, and municipal planning; and
    - Gender-equitable, rural adaptation: emphasizing women's access to land, decision-making, services, and early warning systems (EWS).

Project Location: KRB

36. The KRB, spanning Namibia and Angola, is of critical strategic importance for climate resilience, ecological stability, and socio-economic development in the region. Despite the Kuenen River being one of the perennial water sources in this semi-arid landscape, the basin is increasingly vulnerable to the compound effects of CC, ecosystem degradation, and institutional limitations. These drivers are exacerbating water insecurity, undermining traditional livelihoods, and increasing the exposure of vulnerable populations, particularly women, youth, and Indigenous pastoralist communities, to climate-related shocks.
37. The basin's diverse ecosystems, including wetlands, dry forests, and riparian corridors, provide essential eco-system services such as groundwater recharge, water purification, drought buffering, and carbon sequestration. However, these natural assets are being degraded due to overgrazing, deforestation, unsustainable land use practices, and climatic extremes. The loss of ecosystem integrity is reducing the natural adaptive capacity of the basin and compromising the resilience of the communities who depend on these services for food, water, and income.
38. **Subsistence Livelihoods and Climate-Induced Vulnerabilities**: Most of the population in the KRB relies on subsistence farming and semi-nomadic pastoralism for their livelihoods. These traditional strategies, once key to resilience in dryland ecosystems, are being increasingly undermined by CC. Prolonged droughts and more erratic rainfall patterns have reduced the availability of grazing land and water points, triggering earlier and longer transhumance periods, diminishing livestock productivity, and increasing tensions over dwindling natural resources. Adaptive capacity is further limited by the lack of access to modern agronomic techniques, improved seed varieties, irrigation technologies, and timely climate services. Without targeted investments to improve these conditions, households remain vulnerable to climate shocks and are becoming more frequent and severe.
39. Climate projections for Angola, addressed in detail in preceding sections, suggest a continued warming trend under both moderate and high emissions scenarios. Between 2020 and 2040, average temperatures are projected to increase by 1–1.5°C above the 1981–2010 baseline, rising to 2–2.5°C by mid-century under RCP8.5. These temperature increases are expected to accelerate evapotranspiration and soil moisture loss, heightening water scarcity in the southern regions, including the Angolan portion of the Kunene Basin. Rainfall patterns, while uncertain, are projected to become more erratic, with shorter and more intense wet seasons punctuated by longer dry periods. This volatility, coupled with increased extreme weather events, will further strain groundwater and surface water systems that are already poorly managed and inadequately monitored. [10]
40. In the lower KRB, potential evaporation already exceeds rainfall by a factor of 5 to 10, making even modest increases in temperature significantly more impactful. The result is chronic drought conditions that undermine food production, drive livestock mortality, and heighten water insecurity. According

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[10] Kusangaya, S., Warburton, M. L., Van Garderen, E. A., & Jewitt, G. P. (2014). Impacts of climate change on water resources in southern Africa: A review. *Physics and Chemistry of the Earth, Parts a/b/c*, 67, 47-54.

to UN estimates, the percentage of Angola's population affected by drought could nearly double by the end of the century, reaching over 13%, with the majority concentrated in southern and central provinces. This results in heightened food insecurity and economic vulnerability, particularly among marginalized groups.

41. **Disproportionate Impacts on Women, Youth, and Marginalized Groups:** Gender inequalities and socio-economic marginalization amplify the vulnerability of specific groups within the KRB. Women, who play a central role in agricultural production, food preparation, and water collection, face disproportionate burdens during periods of drought and resource scarcity. Despite their responsibilities, they frequently lack access to climate information, land tenure, financial services, and agricultural extension support. Youth, meanwhile, face rising unemployment and limited livelihood alternatives, contributing to migration and social dislocation. [11]
42. Without targeted, gender-responsive adaptation interventions, climate impacts are expected to exacerbate these inequalities. Enhancing women's access to climate-resilient inputs, land rights, and decision-making forums is not only an equity imperative but also a critical determinant of project success and sustainability.
43. **Gaps in Infrastructure, Data, and Institutional Coordination:** Despite the basin's vulnerability, critical gaps remain in climate monitoring, water infrastructure, and institutional coordination. In Angola, hydrological and meteorological infrastructure is sparse, and localized forecasting is limited, constraining anticipatory action and climate-informed planning. In Namibia, while national frameworks exist, the lower Kunene remains underserved by EWS, particularly in remote areas. As a result, drought and flood risks continue to inflict preventable damage on vulnerable communities who lack access to timely information or formal response mechanisms. Transboundary water governance, managed under the Permanent Joint Technical Commission (PJTC) between Angola and Namibia, also faces institutional constraints. [12] Limited resources, fragmented planning processes, and insufficient coordination mechanisms impede the development and implementation of climate-resilient water management strategies across the basin. These institutional bottlenecks weaken adaptive capacity and inhibit basin-wide approaches to early warning, disaster risk reduction (DRR), and long-term resilience building. [13]
44. **Chronic Vulnerability and the Need for Integrated, Community-Based Responses**: The chronic and recurring nature of drought across the KRB, compounded by weak socio-economic conditions, entrenched poverty, and limited institutional capacity, has severely eroded the coping ability of rural communities. Local economies have also been undermined by repeated climate shocks, which reduce agricultural output and strain social protection systems. Communities are caught in a downward spiral of vulnerability that limits their ability to recover, rebuild, and adapt. This project seeks to address these challenges by embedding gender-responsive, ecosystem-based, and locally led disaster risk reduction and adaptation strategies into the heart of basin-level planning. These strategies are being co-designed with community members, including women and traditional leaders, and are informed by a combination of scientific data and Indigenous knowledge systems.
45. **Agricultural Sensitivity and Food Security Risks:** Agricultural systems in the KRB are extremely sensitive to fluctuations in climate, especially in low-rainfall zones where food insecurity is already prevalent. Periodic droughts routinely result in the loss of livestock and reduced yields of key staple crops such as sorghum and millet. In this subsistence economy, both women and men are deeply involved in agricultural production.[14] However, women in particular shoulder a disproportionate workload in land preparation, planting, weeding, and harvesting, often in addition to their responsibilities for household food security and water collection. CC, especially in the form of delayed rainy seasons, mid-season droughts, and shortened growing cycles, has rendered agricultural outcomes increasingly uncertain. As temperatures rise and rainfall become more variable, millet and maize yields are projected to decline, aggravating food insecurity and deepening gender disparities in access to resources and nutrition.[15]
46. **Impacts on Pastoralism and Livestock Production:** The viability of pastoralism in the basin is also under significant threat. Increasing aridity and the degradation of rangelands are pushing communities toward smaller and more drought-tolerant livestock species such as goats and sheep. During extended dry periods, animals are forced to consume toxic plants that are among the first to regenerate on overgrazed lands, resulting in elevated mortality and reduced productivity. CC is also influencing the spread of livestock diseases, with higher temperatures likely to increase the prevalence of tick-borne illnesses, although tsetse fly–borne diseases may decline. Livestock, often the primary asset for rural households, is critical to food security, income generation, and social status. Their loss can result in severe social disruption, particularly in Indigenous and semi-nomadic communities.

The project's target population

47. The KRB is home to approximately 3 million people and between 3 to 5 million livestock. The basin spans an area subject to a wide range of climate vulnerabilities described above, that severely impact the livelihoods and resilience of its predominantly rural, agro-pastoralist populations. The Kunene River stretches 1,050 km and has a mean annual discharge of 5.5 km³ at its mouth, yet its potential, as well as its conservation, remain exposed to limited infrastructure and national and cross border coordination challenges.
48. During both the concept note and full project development phase, consultations were carried out in strategic areas of the KRB to ensure site selection aligns with community needs, climatic vulnerability, and project feasibility. Initial consultations focused on Matala and Ombadja (Angola) and Epupa and Ruacana (Namibia), with further consultations in Chitado commune (Kutanga and Mandave communities) in Angola and additional areas in Okanguati and Opuwo in Namibia. These discussions helped refine the selection of project areas based on vulnerability to climate shocks, population dependency on climate-sensitive livelihoods, and institutional capacity for adaptation planning.

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[11] Southern African Development Community. (2016). Regional Humanitarian Appeal. https://www.sadc.int/sites/default/files/2021-08/SADC_Regional_Humanitarian_Appeal_June.pdf

[12] ibid.

[13] ibid.

[14] https://www.ipcinfo.org/ipc-country-analysis/details-map/en/c/1157149/?iso3=NAM

[15] Kusangaya, S., Warburton, M. L., Van Garderen, E. A., & Jewitt, G. P. (2014). Impacts of climate change on water resources in southern Africa: A review. *Physics and Chemistry of the Earth, Parts a/b/c*, *67*, 47-54.

49. The target areas include Epupa Constituency in Kunene Region and Ruacana in Omusati Region. Kunene is among Namibia's poorest regions, with a multidimensional poverty rate of 64.1%, and a population heavily reliant on subsistence and nomadic pastoralism.[16] Epupa Constituency, with 26,500 people, is a prioritized due to high poverty levels, climate vulnerability, natural resource degradation, and underdeveloped infrastructure. Ruacana, a semi-arid area with average rainfall between 350–500 mm per year, is characterized by rural livelihoods highly sensitive to climate variability.[17] Additionally, these areas suffer from limited access to services and low institutional capacity, which further exacerbate their exposure to climate risks.
50. In Angola, selected areas are located within Cunene and Huila provinces, both of which face recurring droughts and food insecurity. Huila Province has a population exceeding 3.1 million, with Matala Municipality hosting more than 335,000 people. Cunene Province is home to 1.27 million people, with Ombadja and Curoca municipalities particularly hard-hit by climate shocks.[18] These municipalities feature fertile soil and untapped groundwater resources but lack modern agricultural inputs and climate-resilient technologies. The commune of Chitado in Curoca was selected for its population of approximately 27,700 semi-nomadic agro-pastoralists, whose vulnerability to climate extremes is compounded by limited access to services and EWS. The selected locations reflect the core vulnerabilities discussed in the climate rationale—chronic drought, degraded rangelands, food insecurity, and weak institutional systems. These factors not only justify the targeting of these communities but also underscore the urgency for targeted adaptation interventions that enhance water security, strengthen EWS, build local capacity, and foster transboundary cooperation. The project aims to build climate resilience where it is most needed and where climate impacts are already undermining development gains.
51. **Semi-Nomadic pastoralists groups**: The KRB is home to two distinct Indigenous groups, the Himba and the Zemba, whose semi-nomadic agro-pastoralist livelihoods are deeply intertwined with the dryland ecosystems of southern Angola and northern Namibia. The Himba are comprised of approximately 50,000 people across Angola and Namibia, while the Zemba are comprised of around 20,000 to 30,000. Both communities maintain traditional herding and subsistence farming systems, relying on livestock mobility, seasonal water access, and customary land governance to manage their rangelands. With ancestral ties and linguistic similarities as part of the broader Herero-speaking cultural family, the Himba and Zemba share common ecological knowledge, social norms, and spiritual relationships with the land.
52. Despite these similarities, the two groups maintain distinct ethnic and cultural identities, with differences in settlement patterns, traditional leadership structures, and socio-political recognition in national contexts. The Himba, more concentrated in Namibia, historically resisted sedentarisation policies, while the Zemba, in Angola and Namibia, face encroachment on their customary lands from extractive industries and agricultural expansion.
53. Both groups are reliant on livestock production, a livelihood increasingly undermined by erratic rainfall, drought, and rangeland degradation, leaving them highly vulnerable to the impacts of CC, particularly recurrent droughts, erratic rainfall, and the degradation of grazing lands and water sources. Gender roles in both communities are sharply defined: men are responsible for livestock management and community governance, while women and girls are responsible for most of the household labor, food preparation, water collection, and caregiving. These roles result in disproportionate exposure of women and children to climate-related stresses. Recent consultations indicate that while traditional knowledge remains strong, access to climate information, basic services, and adaptation support is limited—exacerbating vulnerabilities.
54. This project will ensure the inclusion of both Himba and Zemba communities through culturally appropriate, gender-responsive approaches that recognize their unique identities and shared challenges. Emphasis will be placed on strengthening water security, supporting sustainable land use, and promoting Indigenous knowledge in climate-resilient livelihoods,
55. These socio-ecological pressures, especially for Indigenous and marginalized groups, underscore the urgent need for inclusive, community-based adaptation approaches address both gender and Indigenous rights. A socially inclusive Disaster Risk Reduction (DRR) framework grounded in Ecosystem-based Adaptation (EbA) and focused on water security and sustainable land use would strengthen adaptive capacity, reduce vulnerability, and support more equitable development across the basin.
56. **Gender Mainstreaming Approach:** To address constraints faced by rural women and promote gender equality, the project will adopt an inclusive approach ensuring both women and men benefit equitably from its interventions. This process will be built on community engagement through a diagnostic process conducted at the start of the project and repeated annually to identify and engage all relevant socio-economic groups. Targeting and social inclusion will be guided by this diagnostic process and implemented by selected a gender and indigenous people's specialist.
57. The Gender Action Learning System (GALS), a participatory learning approach to promote gender equality, will be used to strengthen inclusive decision-making, and ensure women's empowerment in planning, implementation, and evaluation processes. The project's gender mainstreaming approach aims to achieve several key objectives: 1) ensure women and men respectively account for 60% and 40% of the beneficiaries of capacity building, training, and access to productive assets. In certain interventions, services and trainings will target women exclusively (100%). 2) to enhance women's decision-making voice at both household and community levels. 2) Leadership training integrated Farmer Field Schools (FFS) programs and climate change and nutrition training targeting women and youth. 3)Women will be encouraged to form groups, and their leadership and negotiation capacities will be strengthened to facilitate meaningful participation in community planning. 4) Women will hold at least 50% of representative positions (e.g., in committees) and 5) gender-awareness training, including modules on gender-based violence (GBV), will be provided to both men and women at household and community levels, including village leaders.
58. These programs aim to expand women's access to skills and knowledge and build leadership capacity. Under Outcomes 1.2 and 3.1, 50% of beneficiaries of trainings in areas such as climate-resilient soil and water conservation, and water management will be women. Skill development will aim to enhance the well-being of women as well as their families – focusing on cultivation of high nutrition climate resilient crops under Outcome 3.1. This training will include information on climate smart agriculture (CSA) and high nutrition drought resistant crops.

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[16] https://kunenerc.gov.na/kunene-regional-profile

[17] http://www.omusatirc.gov.na/documents/550777/552716/Omusati_Regionall_Profile/15467267-7686-429c-a7fc-a18651d9184c

[18] Angola: Administrative Division (Provinces and Municipalities) - Population Statistics, Charts and Map (citypopulation.de)

59. Project staff and extension service providers will receive training on gender-related issues, including gender sensitivity and GBV. The project will ensure the development, adaptation, and oversight of these modules and curricula, which will be used by Community Facilitators, drawing on the expertise of the indigenous person and gender specialist.

Project area selection process

60. A comprehensive, three-tiered consultation process guided the selection of the project's target areas. First, national-level consultations were conducted with government entities responsible for CC, agriculture, and disaster risk management, along with civil society organizations and development partners. These discussions informed overall priorities and alignment with national adaptation strategies. Subnational consultations also took place with provincial and district-level political and traditional authorities. These stakeholders played a key role in identifying climate-vulnerable communities within their jurisdictions and validating the selection of proposed intervention sites. Most importantly, the communities were directly engaged. Through structured dialogues and participatory assessments, communities gave feedback on the local impacts of CC, expressed adaptation priorities, and co-developed potential solutions that reflected their specific realities.

61. Based on the consultations, the project was designed to be implemented across the KRB, in five administrative areas (detailed in the table and map below). This area constitutes the Core Project Area, targeting 54,200 direct beneficiaries (36,692 in Angola and 17,508 in Namibia), with an emphasis on inclusion, 50% women and 20% youth. In addition, the broader project area population of approximately 833,279 people will benefit indirectly. These indirect beneficiaries will be covered by basin-wide Disaster Risk Reduction (DRR) Plans and the Multi-Hazard Early Warning System (MH-EWS) and will gain increased access to food and market products generated through the project's resilience-building activities.

Table 1: Core Project Area and Project Target Beneficiaries

Country	Province/Region	Local administrative area	Population	Targeted direct beneficiaries
Angola	Huila	Matala Municipality	335,118	13,968
	Cunene	Ombadja Municipality	391,628	13,970
		Curoca Municipality	52,781	8,754
Namibia	Kunene region	Epupa Constituency	26,491	8,754
	Omusati region	Ruacana Constituency	27,261	8,754
Total			833,279	54,200

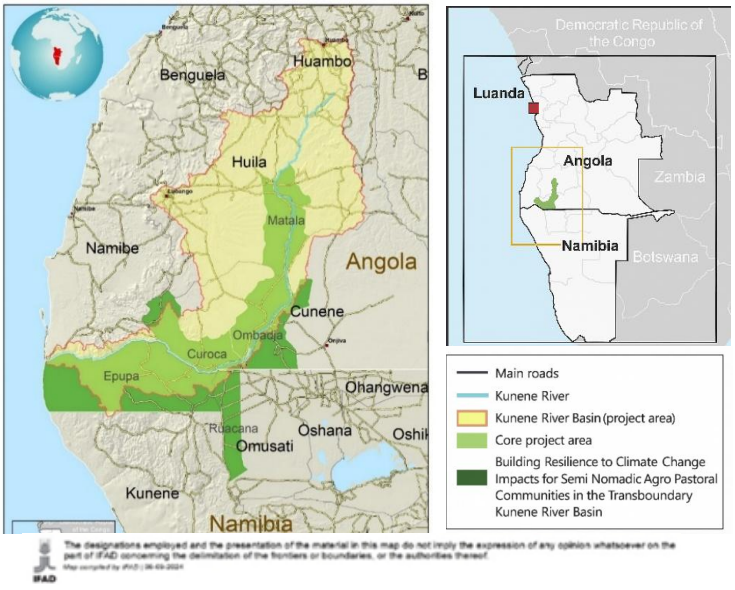

Figure 5: Map of the project area.

B. Project Objectives

94. The overall objective of the project is to enhance the climate resilience and adaptive capacity of vulnerable communities, particularly semi-nomadic agro-pastoralists, and smallholder farmers, across the transboundary region of the KRB in Angola and Namibia. This will be achieved by strengthening

transboundary water governance, improving access to localized climate information, and implementing community-driven adaptation measures that support sustainable livelihoods, food security, and ecosystem health in the face of increasing climate variability. In addition, the project is designed to improve cross-border and regional knowledge sharing, as well as institutional capacity to manage climate risks through inclusive, data-driven governance and awareness-building initiatives.

- This overarching goal aligns directly with the project's four main thematic components:
- Disaster Risk Reduction Planning through Ecosystem-based Adaptation (EbA).
- Implementation of Multi-Hazard Early Warning Systems.
- Inclusive, Community-Based Adaptation Interventions; and
- Climate Change Knowledge Generation and Institutional Capacity Building

95. Each component is designed to reinforce the others, creating a cohesive, system-based approach addressing the socio-ecological vulnerabilities in the KRB. Together they uphold the Adaptation Fund's principles of sustainability, gender equity, and stakeholder inclusion, ensuring that climate action benefits the most marginalized, including women, youth, and pastoral communities. The location and type of activities under this project were identified through an in-depth desktop review, expert interviews, and targeted stakeholder engagement with intended beneficiaries, including women and other marginalized group. These efforts helped to ensure that the proposed interventions are locally relevant, socially equitable, and environmentally appropriate.
96. To further ensure responsiveness to local realities, four key objectives have been identified under the project's overarching goal. These objectives were shaped through extensive consultations with UN agencies, national and local government stakeholders, non-governmental organizations, and most importantly, the vulnerable communities themselves. Engagement processes focused on identifying community-level adaptation needs and priorities, which were then validated through a comprehensive review of regional climate assessments, scientific literature, and stakeholder inputs.
97. Additionally, these four core objectives are supported by three crosscutting, multi-level objectives aimed at generating measurable impact on the local, national, regional, and transboundary scales. Table 2 provides a detailed breakdown of these objectives and their associated outputs.

Table 2: Key objectives and cross-cutting multi-scale objectives

Key Objective 1	Key Objective 2	Key Objective 3	Key Objective 4
Vulnerable communities and institutions in the KRB have improved capacity to anticipate, prepare for, and respond to climate-related hazards through inclusive, ecosystem-based disaster risk reduction planning approach and adapted agriculture and water practices	A fully operational, transboundary MH-EWS actively used by governments and local communities or informed, climate-resilient decisions. Supported by strong cross-border institutional coordination, real-time data generation and sharing, adaptive infrastructure and strengthened local and institutional capacities to interpret, communicate, and act on the information.	Target communities implement inclusive, gender-responsive adaptation actions that enhance water security, food production, and ecosystem integrity supported by cross-border collaboration and regional knowledge sharing to strengthen climate resilience across the KRB.	Increased knowledge and awareness of climate risks and adaptation options are strengthened, and institutions and communities are better equipped to manage gender-responsive adaptation efforts
CCMO1: To promote water security[19] in the KRB			
CCMO2: To promote collaborative governance through multi-scale hydro diplomacy processes			
CCMO3: To promote inclusive basin-wide sustainable natural resource planning and management			

98. Each project component directly supports AF's Strategic Objectives. Component 1 aligns with the objective of enhancing resilience of vulnerable communities by co-designing a gender-inclusive, ecosystem-based Disaster Risk Reduction Plan, rooted in community needs, ecological assessments, and stakeholder engagement. Component 2 contributes to reducing climate-induced risks and promoting EWSs by establishing a Multi-Hazard Early Warning System (MH-EWS) using locally relevant, real-time climate data and analytics to enable proactive community-level responses. Component 3 targets improving the resilience of natural systems and promoting sustainable water resource management, through the restoration of degraded rangelands, expansion of drought-resilient agriculture, and construction of water infrastructure such as rainwater harvesting systems and groundwater access points. Lastly, Component 4 supports the objective of building institutional and community capacity for climate adaptation, by enhancing awareness, knowledge sharing, and coordination mechanisms across local and regional stakeholders, including women and marginalized groups. Together, the components demonstrate clear coherence with the Adaptation Fund's goals and enable aggregation into its results-based monitoring system. To ensure that the project objectives are met inclusively, a specific gender-focus is integrated throughout, aimed to increase female leadership roles in climate adaptation activities, ensuring their active participation in the decision-making processes at the community, national, and regional

[19] UN-Water proposes the following definition for water security: "The capacity of a population to safeguard sustainable access to adequate quantities of and acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability." UN Water. (2013). What is water security? https://www.unwater.org/sites/default/files/app/uploads/2017/05/unwater_poster_Oct2013.pdf

levels. A study by the World Bank[20] found that women's participation in climate governance significantly improves the effectiveness and sustainability of adaptation strategies. The project will incorporate gender-responsive strategies in every aspect of the implementation, from designing infrastructure to monitoring and evaluation.

99. The direct beneficiaries are intended to be the semi-nomadic agro-pastoral indigenous community members and smallholder farmers that are poor and highly vulnerable to current and projected climate risks. It is anticipated that the project would benefit an overall **54,200 beneficiaries** directly (approximately 6,377 households)[21] through various adaptation interventions. This is the combined population of Chitado Commune in Angola and Epupa Constituency in Namibia. It is estimated that a further, people, i.e., the remaining population of the project area, will indirectly benefit from awareness campaigns on CC adaptation and disaster risk reduction, as well as early warnings of extreme or unfavorable weather conditions/events.

C. Project Components and Financing

Table 3: Project Components and Budget Allocations

Project Components	Expected Outcomes	Expected Outputs	Amount for Angola (USD)	Amount for Namibia (USD)
Component 1. Co-design and implementation of a Disaster Risk Reduction Plan through eco-system-based adaptation (EbA) in the KRB	1.1 Improved availability and effectiveness of DRR Plan co-designed and implemented by beneficiary communities and stakeholders.	1.1.1 Knowledge gaps identified and addressed through a Water Security Assessment, Ecosystem Goods and Services Valuation, and community-based climate vulnerability and needs assessments to support the development of the KRB: EbA-DRRP. 1.1.2 A Basin-wide gender inclusive DRR Plan, with a focus on EbA, developed and validated.	$1,053,024	$1,053,024
	1.2 Strengthened stakeholder dialogue, inclusive participation, and co-planning for integrated DRR and eco-system-based adaptation across the KRB	1.2.1 A comprehensive report documenting stakeholder engagement processes with beneficiary communities (including gender and ethnic subgroups), civil society, private sector, and government actors.		
Component 2. Implementation of a satellite-based Multi-Hazard Early Warning System for the KRB	2.1 Enhanced technical capacity and institutional readiness for climate risk monitoring and inclusive, locally led adaptation at the micro-climate level in the KRB	2.1.1 Weather stations installed in key micro-climate zones of Kunene River Basin, in collaboration with national meteorological agencies. 2.1.2 Hydrometric stations installed along the Kunene River, in partnership with the national hydrological agencies	$2,327,000	$1,299,000
	2.2 Communities and institutions in the KRB effectively use timely and accurate multi-hazard early warning information to prepare for and respond to climate-related risks.	2.2.1 Multi-level KRB: MH-EWS co-designed and validated by governments and local communities, integrating indigenous knowledge. 2.2.2 Operational Big Data Analytics platform developed for real-time capture, monitoring, and analysis of EWS data, with an accessible, user-friendly dashboard tailored to decision-makers and community users. 2.2.3 KRB MH-EWS operationalized using a cross-border, multi-level, multi-sectoral and multi-disciplinary framework. 2.2.4 Data from MH-EWS translated into locally relevant and easily understandable weather alerts for local communities use and action.		
Component 3. Inclusive, community-based adaptation actions are co-designed and implemented to strengthen climate-resilient livelihoods, natural resource management, and water security in the KRB.	3.1 Community prioritized, climate-informed adaptation interventions implemented in collaboration with local and national authorities, based on early warning alerts and seasonal forecasts generated under Component 2 (MH-EWS).	3.1.1 Rainwater harvesting and retention infrastructure constructed or rehabilitated to improve water availability for domestic and agricultural water access, particularly during dry periods. 3.1.2 Groundwater access improved through small scale infrastructure to support home gardening, and household water supply. 3.1.3 High nutrient, drought-tolerant crop varieties promoted through farmer field schools, demonstrations, and extension services. 3.1.4 Degraded rangeland restored through reseeding, rotational grazing, and soil improvement techniques to enhance drought-resistant fodder availability and ecosystem health.	$6,660,000	$6,660,000
	3.2 Improved collaboration and coordination among development partners and stakeholders within the KRB.	3.2.1 An inclusive multi-stakeholder climate adaptation coordination forum established and operationalized to enhance alignment, knowledge sharing, and inclusive decision-making in the KRB		
Component 4. Strengthening awareness, knowledge, and capacity to adapt to CC and variability	4.1 Targeted populations in the KRB demonstrate increased awareness, understanding, and ownership of CC adaptation and disaster risk reduction processes, resulting in more inclusive participation and leadership in locally led adaptation planning and implementation. 4.2 Strengthened institutional capacity at local and regional levels to manage	4.1.1 Knowledge of climate risks, adaptation strategies, and the ecological dynamics of the KRB is generated, shared, and used to inform inclusive adaptation planning and resource management. 4.1.2 Kunene River Awareness Kit (RAK) online portal updated and reactivated with gender-responsive climate smart content and community outreach tools. 4.1.3 Three Case studies from the project developed and submitted to knowledge platforms such as IFAD, FAO, SADC-GMI and WaterNet for wider dissemination. 4.2.1 Strengthened institutional capacity at local and regional levels to manage gender-responsive, locally led adaptation interventions effectively.	$517,500	$517,500

[20] World Bank. (2019). "The Role of Women in Climate Change Governance." World Bank Group.

[21] https://www.researchgate.net/figure/The-size-of-pastoral-Himba-households_tbl1_238489569

	gender-responsive, locally led adaptation interventions effectively.			
Total				$20,087,048
Project Execution cost (up to 10% of the Total Project Cost)				$2,231,894
Total Project Cost				$22,318,942
Project Cycle Management Fee charged by the Implementing Entity (up to 10% of the Total Project Cost)				$2,231,894
Amount of Financing Requested				$24,550,836

D. Projected Calendar

Table 4: Projected Calendar for Project Implementation

Milestones	Expected Dates
Start of Project Implementation	November 2026
Mid-term Review	May 2028
Project Closing	May 2032
Terminal Evaluation	March 2033

PART II: PROJECT JUSTIFICATION

A. Description of the project components

100. The project's four interlinked components have been structured to build on and strengthen one another, creating cohesive, transboundary climate resilience in the KRB by integrating community-led adaptation, technological innovation, and inclusive governance. Core interventions include piloting sustainable land and water management practices to address food and water security, deploying a cross-border MH-EWS to enhance disaster preparedness, and strengthening institutional frameworks to support coordinated, gender-responsive adaptation.
101. Through these actions, vulnerable communities gain the knowledge, tools, and structures needed to anticipate and respond to climate hazards such as droughts and floods. The project draws on lessons learned from past initiatives, directly involves local stakeholders, including women and Indigenous groups, and institutionalizes the exchange of climate data and traditional knowledge.
102. A key innovation is the operationalization of a transboundary MH-EWS, supported by weather and hydrometric stations across Angola and Namibia. This system enables real-time, cross-border sharing of climate and hydrological information between national agencies, local communities, and basin authorities. In doing so, it strengthens coordinated emergency responses, supports long-term water planning, and bridges governance gaps. Ultimately, the project delivers not only locally driven adaptation and sustainable livelihoods but also a replicable model for regional climate resilience, one that is grounded in community priorities and capable of withstanding future climate challenges. See Annex 4 for the project's Theory of Change.
103. This structure supports integrated, inclusive, and adaptive action that is both community-led and institutionally anchored across national boundaries. The design responds directly to observed and projected impacts of CC in the basin, particularly increasing temperature, erratic rainfall, prolonged droughts, and flash flooding. Regional climate modeling and scenario analysis under RCP4.5 and RCP8.5 project up to a 25% decline in rainfall reliability, more frequent extreme weather events, and rising average temperatures by 2050. These changes are expected to significantly increase evapotranspiration, reduce catchment runoff by over 40%, and decrease water availability for rain-fed agriculture and ecosystems, thereby intensifying pressure on already vulnerable rural communities and ecosystems.[22].
104. **Component 1** lays the groundwork for the entire intervention through the participatory co-design of a gender-responsive Disaster Risk Reduction Plan (DRRP). This process is informed by ecological assessments and built upon community-defined priorities, ensuring that strategies in both countries are locally grounded, ecosystem-based, and aligned at the transboundary basin level. The participatory methodology promotes ownership, equity, and social cohesion while embedding traditional and local knowledge into risk governance frameworks that are responsive to future climate stressors.
105. **Component 2** addresses the technical and institutional capacities required to operate early action by establishing a MH-EWS. This system captures real-time weather and hydrological data at the micro-climate scale, and climate forecasting enabling timely and targeted responses to actionable alerts. It is designed to factor in downscaled climate projections and uncertainty scenarios to enable forward-looking decision-making. The MH-EWS strengthens cross-border coordination and provides critical information that informs the implementation of DRR measures under Component 1, while also triggering localized adaptation responses under Component 3.
106. **Component 3** translates planning and data into tangible community-level action. These interventions, including rainwater harvesting, improved access to ground water, climate-smart agriculture, and rangeland rehabilitation, are selected based on DRRP priorities and their proven effectiveness under projected climate extremes. For example, the adoption of drought-tolerant crops such as cassava and ground nuts, alongside conservation agriculture

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[22]https://documents1.worldbank.org/curated/en/099150012022242096/pdf/P1769171f457c3010198d31b375aaddd937.pdf and https://climateknowledgeportal.worldbank.org/country/namibia

and agroecological practices, directly addresses expected rainfall deficits and temperature increases. The integration of scientific data with Indigenous knowledge ensures that interventions enhance adaptive capacity and promote sustainable resource management tailored to the unique socio-ecological contexts of the basin.

107. **Component 4** serves as the cross-cutting backbone of the project, embedding learning, capacity strengthening on climate adaptation strategies, fosters horizontal and vertical flows of climate and Indigenous and women's knowledge, and builds digital platforms for real-time data and experience sharing. This continuous learning loop allows project stakeholders to iteratively refine DRR strategies and policy actions in response to evolving climate risks and ensures that implementation feedback informs ongoing DRR planning and policy refinement.
108. Collectively, the four components form an integrated and adaptive system that fosters transboundary collaboration, ensures coherence across planning and implementation, and supports a shared vision for climate resilience. This design has been drawn from best practices from regional climate adaptation programs and is responsive to climate projections for the basin. Quantifiable indicators such as percentage reduction in households affected by climate-related disasters, increases in water-secure days, and yield improvements of drought-tolerant crops will enable tracking of adaptation outcomes. This approach not only avoids fragmentation but also creates opportunities for leveraging joint resources, unlocking synergies across sectors, and institutionalizing inclusive, data-informed, and community-driven adaptation efforts that are sustainable over time.
109. **Component 1 Co-design and implementation of a gender-responsive Disaster Risk Reduction Plan through EbA in the KRB (KRB: EbA-DRRP)** Effective management of the KRB requires strategic and coordinated planning to address current climate-related disasters and reduce the risk of future hazards stemming from CC and maladaptive practices. Enhancing both human and ecosystem resilience at the local level is central to this objective. Accordingly, this component focuses on the participatory co-development of a gender-inclusive Disaster Risk Reduction Plan (DRRP) for the KRB, embedded in the national and local planning processes of both countries. To ensure the DRRP is responsive to local realities, Component 1 will undertake a participatory climate vulnerability and needs assessment, which will identify and map the differentiated priorities, risks, and adaptive capacities of the targeted beneficiaries. This assessment will serve as a critical foundation for both the design of the DRRP and the prioritization of ecosystem-based adaptation measures implemented under Component 3. To maintain its relevance and responsiveness, annual DRRP updates will incorporate community feedback and integrate the latest climate risk data, ensuring that disaster preparedness remains dynamic, evidence-based, and locally owned.
110. The KRB EbA-DRRP will be a first of its kind in the Southern African Region and will enable the PJTC and the Governments of Angola and Namibia, as well as their International Cooperating Partners, to plan for and implement gender-responsive EbA activities which bring together scientific and indigenous knowledge, facilitating enhanced disaster preparedness and risk reduction, as well as ecosystem restoration, conservation and management.
111. **Outcome 1.1 Improved availability and effectiveness of DRR Plan co-designed and implemented by beneficiary communities and stakeholders.** The DRRP will strengthen the availability and effectiveness of disaster risk reduction planning across the KRB by ensuring inclusive, locally led, and ecosystem-based approach. The implementation of the DRRP will apply an EbA approach to promote ecosystem restoration and sustainable livelihoods[23] particularly through addressing gender-specific access to control over natural resources.
112. **Output 1.1.1 Knowledge gaps identified and addressed through a Water Security Assessment, Ecosystem Goods and Services Valuation, and community-based climate vulnerability and needs assessments to support the development of the KRB: EbA-DRRP.** These participatory assessments will identify the differentiated needs, priorities, and capacities of women, youth, elders, persons with disabilities, and semi-nomadic pastoralist communities**.**:
113. The findings will directly inform the co-development of the DRRP, ensuring that it is locally grounded, climate-informed, and ecosystem-based, as well as guide the design of community-led adaptation measures under Component 3, including climate-resilient water infrastructure and livelihoods interventions. Moreover, mapping of existing water infrastructure—conducted as part of the water security assessment—will inform targeted rehabilitation and ensure alignment with both current needs and future climate risks.
114. Specifically, the ecosystem goods and services valuation will:
    - Facilitate the design of ecosystem-based DRR measures (e.g., retention ponds, flood buffers, groundwater recharge zones).
    - Provide a basis for comparing pre- and post-project ecosystem service values to demonstrate the project's environmental and economic impact.
    - Strengthen the case for nature-based solutions as cost-effective, sustainable adaptation and disaster risk reduction strategies.
115. **Activity 1.1.1.1 Conduct a participatory Water Security Assessment in the KRB, with a focus on gender-responsive and EbA disaster risk reduction.** These assessments will evaluate the quality, quantity, seasonal variability, and sustainable yield of water resources, particularly in areas crucial for semi-nomadic pastoralists. It will involve participatory mapping of both natural and man-made water infrastructure (e.g., wells, boreholes, small dams). Climate-informed hydrological modelling will be used to assess future water security scenarios under different climate risk projections.
116. Indigenous knowledge will be integrated into the water security assessment through a participatory and culturally grounded methodology that values traditional systems alongside scientific approaches. It will begin with co-design of the assessment, taking into consideration Indigenous values and customary governance structures, such as communal water-sharing rules, seasonal use restrictions, and spiritual taboos. Participatory Rural Appraisal (PRA) methods will guide inclusive dialogue and data collection, encouraging communities to share their knowledge through tools like seasonal calendars and ecological health assessments. Indigenous-led GIS mapping will be used to spatially document traditional water sources, biodiversity indicators tied to cosmological knowledge (such as frog calls and fish cycles), and areas of cultural significance. The approach will aim to acquire intergenerational knowledge by involving elders, youth, and women in the process, making certain ancestral understandings of water, land, and ecology

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[23] Lo, V. (2016). Synthesis report on experiences with ecosystem-based approaches to climate change adaptation and disaster risk reduction, Technical Series No.85. Secretariat of the Convention on Biological Diversity.

are preserved and applied. This information will be integrated with scientific data, and all data will be managed ethically and transparently under community ownership and consent. The final assessment will include both conventional metrics and Indigenous indicators, such as cultural flow needs and ecological vitality, to gain a more holistic, inclusive understanding of water security.

117. The assessments will be led by FAO in collaboration with relevant Ministries and partners in Angola and Namibia, with active participation from local communities, women's groups, and civil society organizations. Data collection will be a key component, ensuring that gender and socio-cultural differences in access to water resources are carefully considered. This participatory process will also help identify existing gaps in infrastructure and guide future water management and EbA strategies.
118. **Activity 1.1.1.2 Undertake a participatory and gender responsive Ecosystem Goods and Services (EGS) quantification and valuation across the KRB and community-based climate vulnerability and needs assessments.** This activity will contribute directly to the co-design and implementation of locally grounded, evidence-based Disaster Risk Reduction (DRR) Plans by undertaking participatory assessments that merge scientific and traditional knowledge. Through the quantification and valuation of EGS, climate vulnerability and needs assessments, communities and stakeholders will contribute and help co-design the tools and information needed to identify and prioritize risks, vulnerabilities, and adaptation options.
119. The assessments will include multiple land tenure systems, including conservancies, protected areas, communal lands, and private farms, and will:
    - Map and quantify key EGS (e.g., water, forage, wild foods, flood regulation) to inform ecosystem-based DRR strategies.
    - Identify drivers of environmental degradation and their impacts on hazard exposure, with gender-disaggregated analysis.
    - Assess climate vulnerabilities and adaptation needs of women, youth, and marginalized groups.
    - Identify restoration and conservation measures that reduce disaster risk, such as reforestation, wetland rehabilitation, sustainable grazing, and catchment management.
    - Explore climate-resilient and ecosystem-based livelihood options that reduce dependency on risk-prone practices.
120. The valuation of ecosystem services will highlight their role in enhancing resilience and buffering climate-related shocks, forming a critical evidence base for the DRR planning process. To ensure that DRR Plans are inclusive and culturally appropriate, the activity will embed participatory engagement of indigenous and semi-nomadic communities throughout. Elders, herders, women, and youth will participate in:
    - Community-led planning sessions that document traditional practices related to land use, drought response, early warning, and risk management.
    - Mapping exercises and storytelling to capture indigenous indicators of environmental change and disaster risk.
    - Blended knowledge-sharing forums that integrate local wisdom with scientific data and strengthen community agencies in risk governance.
121. Facilitators trained in Free, Prior, and Informed Consent (FPIC) and cultural norms will guide these processes, ensuring respectful and meaningful participation. Traditional early warning indicators, such as changes in animal behavior or plant cycles, will be documented and integrated into DRR Plans and multi-hazard MH-EWSs, enhancing their local relevance.
122. By generating community-owned data and integrating indigenous and gender-sensitive knowledge into planning, this activity will ensure that DRR Plans are not only technically sound but also socially legitimate, locally grounded, and widely adopted. The participatory nature of the assessments will build trust, strengthen local ownership, and enable the co-design of DRR Plans that reflect the priorities, knowledge, and lived realities of the most at-risk populations in the KRB.
123. **Output 1.1.2 A basin-wide, gender-responsive DRR Plan focused on EbA is co-designed, developed, validated, and endorsed by key stakeholders across the KRB, incorporating local priorities and ecological knowledge gathered through participatory scenario planning processes Eba.** This activity will directly support the co-design of a comprehensive and community-owned DRR Plan by identifying current and future water-related risks and vulnerabilities in the KRB. The assessment will evaluate the availability, quality, seasonal variability, and sustainability of surface and groundwater resources, particularly in climate-sensitive zones critical to semi-nomadic pastoralists and smallholder farmers.
124. The assessment will ensure the DRR Plan reflects priorities, risks, and traditional practices of local communities. It will include:
    - Participatory water mapping, involving community members for identifying and documenting water infrastructure (e.g., springs, boreholes, traditional wells, hand-dug dams), and ecosystem-based water sources (wetlands, seasonal streams).
    - Climate-informed hydrological modeling: assessing future and seasonal water availability under different climate scenarios and hazard profiles.
    - Gender-responsive data collection to examine differential water access, use, and decision-making roles by men, women, and youth.
    - Gap analysis to highlight vulnerabilities in existing infrastructure, governance, and water security planning for disaster preparedness.
125. To ensure equitable and meaningful participation of indigenous communities in the assessment and the DRR planning process:
    - FPIC protocols will follow throughout, guided by facilitators familiar with the cultural norms and political context, using the preferred language.
    - Traditional authorities and indigenous knowledge holders: including elders, herders, and women to validate water sources, seasonal usage patterns, and local coping mechanisms for drought and flood risks.
    - Community mapping and storytelling sessions will be used to document traditional indicators of water scarcity and abundance (e.g., animal behavior, sacred springs, or phenological cues).
    - Focus groups and dialogue forums, held in local languages, will be used to enhance accessibility and encourage inclusive participation across gender, age, and livelihood groups.
    - Capacity-building sessions will strengthen local ability to interpret and use water security data in their DRR planning.
126. The Water Security Assessment will take an integrated approach, which contributes directly to Output 1.1 through co-produced risk information and community priorities, which will form a solid foundation for a DRR Plan that is evidence-based, locally grounded, and socially inclusive. DRR Plan will be guided by priorities from nature-based water retention, rehabilitation of traditional systems, and equitable governance mechanisms.

127. Risk profiles will be updated annually to refine DRR plans in a continuous learning process, using climate data from Component 2 and outcomes from Component 3 adaptation activities.
128. **Activity 1.1.2.1 Facilitate the co-development of a basin-wide, gender-responsive DRRP focused on EbA through an inclusive, participatory stakeholder engagement process.** The project will facilitate the co-development of a basin-wide, gender-responsive DRR Plan focused on EbA through a culturally designed inclusive and participatory stakeholder engagement process. This will encourage the active involvement of diverse community members and stakeholder groups across the KRB, including women, men, youth, people with disabilities, indigenous communities, and the elderly - across Angola and Namibia.
129. Using a Scenario Planning methodology, stakeholders will collaboratively explore climate risks, identify community-driven priorities, and co-create localized adaptation pathways centered on EbA interventions. To ensure equal access, participatory workshops and dialogues will be conducted at local, provincial, and national levels, led by local experts with cultural context and FPIC protocol experience and prioritize the integration of local ecological knowledge and community-specific adaptation needs, with a strong focus on elevating the perspectives and priorities of marginalized groups.
130. Approaches utilized during the assessments will be used to promote the engagement of semi-nomadic pastoralist communities, whose unique languages, seasonal mobility, cultural norms, and decision-making structures can pose barriers to conventional consultation processes. The project will adopt culturally appropriate approaches, including the use of local facilitators and interpreters, mobile engagement units, and flexible scheduling aligned with pastoralist migration cycles. Custom engagement strategies will be co-designed with traditional leaders, women's groups, and youth representatives within these communities to ensure inclusivity and relevance. Additionally, inclusive participation will be facilitated by aligning meeting schedules with the timing needs of community members, particularly women and caregivers, and will provide childcare support where possible. Flexibility in agenda design, including breaks and culturally appropriate facilitation methods, will encourage all voices, especially those of traditionally underrepresented groups, to be heard and valued.
131. Insights and feedback from these sessions will directly shape the gender-responsive DRRP, aligning it with existing basin-level disaster risk strategies while outlining clear, actionable EbA measures to reduce climate-related risks. The finalized plan will be validated and endorsed by key stakeholders to ensure broad ownership, accountability, and long-term sustainability.
132. **Outcome 1.2 Strengthened stakeholder dialogue, inclusive participation, and co-planning for integrated DRR and eco-system-based adaptation across the KRB.** The project will improve stakeholder engagement by addressing the current limitations in interaction between intended beneficiaries and other stakeholders in the KRB, which stems from the remote nature of the communities, poor road infrastructure and minimal to non-existent telecommunications. Recognizing that the meaningful participation of these communities, especially in planning and implementation, is essential for strengthening adaptive capacity, the project will actively work to overcome travel and communication barriers. Tailored approaches will be adopted to facilitate effective dialogue, inclusive participation, and joint planning processes, resulting in the meaningful involvement of all stakeholders, including remote and marginalized communities, in shaping integrated DRR and EbA strategies across the KRB.
133. **Output 1.2.1 A comprehensive record of inclusive multi-stakeholder engagement processes in the KRB is developed, documenting meaningful participation of beneficiary communities (with specific attention to gender and ethnic groups), civil society, private sector, and government institutions, to inform the development of the EbA focused DRR Plan**. Stakeholder engagement has been integral to the design of the project, oriented to identify solutions to the challenges faced by the targeted beneficiaries- with specific attention to the different experiences, needs, and capacities of women, men, and other marginalized groups and collaborating on how to effectively support them in adapting their livelihoods in response to CC. However, as the context, needs and priorities of the beneficiaries are not static, the project will undertake ongoing multi-ethnic inclusive stakeholder engagement throughout project implementation. Gender-differentiated impacts will be monitored to ensure the voices of all gender groups are equitably represented. Findings from the project's innovation, including indigenous knowledge integration, gender responsive design, and the use of climate-smart technologies to support Namibia- Angola collaboration, will be systematically documented. These insights, together with the outputs from ongoing consultations, will directly contribute to Component 4's effort to promote South-South learning and regional standardization. This includes the development of case studies, knowledge submissions to platforms such as the FAO, SADC-GMI, and WaterNet, and alignment with regional metadata and information-sharing protocols, such as the tri-lingual knowledge exchange platform under development with the Niger Basin Authority.
134. **Activity 1.2.1.1 Facilitate inclusive stakeholder engagement and co-planning across the KRB.** This activity will sustain participatory multi-ethnic and gender-inclusive consultation processes with stakeholders at the national, provincial, municipal and community levels across Angola and Namibia. Stakeholders include local authorities, community-based organizations, and representatives of different gender and ethnic groups.
135. Engagement began during project concept and will continue throughout implementation to ensure that all project interventions, particularly the co-design of the DRRP, are informed by the needs, priorities, and knowledge of diverse groups. This activity directly contributes to Outcome 1.1 by enabling broad-based ownership and increasing the effectiveness and relevance of the DRR plan.
136. The activity will foster dialogue and consensus building among groups with differing needs and interests, with specific attention to marginalized voices, including pastoralists, women, youth, and indigenous peoples. The project will implement culturally sensitive methods to engage indigenous communities, including the use of local languages, traditional meeting structures, and facilitators familiar with customary practices. FPIC protocol will be maintained throughout. A stakeholder feedback mechanism will be used to systematically include stakeholder input, ensuring feedback is incorporated into decision-making and ensuring continuous learning and real-time adaptation of project activities.
137. To ensure transparency and continuous engagement, all consultation processes and outcomes will be systematically documented. This includes participant lists disaggregated by gender and ethnicity, record of key issues raised, and agreements reached, forming a critical evidence base for the EbA-focused DRRP.

138. To support meaningful participation, the project will conduct continuous capacity-building workshops to enhance stakeholders' understanding of DRR and EbA principles and strengthen their ability to co-lead planning processes. Consideration will be given to participants' logistical needs, such as timing, language access, transportation, and childcare, to facilitate equitable involvement, especially among women and vulnerable groups.
139. **Activity 1.2.1.2 Facilitate the development and implementation of a Free, Prior and Informed Consent (FPIC) Plan for indigenous communities.** This activity will ensure that indigenous peoples are informed to make decisions regarding project activities that may impact their rights, lands, resources, and livelihoods. The FPIC process will include culturally appropriate consultations with community-endorsed institutions and will ensure their meaningful participation throughout the decision-making processes and for the duration of the project cycle. A qualified expert consultant or NGO will be engaged to co-develop the FPIC plan in according with international best practice and the AF Environmental and Social Policy, in close coordination with local authorities and relevant ministries in Angola and Namibia. The FPIC process is outlined in Annex 5
140. **Activity 1.2.1.3 Facilitate inclusive dialogue among gender and ethnic subgroups using participatory scenario planning approaches.** This activity will use facilitated scenario planning exercises to engage diverse community members – including women, men, youth, elders, persons with disabilities, and Indigenous peoples—in envisioning future climate-resilience. The approach will support understanding of how local decisions affect long-term ecosystem health and disaster risk and will guide collective decision making. Workshops and dialogue sessions will be conducted in Angola and Namibia, with outcomes used to inform the design of the EbA-DRR Plan. The scenario planning process will also include systematic documentation of participation and feedback outcomes, ensuring that data is disaggregated by gender, ethnicity, and other relevant factors. This documentation will be integrated into the project's monitoring and evaluation system, tracking progress and highlighting areas for improvement.
141. To ensure gender equity and inclusion throughout implementation facilitators will be trained and approximately 10% of the total project budget will be allocated to gender-responsive activities. These include capacity-building workshops, women's leadership training, scenario planning facilitation, and targeted support for women's participation in community-based adaptation actions. Gender-sensitive data drawn from the gender assessment (Annex 6) will also be integrated into the project's monitoring and evaluation systems to track participation and benefits disaggregated by gender and ethnicity.**Component 2 Implementation of a satellite-based MH-EWS for the KRB**
142. A key infrastructure priority for the Kunene Rive Basin (KRB) is the installation of weather and hydrometric stations across key micro-climate. [24] These stations are critical to establish a functional, satellite-integrated multi-hazard EWS (MH-EWS), capable of issuing timely alerts to local communities – particularly marginalized and at-risk groups including indigenous women, men, girls, boys, and persons with disabilities (PWD). The system will monitor multiple hazards such as riverine and flash flooding, heatwaves, dry spells, wildfires, disease and pest outbreaks, and pollution events.
143. Enhanced meteorological and hydrological monitoring, along with water quality tracking, will support informed, real-time decision-making at community, regional and cross-border levels. In particular, the system will contribute to the following outcomes:
    - Localized adaptation planning: Forecast data will be translated into accessible, easy to understand formats tailored to community needs, with emphasis on outreach to women and marginalized subgroups. These tools will help communities understand changing climatic conditions, assess their impacts, and jointly explore adaptation strategies based on current and forecasted conditions.
    - Cross-border collaboration: By standardizing and sharing data across countries, the project will contribute to fulfilling regional cooperation commitments under the Revised Protocol on Shared Water Courses (2000), while supporting coordinated planning under other Components of this project.
    - Knowledge dissemination: Harmonized datasets will be made to the Joint Management Committee and the public via an updated Kunene River Assessment Toolkit, promoting regional Project knowledge sharing and contributing to national/regional planning.
144. CC impacts are gender-differentiated, with significant disparities in access to climate information, technology, and adaptive capacity. Typically, men may have greater access to training and weather data, enabling decisions for large-scale agricultural decisions and economic activity. In contrast, women – especially indigenous women - often lack equitable access to such tools and training, relying more on traditional knowledge to make critical household-level decisions related to food production, harvesting, water management and health. This lack of information can impede women's ability to adapt to climate variability and extreme weather events effectively, compromising food security and household resilience.
145. To address these inequalities, the project will adopt inclusive approaches that prioritize the participation of women and marginalized groups in the design, deployment, and application of weather information tools. This includes:
    - Co-designing user-friendly data visualizations with community input.
    - Applying Gender Action Learning System (GALS) methodologies
    - Delivering climate services in local languages and culturally appropriate formats
146. These measures will strengthen equitable access to actionable climate information and improve the resilience of all community members to climate risks in the KRB.
147. **Outcome 2.1 Enhanced technical capacity and institutional readiness for climate risk monitoring and inclusive, locally led adaptation at the micro-climate level in the KRB.** Activities under this outcome will support the generation, analysis, and use of climate data disaggregated by location and gender, enhancing capacity to define weather patterns at the micro-climate scale. Women will be directly involved in the design and implementation of weather information systems, ensuring that resulting services are inclusive, accessible, and actionable across all gender and ethnic groups. By promoting women's leadership within local organizations responsible for delivering and disseminating weather information and resources, the project advances gender inclusive climate services. This approach enhances the effectiveness of EWSs and contributes to long term sustainable development.

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[24] This component is based on the approach created and implemented by the World Meteorological Organization as part of its contribution to Disaster Risk Reduction [WMO. (2018). *MH-EWSs: A checklist*.] and endorsed by the UN and its agencies [e.g., United Nations Development Programme. (2018). *Five approaches to build functional early warning systems*.]

148. **Output 2.1.1 Automatic weather stations installed and operational in key micro-climate zones of KRB, in collaboration with national meteorological agencies, enhancing localized risk monitoring capacity.** Installations of automated weather stations in the KRB will enhance the existing weather observation network, providing additional data points that will increase the accuracy of weather forecasting and climate monitoring in the Basin.
149. **Activity 2.1.1.1 Install 24 automatic weather stations (AWS) across the KRB in collaboration with national meteorological agencies.** To enhance weather forecasting accuracy and support climate-resilient planning, the project will install 24 automatic weather stations throughout the KRB. This aligns with the World Meteorological Organization's minimum recommended density of one station per 10,000 km² in arid zones.[25] Given the Kunene Basin's surface area of 106,500 km², 18 stations will be installed in Angola and 6 in Namibia, proportionate to each country's share of the basin. The stations will provide real-time meteorological data to improve early warning capabilities, support community-level adaptation planning, and strengthen cross-border data harmonization under the KRB MH-EWS **(MH-EWS).**
150. In addition to the physical installation of 24 AWS across the Kunene River Basin, the project will conduct site assessments to ensure strategic coverage of key micro-climate zones. It will support procurement, logistical deployment, system integration with national meteorological databases, and training of technical personnel in both Angola and Namibia. Data will be transmitted in real time to support the MH-EWS and national forecasting systems. To promote sustainability, the project will support maintenance planning and enhance awareness among community members about the role of AWS in early warning and climate adaptation.
151. **Output 2.1.2 IoT-enabled hydrometric and water quality monitoring stations installed and integrated into national monitoring systems along Kunene River, in partnership with the national hydrological agencies, to support real-time flood and drought risk tracking and early response planning.** To strengthen flood and drought risk monitoring across the KRB, the project will install a network of IoT-enabled hydrometric stations at critical locations along the river. These stations will enhance the national hydrological observation systems of both Angola and Namibia, improving the precision of streamflow monitoring and flood forecasting. In addition, water quality sensors will be integrated into the stations to track climate-induced changes in water quality and identify potential pollution and disease outbreaks. The collected data will be fed into the KRB MH-EWS and linked to national and basin-level planning tools to inform timely, risk-informed decision-making. These stations will also contribute to fulfilling cross-border data sharing commitments under regional watercourse agreements and support inclusive resilience-building for vulnerable communities across the basin.
152. **Activity 2.1.2.1** Install 24 hydrometric and water quality monitoring stations along the Kunene River, in collaboration with the national hydrological agencies:
153. To enhance real-time flood and drought monitoring and support, climate-informed decision-making in the KRB, KRB the project will install approximately 12 IoT-enabled hydrometric and meteorological stations with water quality monitoring along key points of the river in collaboration with the national hydrological agencies of Angola and Namibia.
154. These stations will measure streamflow variables, including water levels, discharge rates, and precipitation, while also monitoring water quality indicators such as turbidity, temperature, and conductivity. This will enable early detection of pollution events and potential climate-related disease outbreaks. Data will be transmitted wirelessly and integrated into both countries' national hydrological databases, as well as the basin-wide MH-EWS, contributing to timely, risk-informed action and improved transboundary water governance to ensure sustainability, local ownership, and functionality of this system, the following implementation steps will be undertaken:
    - **Baseline Assessment**: A comprehensive, basin-wide baseline assessment will be conducted (linked to Activity 1.1.1.1) to identify optimal installation sites based on hydrological relevance, existing infrastructure, climate vulnerability hotspots, and logistical feasibility.
    - **Equipment Procurement and Installation**: Specialized hydrometric and water quality monitoring equipment will be provided and installed to withstand remote and transboundary field conditions.
    - **Capacity Building**: Targeted technical training will be provided to national and regional hydrology staff in both countries. This will cover equipment operation and maintenance, data analysis, and reporting via interoperable systems.
    - **Systems Integration**: All data systems will be connected to national platforms and integrated with MH-EWS to ensure seamless, real-time analysis for disaster preparedness, climate forecasting, and basin-wide water governance.
    - **Cross-border Data Sharing Protocols**: Protocols for transboundary data sharing will be established in alignment with regional watercourse agreements, promoting transparency, cooperation, and joint risk-informed adaptation.
155. **Outcome 2.2 Communities and institutions in the KRB effectively use timely and accurate multi-hazard early warning information to prepare for and respond to climate-related risks.** A MH-EWS (MH-EWS) tailored to climate-related risks in the KRB will enhance the capacity of governmental and non-governmental institutions, civil society organizations, and communities to anticipate, prepare for, and respond to weather events and evolving climate threats. The system will be designed for interoperability with national and regional EWS platforms, ensuring integration across sectors, governance levels, and borders.
156. **Output 2.2.1 Multi-level KRB: MH-EWS co-designed and validated by governments and local communities, integrating indigenous knowledge.** The MH-EWS will be developed through a consultative multi-stakeholder process, combining meteorologists and hydrologists expertise with traditional and indigenous knowledge. Participatory workshops will engage both national institutions and basin communities to ensure that the system is responsive to local realities and community needs, while fostering ownership and long-term sustainability. Community-generated data and

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experiential knowledge will complement technical forecasts from the MH-EWS to improve locally appropriate responses. MH-EWS will integrate real-time weather and hydrological thresholds to directly inform DRRP revisions and activate pre-defined adaptation protocols.

157. **Activity 2.2.1.1 Facilitate participatory design of the MH-EWS with national institutions and local communities, ensuring gender and social inclusion.** The project will implement a comprehensive, participatory development process that integrates both scientific expertise and indigenous knowledge. This process will begin with the mapping and engagement of key stakeholders across Angola and Namibia, including national meteorological and hydrological institutions, government authorities involved with risk management, traditional leaders, women's organizations, and other community-based entities. Special attention will be given to ensuring gender and social inclusion throughout the design and decision-making process.
158. Building on this foundation, the project will organize a series of stakeholder-driven workshops at the technical, community, and cross-border levels. These workshops will be facilitated by the FAO, leveraging its experience with the Global Information and Early Warning System (GIEWS). The workshops will bring together national institutions and local communities to jointly conceptualize the MH-EWS, ensuring the system is grounded in both local realities and institutional capacity. Community members, particularly women and marginalized groups, will contribute indigenous weather and environmental forecasting knowledge that will be systematically documented and integrated alongside scientific data into the design of the warning system.
159. Through this process, the project will establish inclusive governance and communication mechanisms to promote sustainability and local ownership. Pilot testing in select communities will allow for the validation and refinement of the system, ensuring it is user-friendly and meets the anticipatory needs of diverse groups across the basin. The project will also build the capacity of both institutional and community actors to operate, maintain, and respond to the MH-EWS, ensuring its long-term functionality and relevance in the face of climate-related hazards KRB.
160. **Output 2.2.2 Operational Big Data Analytics platform developed for real-time capture, monitoring, and analysis of EWS data, with an accessible, user-friendly dashboard tailored to decision-makers and community users.** A robust, ICT-enabled Big Data Analytics platform will be developed to process diverse inputs from automatic weather stations, gyrometric sensors, radars, satellites, weather buoys, and weather balloons. This platform will enable timely generation of forecasts and advisories, supporting anticipatory action by both technical institutions and communities. A user-friendly interface will ensure accessibility for a range of users, from national decision-makers to local stakeholders, with customization options based on literacy, language, and data needs.
161. **Activity 2.2.2.1 Develop and operationalize a real-time Big Data Analytics platform and user interface to support MH-EWS forecasting and dissemination.** This activity will focus on developing and operationalizing a Big Data Analytics platform to capture, monitor, and analyze meteorological and hydrological data in real-time within the KRB. The platform will integrate data from various sources such as weather stations, hydrometric sensors, satellites, and other observation systems, to generate timely forecasts and early warnings. The platform will be designed to meet the needs of both technical stakeholders and non-technical community members, ensuring accessibility through user-friendly features, local language options, and visual simplification tools.
162. The project will support meteorological and hydrological agencies in procuring and installing the platform, ensuring that it can process real-time data from the observation stations. It will include servers and software capable of handling large datasets and generating meaningful forecasts. An intuitive, customizable dashboard will be developed to present real-time data and alerts in an easily accessible format, with maps, charts, and color-coded warnings. The platform will be tested through pilot projects, gathering feedback from users to refine its functionality and usability.
163. To ensure its successful implementation, the project will provide training to both technical staff and community focal points on using the platform for data analysis and response coordination. Community-level training will focus on how to interpret early warnings and take appropriate actions, with a special emphasis on gender and social inclusion. The platform will also establish data-sharing protocols between agencies and ensure the dissemination of alerts via multiple channels. Finally, a monitoring and evaluation system will be put in place to track the platform's effectiveness and sustainability, with a long-term plan for maintaining it through local institutions or government support.
164. **Output 2.2.3 KRB MH-EWS operationalized using a cross-border, multi-level, multi-sectoral and multi-disciplinary framework.** Meteorological and hydrological observation networks are operated by national agencies, but the phenomena they measure are influenced by geographical factors. A river basin is a natural unit for measurement of these phenomena because similar conditions exist across a transboundary basin. Thus, the KRB MH-EWS aims to harmonize EWS across the KRB.
165. **Activity 2.2.3. Establish the Institutional and Technical Foundation for a Harmonized, Cross-Border, Multi-Sectoral MH-EWS in the KRB.** This activity will establish the institutional and technical backbone for the KRB MH-EWS, ensuring it is operational, coordinated, and responsive to the needs of both Angola and Namibia. It will involve coordinated actions across institutions, technical systems, and communities to ensure a fully functional and harmonized system. It will integrate the following sub-actions:

    1. Establish a Cross-Border Technical Coordination Task Force: Composed of representatives from national meteorological and hydrological agencies, water resource bodies, and government institutions. This Task Force will serve as the central governance and coordination platform for the transboundary MH-EWS. It will lead to the harmonization of standard operating procedures (SOPs) for forecasting, alerts, and response; oversee the development and implementation of data-sharing protocols and joint emergency response plans; and ensure the meaningful inclusion of gender focal points and social development specialists in all aspects of MH-EWS development and deployment.
    2. Harmonize Early Warning Message Formats and Dissemination Channels: To ensure that alerts issued on both sides of the KRB are consistent, timely, and easily understood by all users. This will involve co-developing common thresholds for alert levels based on parameters such as rainfall intensity, river stage, or wind speed; aligning terminology and color-coded warning symbols across countries; and standardizing dissemination pathways. The goal is to reduce confusion and ensure coordinated action across communities and agencies.

3. Develop and Deliver a Joint Training Program: A joint training program will be developed and delivered for technical and community-level stakeholders involved in the MH-EWS. This will include training for hydrometeorological and disaster risk management staff on cross-border data analysis, forecasting, and communication protocols; capacity-building for emergency responders and disaster managers on coordinated operational procedures; and community-based education on how to interpret and respond to early warnings. Special attention will be given to reaching women, youth, and marginalized groups to ensure inclusivity in preparedness and response.

4. Integrate Hazard Monitoring and Forecasting Capacity: Informed by the range of hazards that affect the inhabitants and ecosystems of the basin, the project will ensure that multiple sources of data are integrated into the MH-EWS to improve the timeliness and accuracy of forecasts. Hazards include riverine and flash floods, heatwaves, dry spells, wildfire risk, lightning, strong winds, and cold spells. Existing meteorological and hydrological observation stations in both countries will be rehabilitated to ensure they can provide consistent, reliable data. The national meteorological and hydrological agencies will be supported with the necessary IT infrastructure, including servers, data processing systems, and forecasting software to transform raw data into user-friendly warnings for dissemination to stakeholders across the basin.

166. **Output 2.2.4 Data from MH-EWS translated into locally relevant, gender-responsive and easily understandable weather alerts for local communities use and action.** The communities in the KRB are highly sensitive to climate variability considering their reliance on rain-fed agriculture, pastoralism, and seasonal migration. Despite advances in forecasting, a major barrier to climate resilience remains the translation of scientific data into information that is understandable, actionable, and trusted at the community level. This challenge is particularly acute for women, youth, and Indigenous populations, who often face structural barriers to accessing information in formats they can use.
167. To ensure the MH-EWS benefits all segments of the population equitably, forecast information must be simplified, localized, and delivered through culturally appropriate channels. Doing so will enhance anticipatory action, reduce disaster losses, and enable climate-informed decision-making at the household and community levels. This output will ensure that forecast products derived from the MH-EWS are tailored to local needs, support inclusive access, and are integrated into community-based risk reduction and livelihood planning efforts. Additionally, forecasts will inform the timing and prioritization of adaptation activities under Component 3, such as drought-resilient agriculture, water resource management, and rangeland restoration, ensuring that local actions are anticipatory rather than reactive.
168. **Activity 2.2.4.1 Co-design, simplify, translate, and disseminate gender-responsive weather alerts in local languages spoken in the KRB.**
169. The project will work closely with national meteorological agencies in Angola and Namibia to co-design and deliver weather and climate information that is accessible, actionable, and locally relevant, ensuring technical weather forecasts are simplified, translated into local languages, and disseminated through trusted communication channels as well as culturally grounded channels and formats familiar to Indigenous communities. This will enable all community members, regardless of gender, literacy level, or social status, to access and use climate information for decision-making.
170. The activity will begin with participatory consultations involving women, men, youth, Indigenous peoples, persons with disabilities, and other vulnerable groups to identify their specific climate information needs, preferences for receiving forecasts, and barriers to access. Drawing on this input, technical forecasts (including seasonal outlooks, 10-day bulletins, and daily updates) will be simplified using locally meaningful symbols, metaphors, and visual tools to ensure comprehension. These messages will be translated into the local languages spoken throughout the Basin.
171. To maximize reach and effectiveness, dissemination will occur via multiple culturally appropriate platforms, such as mobile phones, radio, and community meetings. Coordination with mobile network providers will ensure that weather and climate-related warnings are sent to all phones within targeted areas. These channels will be selected based on community preferences identified during the initial consultations. Special attention will be paid to reaching women and marginalized groups who may be excluded from traditional information flows, ensuring that these groups are actively engaged and informed.
172. By making weather forecasts understandable and accessible to all, this activity will strengthen the capacity of communities to anticipate and respond to climate-related risks—supporting more inclusive and equitable climate adaptation outcomes across the Basin.
173. **Component 3 Inclusive, community-based adaptation actions are co-designed and implemented to strengthen climate-resilient livelihoods, natural resource management, and water security in the KRB.** The adaptation measures supported under this component will be directly guided by real-time alerts, seasonal outlooks, and risk maps generated by the KRB MH-EWS (Component 2), promoting responsive, climate-smart community planning. It will also focus on developing, promoting, and strengthening gender considerations in CC adaptation planning, resulting in gender-responsive and climate-smart agricultural practices and technologies. This approach is expected to support long-term cooperative dialogue between stakeholders, contributing to the project's overall sustainability.
174. Utilizing the GALS approach, this component will address social barriers that limit women's access to resources, focusing on power imbalances, by building women's skills in ecological management, climate smart agriculture, management of rangeland and natural resources, as well as leadership and support for women's groups and involvement in Water-EWS Action Committees (WEAC). These committees, with ensured inclusive representation of women and marginalized groups, will play a pivotal role in managing community water resources, informing local water governance by information from the EWS. These committees will be instrumental in promoting equitable access to water, facilitating climate-responsive management based on MH-EWS alerts, and supporting community resilience through collaborative decision-making and maintenance of water infrastructure.
175. **Outcome 3.1 Community prioritized climate change adaptation interventions implemented in collaboration with local and national authorities, based on early warning alerts and seasonal forecasts generated under Component 2 (MH-EWS).** The project will prioritize conservation agriculture as a key climate change adaptation intervention, given its proven benefits in enhancing soil water retention, organic matter, and agricultural productivity adaptation investments will be prioritized based on DRRP-defined climate risk zones and informed by alerts from the MH-EWS.

176. To facilitate the adoption of conservation agriculture, the project will build on the existing farmer field schools (FFS) program in Angola, expanding the program's reach and establishing new ones where needed. The FFS will bring together small-scale farmers from neighboring communities to collectively address production challenges through sustainable agricultural methods.
177. The management committees for the FFS will ensure the equal representation of women and gender subgroups, promoting inclusive decision-making. By leveraging FAO's technical expertise and experience in the implementation of climate-smart agriculture and its experience in community-based adaptation, this activity will be implemented in close collaboration with national extension services, government climate adaptation institutions, and local NGOs. The goal is to ensure that the climate adaptation interventions are co-designed, agreed upon, and effectively implemented by both communities and local/national authorities, fostering long-term sustainability projects.
178. **Output 3.1.1 Rainwater harvesting and retention infrastructure constructed or rehabilitated to improve water availability for domestic and agricultural water access, particularly during dry periods.** This output will be achieved by designing and building infrastructure such as rainwater harvesting systems, water retention ponds, and small-scale dams, specifically tailored to the local context and designed to capture and store water during intense rainfall events. These systems will improve water access during the dry seasons, supporting household water needs and enabling irrigation for agricultural use. The infrastructure will be constructed with consideration of gender-specific water needs, ensuring that both men and women have equitable access to the water resources created. Additionally, the project will establish 10 community Water-EWS Action Committees with at least 40% women's participation to ensure inclusive, sustainable management and equitable access to improved water resources.
179. **Activity 3.1.1.1 Rehabilitate 20 existing earth or sand dams**. To enhance adaptive capacity and strengthen climate resilience, the project will rehabilitate approximately 20 existing earth or sand dams across the KRB. These small-scale water retention structures serve as vital buffers against the impacts of CC by capturing and storing excess streamflow during intense rainfall events, an increasingly common climate phenomenon in the region and making water available during extended dry spells. Rehabilitation will be guided by climate risk-informed technical and hydrological assessments to evaluate the current functionality of the dams, sediment loads, structural integrity, and resilience to future climate stressors. Activities will include desilting, reinforcing embankments to reduce flood risk, repairing damaged spillways, and introducing nature-based erosion control measures such as vegetative buffers. This climate adaptation measure will also integrate participatory processes to identify priority sites based on community exposure to water insecurity and ensure that interventions meet differentiated needs across gender and social groups.
180. In collaboration with FAO, national water agencies, and local NGOs, the project will promote the use of climate-smart design principles to extend the longevity and resilience of these structures. Additionally, the project will strengthen the capacities local knowledge, with a focus on empowering women to participate in the governance, monitoring, and maintenance of these systems. By increasing year-round water availability, especially during climate-induced dry spells, this activity will directly support the resilience of livelihoods and food systems across vulnerable communities in the Basin.
181. **Activity 3.1.1.2 Construct 20 new rainwater retention ponds**. To strengthen community climate resilience, the project will support the construction of 20 new ecosystem-based rainwater retention ponds. These infrastructures will be sited based on participatory consultations and climate risk mapping to identify communities most affected by erratic rainfall and drought. Site selection, guided by hydrological and geotechnical assessments, will evaluate runoff potential, soil infiltration capacity, and alignment with climate projections. The ponds will be designed using climate-resilient principles, incorporating erosion control features, vegetative buffers, and overflow channels to manage extreme weather events.
182. To prevent water contamination and disease transmission, each pond will be fenced preventing access of livestock and will have adjacent watering troughs installed. Construction will engage local labor and integrate low-carbon, context-appropriate methods. Communities, especially women, pastoralists, and Indigenous groups, will be involved in co-designing and managing the ponds, including the formation, or strengthening of inclusive Water-EWS Action Committees. These committees will be trained in EWS data and its implications for pond maintenance and community behavior. Additionally, the committees will receive training on pond maintenance, sustainable water use, and climate-informed governance to ensure long-term functionality. A community-based monitoring system will be established to track performance, respond to changing climate conditions, and inform adaptive management. This information that is collected will provide feedback to EWS. These measures will provide a critical buffer against climate shocks that previously affected the rainwater retention ponds, thereby supporting domestic water use, livestock needs, and improved water security.
183. **Activity 3.1.1.3 Install 40 rooftop rainwater harvesting systems on public buildings for community use**. This activity complements the project's DRR and climate adaptation goals by increasing community water security through the installation of rooftop rainwater harvesting systems on strategically selected public buildings, targeting schools and health posts were proven effective as well as training communities on their construction. By using climate-informed technical assessments that incorporate historical rainfall data and future climate projections, the design of these systems ensures resilience to changing and increasingly erratic rainfall patterns identified by the MH-EWS (Component 2). This proactive approach helps buffer communities against drought and water scarcity risks highlighted in early warning alerts, thereby reducing disaster vulnerability.
184. Furthermore, by involving Water-EWS Action Committees with strong representation of women and vulnerable groups in the management of these systems, the activity promotes inclusive governance and supports the social dimensions of DRR and climate adaptation. Reliable access to harvested rainwater directly supports climate-resilient livelihoods by providing a critical water source for household use and potentially for small-scale irrigation, linking it to adaptive agricultural practices promoted under other components of the project.
185. Training and community engagement activities will improve local capacity to manage the water, maintain infrastructure, and respond to water-related risks, strengthening long-term resilience. This intervention operationalizes the project's integrated approach by connecting climate risk information (EWS), community-led resource management (DRR), and sustainable water availability critical for adaptive agriculture. By beginning with identifying suitable public buildings (i.e., schools, health centers, and community halls) based on roof size, structure, material, and proximity to water-stressed communities. A climate-informed technical assessment (Component 1) will inform estimates for rainwater catchment potential using historical rainfall data and future climate projections.

186. Based on the sites, tailored rainwater harvesting systems will be designed considering gutter and downpipe systems, first-flush diverters, and storage tanks, ideally durable and locally sourced. Filtration units may also be needed depending on the intended use of the water. To promote sustainability and local ownership, local labor and technicians will install the systems and community sensitization campaigns will raise awareness on the purpose and benefits of the systems. Water user committees (with strong female representation) will be established or strengthened to manage the infrastructure and ensure equitable access.
187. Maintenance training for local communities will be conducted for cleaning gutters, inspecting tanks, and managing overflow. User-friendly operation and maintenance guides in local language will support this training. A system for ongoing monitoring and feedback will be put in place to assess functionality and water use patterns, and to document the systems' contribution to reducing climate-induced water vulnerability, particularly for women and youth.
188. **Activity 3.1.1.4: Establish and build the capacity of 10 community Water-EWS Action Committees.** The project will also strengthen community water governance by establishing or revitalizing Water-EWS Action Committees. Each committee will include at least 40% women and reflect the diversity of the local population, including youth and pastoralist representation where relevant. They will serve as platforms for local water governance and interface with local authorities, ensuring integration of community voices in water resource management and ensure sustainability of operations. These committees will receive training in leadership, water governance, equitable decision-making, basic operation, and maintenance of groundwater infrastructure, fostering local ownership and long-term sustainability.
189. **Output 3.1.2 Groundwater access improved through small scale infrastructure to support home gardening, and household water supply.**
190. To enhance community adaptive capacity by improved access to groundwater for household use and home gardening, the project will install or rehabilitate small-scale water infrastructure, such as boreholes, hand-dug wells, and install solar-powered pumps. Improved water access will alleviate domestic labor (especially for women and children), all for home gardens for climate-resilient vegetable cultivation and improve household nutrition through increased dietary diversity.
191. **Activity 3.1.2.1 Rehabilitate 180 existing boreholes for vegetable gardens and domestic use.** First, a technical and environmental assessment of existing boreholes will be done to determine the structural soundness, groundwater water yield, and water suitability for domestic use and home gardening. Based on the findings, rehabilitation efforts will potentially include repairs, re-drilling, and the installation of handpumps or solar-powered pumps to ensure year-round access to water. All boreholes will be equipped with appropriate solar pumps that allows borehole recharge, aiming to save water and reduce time required to collect water, borne by women.
192. To ensure long-term functionality and sustainability of the water infrastructure, local water point committees will be established or strengthened, with equal representation of women and men. These committees (composed of 50% women) will receive training for interpreting EWS data, technical operation of the pumps and basic maintenance, water governance, and leadership. This training will be used to govern community water use and guide water conservation techniques. Sustainable yields (provided by the water assessment) will determine measures to prevent over-extraction of groundwater. Women and youth (historically disproportionately burdened by water collection and household food provision) will receive such training. This integrated approach will increase adaptive capacity by enhancing water access, supporting home gardens, improving nutrition, and reducing the domestic burden on women and children. This activity will be led by FAO, in collaboration with the line ministries of both countries.
193. **Output 3.1.3 High nutrient, drought-tolerant crop varieties promoted through farmer field schools, demonstrations, and extension services.** To enhance agricultural resilience and adaptive capacity the project will promote the adoption of high nutrient, drought-tolerant crop varieties through FFSs, demonstration plots, and targeted extension services. Key staples such as sorghum and millet (proven to be well-adapted to the climate) will be prioritized for wider uptake due to their reliability under drought conditions. Expanding the production of other resilient crops like cassava and groundnuts will support diversified food systems and excess of home consumption needs will be used as income streams.
194. In addition to staple crops, climate-resilient vegetable varieties suitable for home gardening in semi-arid zones, such as okra, eggplant, leafy greens, and select beans, will be introduced. These not only improve dietary diversity and nutrition but also reduce the burden of food insecurity during dry seasons. Selection of crops will be participatory, ensuring local knowledge is integrated into crop selection and that women, youth, and other vulnerable groups are actively engaged in field training and decision-making processes. FFS and home demonstration plots will include Moringa trees as part of integrated garden systems. As a multipurpose species, Moringa supports drought-resilient farming by enhancing microclimates, improving soil organic content, and offering a reliable source of nutrients during lean seasons. Extension services will provide women and youth training on tree propagation, pruning, and nutrient use of Moringa as both food and livestock feed and seedlings will be propagated in the community led nurseries.
195. Gender Action Learning System (GALS) training will provide guidance and empower beneficiaries with tools to negotiate equitable roles in household and community-level adaptation strategies, including resource access, market participation, and benefit sharing. Additionally, community outreach will raise awareness of labor-saving agriculture practices that enhance food security and reduce workloads.
196. **Activity 3.1.3.1 Promote and support high nutrient, climate-resilient food varieties.** This activity will promote climate-resilient agriculture through the introduction and cultivation, of key nutrient rich, drought-tolerant food crops such as sorghum, millet, cassava, groundnuts, Moringa trees, climate-resilient vegetables and – in collaboration with experienced agencies such as The Land Institute and CIMMYT possibly also perennial varieties of grains (such as sainfoin and sorghum). These crops are well adapted for semi-arid conditions and play a vital role in improving food and nutritional security, especially for vulnerable households.
197. To preserve soil quality and enhance agricultural productivity, conservation agriculture practices will be introduced, focusing on minimal soil disturbance, crop mixing and rotation, and maintaining soil cover throughout the growing season. These practices are particularly important for project's predominantly pastoralist population, where declining forage availability and water scarcity are major climate challenges. As pastoralists begin cultivating fodder and food crops, conservation agriculture offers a climate-smart solution to sustain livestock and crop production.

198. Leveraging FAO's expertise in conservation agriculture in Southern Africa, the project will train both men, women, youth, and youth in these sustainable farming methods. Labor saving equipment manual jab planters, manual seeders, and animal-drawn rippers will be provided to facilitate adoption. Women, who hold primarily responsibility for agriculture in pastoralist communities, will especially benefit from these technologies, as CC has increased their workload due to men migrating in search of pasture and water. Boys may be pulled from school to assist, and girls face additional domestic burdens, impacting education and future opportunities. Labor-saving technologies will help alleviate these burdens, empowering women, and children to improve productivity, food security, and household resilience.
199. FAO will train farmers in climate-smart techniques including sustainable crop-livestock integration, conservation agriculture, participatory varietal selection of drought-resilient seeds, and water-efficient irrigation and organic soil health practices. FFS and demonstration plots will provide platforms for farmers to test and adopt resilient varieties and new practices suited to local realities and needs. The schools will give special attention to supporting women-led household vegetable gardens to improve nutrition, save time, and increase adaptive capacity. Extension services will be strengthened to provide ongoing technical support and information sharing. FAO will implement this activity, building on its existing FFS programs in the target area.
200. To integrate high nutrient, climate-resilient Moringa trees into backyard gardens, the community nurseries, established under Activity 3.1.4.1, will grow Moringa tree seedlings, ensuring local availability of seedlings for household gardens and other small-scale planting initiatives. This localized propagation approach will enhance adoption, reduce costs, and build community ownership over planting efforts.
201. Moringa oleifera is a fast-growing, hardy, and indigenous tree species known for its high productivity and the diverse uses of all its vegetative parts, including wood, leaves, flowers, immature pods, and seeds. It holds significant nutritional value for both humans and animals and is traditionally used in agroforestry systems, for medicinal purposes, and in water purification, where its seeds act as a natural coagulant.
202. The leaves of Moringa oleifera are especially rich in protein, as well as vitamins A, B, and C, and essential minerals. These qualities make it highly recommended for pregnant and nursing women, as well as young children. Notably, the tree retains its leaves during the dry season and periods of drought, offering a critical source of green vegetables when other foods are scarce. This tree is valued for its resilience, as well as its fast-growing, drought-tolerant, and well-suited to semi-arid conditions. Beyond its nutritional benefits, the species possesses a range of medicinal properties, including antibiotic, antitrypanosomally, hypotensive, antispasmodic, antiulcer, anti-inflammatory, hypocholesterolemic, and hypoglycemic effects. [26]
203. **Output 3.1.4.4 Degraded rangeland restored through reseeding, rotational grazing, and soil improvement techniques to enhance drought-resistant fodder availability and ecosystem health.** Rangelands form critical ecological infrastructure that support livestock-based livelihoods in the Kunene region, particularly among pastoralist communities. Under a changing climate, these landscapes face increasing degradation due to erratic rainfall, prolonged droughts, and overgrazing, undermining their capacity to regenerate and support biodiversity and fodder availability. This degradation directly threatens food security, incomes, and resilience, especially for women and other vulnerable groups who rely heavily on ecosystem services for food, and livelihoods but often lack equitable access to decision-making and resources.
204. Restoring degraded rangeland through reseeding with drought-tolerant grasses, implementing rotational grazing systems, and applying soil improvement techniques is a vital climate adaptation strategy. These interventions will enhance the regenerative capacity of ecosystems, increase the availability of climate-resilient fodder, reduce livestock pressure on marginal lands, and improve the overall adaptive capacity of pastoralist households. The approach will be community-led and inclusive, ensuring women and youth are actively engaged in rangeland management and benefit equitably from restored ecosystem services.
205. **Activity 3.1.4.1 Establish community-led nurseries for drought-resistant fodder crops and Moringa tree cultivation adjacent to water retention ponds.** This activity will promote inclusive and climate-resilient rangeland restoration by establishing community nurseries for drought-tolerant fodder species, such as Cenchrus ciliaris and Stylosanthes spp., adjacent to water retention ponds developed under Output 3.1.2. Women's groups will be supported to obtain secure land tenure for the nurseries, recognizing their traditional roles in natural resource management and their vulnerability to climate impacts. These nurseries will serve as sustainable sources of planting material for fodder reseeding on degraded rangelands. As well as introduce Moringa tree cultivation with the goal of distributing seedlings to women for home gardens.
206. Inclusive decision-making will be ensured by involving women and youth in resource mapping, seed selection, and nursery operations, and building their capacity in nursery management and fodder and Moringa tree propagation. These nurseries will also be used as demonstration sites for community training on ecosystem restoration techniques, contributing to climate education and local ownership of adaptation measures. Data from Moringa cultivation and benefits derived from backyard gardens will inform the case studies in Component 4.
207. **Activity 3.1.4.2 Secure and rehabilitate 20,000 hectares of rangeland in partnership with traditional leaders and local institutions.** In collaboration with traditional authorities and local governments, 20,000 hectares of degraded communal rangeland will be identified and allocated for climate-smart restoration. This will involve zoning for rotational grazing, fencing of recovery zones, and reseeding with local fodder species propagated in the community nurseries (Activity 3.1.4.1). These measures aim to increase availability of fodder, reduce soil erosion, and restore vital ecosystem functions critical for pastoralist livelihoods. The process will be guided by participatory approaches, including gender-balanced rangeland management committees responsible for designing and enforcing grazing calendars, promoting community ownership and equitable access.
208. In addition, awareness-raising and training sessions will be held for herders on grazing management, climate risks, and sustainable fodder harvesting, strengthening long-term resilience and adaptive capacity. Given the central role of rangelands and water sources in pastoral systems, the project prioritizes rangeland restoration to improve drought-resistant fodder production, biodiversity, and soil cover. Restoration will involve fencing selected areas (guided by community input) to facilitate natural regeneration, while fodder crops grown in community nurseries will be transplanted and matured within the recovery zones. These will be harvested collectively by community members for livestock feeding. Improvements to water infrastructure are addressed under Outputs 3.1.1 and 3.1.2.

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[26] R. Kumar, et. Al (2013) Scientific Production Techniques in Moringa. Agricultural Reviews Volume: 35, Issue: 1 https://arccarticles.s3.amazonaws.com/webArticle/articles/1139.pdf

209. **Activity 3.1.4.3 Promote integration of Moringa trees into household gardens to enhance nutrition, soil health, and water retention in women-led production systems.** To strengthen household climate resilience and promote sustainable, gender-responsive adaptation, this activity will support the integration of Moringa oleifera into women-managed backyard gardens. Moringa trees provide multiple benefits: its leaves are rich in nutrients, its deep-rooted system improves soil structure and water retention, and its biomass can serve as livestock fodder during periods of stress.
210. The inclusion of Moringa trees in household food production systems will help diversify diets, improve soil quality, and create microclimates that support the cultivation of other drought-resilient crops. As CC increases women's water and food security responsibilities, low-input, low water use interventions like Moringa cultivation can significantly enhance home garden production and provide increased nutritional benefits.
211. FAO and local extension services will provide Moringa tree cultivation training on:
    - Propagation and pruning techniques.
    - Soil and water management around Moringa trees
    - Nutritional use of Moringa leaves and pods in household diets.
    - Integration of Moringa into climate-resilient cropping systems
212. Where applicable, the project will also draw on local and Indigenous knowledge of moringa tree cultivation and seasonal planning to guide planting, care, and sustainable harvesting. In doing so, this activity will contribute to broader climate resilience, food, and nutrition security, while reinforcing community ownership and long-term sustainability of adaptation strategies.
213. **Outcome 3.2 Improved collaboration and coordination among development partners and stakeholders within the KRB.** The KRB, particularly its lower basin, is remote and has difficult terrain, sparse infrastructure, and low population density. These conditions make it challenging for local communities, especially semi-nomadic pastoralist groups, to connect with one another or with external development and climate adaptation partners. As a result, adaptation interventions are often fragmented, short-term, and poorly coordinated, reducing their long-term effectiveness and impact.
214. This outcome aims to improve regional institutional coordination, information sharing, and collaborative action of stakeholders working in CC adaptation, DRR, natural resource management, and sustainable livelihoods within the KRB. The project will establish and operationalize a collaborative multi-stakeholder forum that brings together regional technical experts, local and national authorities, NGOs, traditional leaders, and community members. This platform will function as a coordination mechanism to align adaptation actions, facilitate data and knowledge exchange, identify synergies among ongoing initiatives, and avoid duplication of efforts.
215. Targeted training on climate-resilient, gender-inclusive governance, participatory monitoring and evaluation, and resource mobilization will be provided with a focus on reaching both Angola and Namibia and integrating its regional efforts. This collaboration coordination will be designed to promote meaningful participation of indigenous people, women, youth, and marginalized groups in adaptation decision-making processes, thereby strengthening local ownership and long-term sustainability of adaptation efforts.
216. **Output 3.2.1 An inclusive multi-stakeholder climate adaptation coordination forum established and operationalized to enhance alignment, knowledge sharing, and inclusive decision-making in the KRB.** To ensure consistent and inclusive oversight of adaptation and resilience-building activities at the local level, the project will establish and operationalize a multi-stakeholder coordination forum in the KRB. This forum will convene key implementation partners, local government, CSOs, NGOs, local private sector actors, traditional leaders, women's groups, youth representatives, and the Project Implementation Units (PIUs), to facilitate structured and coordinated engagement.
217. The regional forum will:
    - Meet regularly (e.g., quarterly) to align ongoing activities, share updates, identify synergies, and prevent duplication of efforts.
    - Serve as a platform for climate information sharing, participatory monitoring and evaluation, and joint planning of climate adaptation and DRR initiatives.
    - Build local institutional capacity through training on CC adaptation planning, gender-responsive governance, data management, and resource mobilization.
    - Ensure the meaningful participation of indigenous people, women, youth, and marginalized groups, including in leadership and decision-making roles within the forum's structure.
    - Contribute to the institutional sustainability of climate coordination by documenting lessons learned and fostering partnerships with national authorities and development partners.
218. **Activity 3.2.1.1 Establishing and Operationalizing a Multi-Stakeholder Coordination Forum for Climate Adaptation and Sustainable Livelihoods in the KRB**. The PIU will organize quarterly meetings for local development partners, local authorities, CSOs, NGOs, community leaders, and the private sector, to foster collaboration and align efforts in climate adaptation, DRR, capacity building for understanding and disseminating EWS data and sustainable livelihoods. A launch workshop will kick-start the forum, bringing together all stakeholders to align objectives. At this time, stakeholders will identify the most effective means to remain in communication and share information.
219. The forum will facilitate knowledge sharing through a collaborative online platform or physical space, ensuring continuous communication and resource exchange. Capacity-building workshops will equip stakeholders with skills in climate adaptation, gender-inclusive governance, participatory M&E, and resource mobilization, with a focus on empowering women, youth, and marginalized groups. The meetings will support participatory planning and joint monitoring, allowing communities, especially women and youth, to contribute to the design and execution of projects. Feedback mechanisms will ensure the inclusion of vulnerable voices in decision-making processes and a mapping of existing climate adaptation and DRR initiatives will identify collaboration opportunities, eliminate duplication, and enhance synergy. Joint field visits will foster cooperation and learning. A shared action plan will align regional and national efforts for greater impact. The forum will promote gender-responsive governance by ensuring equal representation of women in leadership and decision-making. Monthly newsletters will summarize activities, lessons learned, and upcoming events to keep stakeholders

informed and engaged. Additionally, meetings will have minutes and be referenced in the project's progress reports, mid-term, and terminal evaluations, ensuring transparency and accountability.

220. **Component 4 Strengthening awareness, knowledge, and capacity to adapt to climate change, variability.**. Sharing this component will support the generation, integration, and dissemination of knowledge to strengthen adaptive planning and enhance the effectiveness and sustainability of project interventions. It recognizes that both scientific and traditional knowledge systems are essential to understanding climate impacts and designing appropriate adaptation responses in the KRB. Knowledge products will document how climate-informed planning (Component 1) and real-time data (Component 2) improve the targeting and sustainability of on-the-ground adaptation (Component 3).
221. The component will ensure that the knowledge co-produced through stakeholder engagement processes, particularly the participatory Scenario Planning exercises, is systematically captured and used to inform the design, implementation, and adaptive management of project activities. Emphasis will be placed on the collection and application of gender-sensitive data and indicators to ensure that the project's MEL framework reflects the differentiated vulnerabilities, needs, and contributions of women, men, youth, and marginalized groups.
222. In addition to informing internal learning and project refinement, this component will facilitate the sharing of experiences, lessons learned, and good practices—particularly related to gender-responsive and community-led adaptation—at local, national, regional, and global levels. This includes establishing knowledge exchange mechanisms, contributing to regional learning platforms, and engaging with relevant partners and climate adaptation networks to disseminate insights generated from the project. Ultimately, this component aims to enhance the replicability and scalability of successful adaptation practices and contribute to the global knowledge base on effective, inclusive climate adaptation in transboundary, ecosystem-dependent contexts.
223. **Outcome 4.1 Targeted populations in the KRB demonstrate increased awareness, understanding, and ownership of climate change adaptation and disaster risk reduction processes, resulting in more inclusive participation and leadership in locally led adaptation planning and implementation.** Increasing knowledge of the KRB is critical to enable sustainable management and climate-resilient development across this transboundary ecosystem. The Basin supports biodiversity and provides essential resources, such as water for agriculture, drinking, and fisheries, which underpin the livelihoods of local communities, particularly pastoralists and women engaged in subsistence farming.
224. Given the region's high vulnerability to climate variability, drought, and ecosystem degradation, a deeper understanding of the basin's hydrology, geology, and socio-ecological systems is vital for anticipating and managing climate risks. Strengthening local research and fostering knowledge co-production between scientists, Indigenous peoples, government agencies, and communities will support the design of evidence-based, inclusive adaptation strategies.
225. This outcome will enhance awareness and ownership of adaptation efforts through targeted education, participatory scenario planning, and the dissemination of locally tailored climate information. By doing so, it will empower communities, especially women and youth, to engage in natural resource governance, contribute to climate resilience, and protect the Basin's ecological integrity.
226. **Output 4.1.1 Knowledge on climate risks, adaptation strategies, and the ecological dynamics of the KRB is generated, shared, and used to inform inclusive adaptation planning and resource management**. Gender-responsive knowledge systems on KRB climate risks, adaptation strategies, and ecological dynamics are co-generated, disseminated, and institutionalized to support inclusive and equitable adaptation planning. These systems recognize the differentiated impacts of CC on indigenous people, women, men, and marginalized groups, and aim to empower underrepresented voices in decision-making. Key aspects include:
    (a) establishment of community-led knowledge hubs that blend scientific data with traditional and Indigenous practices.
    (b) gender-transformative training and capacity-building programs that ensure at least 40% women and youth leadership in local adaptation bodies.
    (c) integration of vulnerability-adjusted climate risk assessments and gender-sensitive data into local governance frameworks; and
    (d) implementation of AF-aligned monitoring, evaluation, and learning (MEL) metrics that track participatory budgeting and inclusivity in adaptation investments.
227. To support sustained learning and knowledge production, the project will establish community-led knowledge hubs that blend scientific hydrological data with Indigenous flood prediction methods (e.g., animal behavior, cloud patterns, plant phenology). The integration of Indigenous early warning indicators will enable a more localized and trusted approach to climate risk communication. This will be developed through outreach efforts and will be governed by steering committees with ≥50% women representation.
228. Meetings, workshops, and awareness campaigns will play a key role in disseminating knowledge and fostering local ownership. These initiatives aim to build adaptive capacity by reflecting community priorities and cultural contexts. Insights and lessons will be documented and shared through regional reports, publications, and South-South knowledge exchange platforms, contributing to broader climate resilience and inclusive development across the basin.
229. **Activity 4.1.1.1 Enhancing community capacity through gender-responsive climate knowledge and awareness**. Early in the project, inclusive climate awareness campaigns will be launched to engage beneficiary communities in the design and implementation of locally appropriate adaptation measures. The local radio stations will be mobilized to broadcast the campaigns, while the community action teams will carry out awareness actions at community level. These campaigns will ensure ≥50% participation from women and marginalized groups and will integrate localized vulnerability data from KRB climate risk assessments.
230. Workshops will use participatory methods to co-develop adaptation plans. Gender-adjusted vulnerability indices from FAO will guide community risk mapping exercises. Attendees of leadership and governance training will be linked to reserved seats in project committees, fostering long-term institutional change and empowerment. A robust, MEL system will track the share of adaptation budgets allocated through community assemblies. Bi-annual participatory audits will ensure transparency and accountability. To scale learning regionally, the project will host South-South exchanges with

the Niger Basin Authority and digitize best practices in Swahili and French for open-access knowledge platforms. Post-training surveys will target a ≥30% increase in climate literacy, contributing to more equitable and locally led adaptation planning throughout the project lifecycle.

231. **Activity 4.1.1.2 Enhancing Adaptive Capacity through Integrated Nutrition and CC knowledge**. Improved nutrition and climate understanding are foundational to climate resilience. Enhanced health enables communities to better understand and recover from climate shocks, while climate knowledge strengthens the ability to apply critical information for climate risk reduction. This activity will provide targeted nutrition and CC training, especially focused on women and youth, in collaboration with Health Ministries, nutrition focused agencies and environmental Ministries. FAO will lead implementation through existing FFS and community-based awareness programs within the intervention areas.
232. **Output 4.1.2** Kunene River Awareness Kit (RAK) online portal updated and reactivated with gender-responsive climate smart content and community outreach tools.:
233. The Kunene River Awareness Kit (RAK) online portal operated by Cuvelai Watercourse Commission (CUVECOM**)** will be reactivated and updated to serve as a dynamic, multilingual platform supporting inclusive climate adaptation and transboundary water governance. The updated RAK will integrate gender-disaggregated climate vulnerability maps and Indigenous flood prediction methodologies, developed through participatory mapping protocols. Interactive decision-support tools modeling 2030 and 2050 climate scenarios for water allocation and disaster risk planning will be embedded in the platform and validated through community workshops. Real-time data visualization will be enabled through automated feeds from 24 new hydro-meteorological stations and community observation posts (overseen by water committees associated with retention ponds and rainwater harvesting initiatives), accessible via public-facing dashboard APIs.
234. To expand reach and climate literacy, RAK mobile outreach units will conduct quarterly digital literacy training sessions in 15 Himba and Zemba settlements, targeting ≥40% female participation. Additionally, knowledge-sharing agreements with the Niger Basin Authority will support metadata standardization and the development of French, Portuguese, and Oshiwambo language modules, strengthening South-South cooperation and accessibility.
235. **Activity 4.1.2.1 Reactivate and update the Kunene River Awareness Kit (RAK) online platform to support inclusive, data-driven water governance.** The RAK will be reactivated and updated to serve as a cutting-edge, interactive platform for climate sharing, data-driven transboundary water governance, and community capacity-building. The platform will be upgraded to serve as a multi-lingual, mobile-optimized tool, integrating real-time hydroclimate data and document and digitize Indigenous adaptation practices and knowledge repositories.
236. In close collaboration with the PJTC, the project will develop a mobile-optimized version of the portal, integrating real-time hydroclimate dashboards and Indigenous knowledge repositories, accessible in French, Portuguese, and Oshiwambo. Building on existing content, the portal will be enhanced using new data and knowledge generated from information acquired in Components 2 and 4. Automated data flows will be enabled via API connections from 12 newly installed IoT-based hydro-meteorological sensors and traditional community observer networks that track flood patterns and water retention levels. To promote local access and data ownership, eight community data hubs will be established across remote areas, equipped with satellite internet terminals for offline RAK access and community-led knowledge uploads. Fifteen gender-balanced digital literacy workshops will be conducted, targeting over 500 Himba and Zemba users to build capacity for portal use, data contribution, and local decision-making.
237. To foster South-South learning and regional standardization, the project will establish a tri-lingual knowledge-sharing protocol with the Niger Basin Authority, facilitating cross-portal metadata alignment and the exchange of best practices. The updated RAK platform will also be integrated with regional institutions (SADC Water Division, SADC-GMI, and the Water Ministries of Angola and Namibia), to support basin-wide coordination and transparency. Including documentation and dissemination of Indigenous knowledge practices, integrating it in regional policy frameworks.
238. **Output 4.1.3 Three Case studies from the project developed and submitted to knowledge platforms such as IFAD, FAO, SADC-GMI and WaterNet for wider dissemination.** The project's knowledge-sharing will also be used for three comprehensive case studies to be submitted to the knowledge management systems of IFAD and FAO. In addition to highlighting the projects To ensure dissemination of information to a wide audience and facilitating knowledge exchange and supporting the scaling-up of successful approaches across the region the case studies will also be shared with the Southern African Development Community Groundwater Management Institute (SADC-GMI) and Water Net, two key regional platforms for capacity-building and water research.
239. **Activity 4.1.3.1: Case study development.** This activity will document and disseminate key lessons, best practices, and innovative approaches generated through project implementation. Three case studies will be developed to highlight effective strategies in CC adaptation, innovative measures, disaster risk reduction, regional coordination, and the integration of EWS and indigenous knowledge. Each case study will feature practical, context-specific examples of successful adaptation measures. One case will focus specifically on the introduction and use of *Moringa oleifera* in household gardens as a climate-resilient, ecologically, and agriculturally beneficial intercropping measure, which is nutrition-rich. It will document how traditional knowledge on Moringa's nutritional and medicinal uses has been integrated with scientific practices to support food security, improve soil and water retention, and reduce gendered burdens in rural communities.
240. The case studies will be participatory, drawing on the perspectives of project beneficiaries, including women, youth, Indigenous Peoples, and marginalized groups, to ensure inclusive knowledge sharing. They will be submitted to relevant national, regional, and global knowledge platforms, including the Adaptation Fund Knowledge Hub and the UNFCCC's Nairobi Work Programme, to contribute to global learning on climate adaptation.

Outcome 4.2 Strengthened institutional capacity at local and regional levels to manage gender-responsive, locally led adaptation interventions effectively.

241. Building institutional capacity at the local, national, and transboundary levels is essential to sustain gender-responsive, community-based climate adaptation. Strengthening institutions can more effectively deliver project activities, coordinate across sectors and borders, and ensure inclusive planning, implementation, and monitoring.

242. Embedding gender equity into institutional processes empowers women, youth, Indigenous Peoples, and other marginalized groups, who often face disproportionate climate risks, to meaningfully participate in decision making and resource governance. Inclusive institutions lead to more equitable outcomes and foster ownership of adaptation solutions, enhancing their long-term effectiveness and sustainability.
243. This outcome will support institutional strengthening through a combination of technical training, participatory policy reform, resource allocation strategies, and stakeholder engagement frameworks. These efforts will be guided by principles of Free, Prior and Informed Consent (FPIC), gender equity, and resilience, ensuring that institutions are equipped to facilitate inclusive, data-informed, and climate-smart adaptation interventions.
244. **Output 4.2.1 Capacity-building programs for partner institutions in the KRB, focused on addressing water scarcity, climate change and stakeholder conflicts developed.** Capacity building programs will be designed and delivered to basin-level institutions, local governments, and civil society partners in Namibia and Angola to strengthen water resource management, climate adaptation planning, transboundary cooperation, and stakeholder dialogue capacity.
245. Training will equip institutions to operate EWS (Component 2), implement community-based DRR and adaptation plans (Components 1 and 3), and promote equitable water access and conflict-sensitive resource governance. By strengthening both vertical (national to local) and horizontal (cross-border and sectoral) institutional linkages, the project will ensure coherent and sustained implementation of adaptation strategies. By empowering local and regional organizations with the tools and knowledge needed to address water scarcity and environmental concerns, these efforts will contribute to the long-term resilience and sustainability of the KRB.

Activity 4.2.1.1 Institutional capacity building and strengthening for effective management of gender-responsive climate change adaptation initiatives. This activity will deliver tailored institutional development support and gender-sensitive technical training for key actors, including government ministries, basin authorities, local councils, and NGOs. Core training topics include:

- On integrated water resource management, conflict resolution, use of climate and EWS data for decision-making, and participatory policy development.
- Integrated water resource management (IWRM)
- Use of climate data and EWS for decision-making
- Participatory and gender-inclusive policy development
- Conflict resolution and resource-sharing mechanisms

246. The activity will also enhance stakeholder engagement competencies to better include historically marginalized populations, particularly semi-nomadic Indigenous pastoralists. Institutions will be supported to document and integrate Indigenous knowledge—such as traditional seasonal forecasting, livestock mobility strategies, and water stewardship—into adaptation policies and basin management plans.
247. Training curricula and institutional development strategies will be informed by the project's Gender Action Plan (Annex 7), ensuring culturally appropriate and inclusive approaches. International and regional experts will be engaged to design context-specific tools and materials, with delivery coordinated by the Project Implementation Units (PIUs) in Angola and Namibia. This will ensure long-term institutional ownership, cross-border alignment, and sustainability of adaptation outcomes across the Kunene River Basin.

B. How the project would promote innovative solutions to climate adaptation

248. The project is built on collective lessons learned through collaboration among government agencies in Angola and Namibia, local communities, and partners working in the KRB. The identified innovations optimize knowledge of climate risks in the basin, with a particular focus on the specific vulnerabilities of nomadic communities. By triangulating ecological, climatic, and socio-cultural data, this project introduces a replicable approach that integrates Indigenous and scientific knowledge into disaster risk reduction (DRR) scenario planning.

Innovation 1: Integrating Science with Indigenous Traditional Knowledge

249. While scientific and traditional knowledge systems are often siloed, this project will harmonize them, demonstrating how integration can improve inclusion and adaptive decision-making, especially for semi-nomadic and cross-border populations. The methodological innovation in combining these knowledge systems will not only benefit KRB communities but also contribute to a regional evidence base for integrated knowledge systems in arid river basins. This project introduces an innovative, replicable approach by integrating Indigenous and scientific knowledge into scenario planning for Natural Resource Management and DRR.
250. The project will identify, document, and integrate both knowledge systems, such as that drawn from the EWS as well as traditional seasonal forecasting, pasture management, and mobility strategies, into water governance and climate adaptation planning. This methodological innovation will demonstrate improved inclusion and adaptive decision-making, particularly for semi-nomadic, cross-border populations. Insights will contribute to a regional evidence base for integrated knowledge systems in arid basins.

Innovation 2: Multi-Hazard Early Warning System

251. MH-EWS is tailored to the specific needs of sedentary and semi-nomadic communities across boundaries. Building on existing systems and informed by prior vulnerability assessments, this scaled-up model integrates both meteorological data and local field observations, including feedback from Water-EWS Action Committees. It offers a replicable and inclusive approach to early warning, particularly relevant for mobile populations in arid and semi-arid zones.
252. Advancements in multi-hazard systems, which collate data from diverse sources and issue warnings for various hazards such as floods, fires, and prolonged dry spells, have proven valuable in understanding local CC impacts and shaping preparedness strategies. Draw on such lessons from similar systems, especially within the UNDRR network and the Global Platform for DRR will contribute further to global knowledge and experience.

253. The MH-EWS will cover the basin in its entirety, addressing the needs of both sedentary and semi-nomadic populations, especially indigenous groups in its lower basin. The system's design reflects successful vulnerability assessments already conducted by WWF and IRDNC in Namibian communities and is further informed by consultations with meteorological and hydrological agencies from both countries. Implementation will be carried out in collaboration with local partners, combining real-time data from fieldwork and automated stations to deliver timely and relevant early warnings across the hazard spectrum.

Innovation 3: Integrating EbA into DRR planning.

254. The integration of EbA into DRR planning is still a nascent but increasingly vital practice, especially in transboundary dryland ecosystems like the KRB. In 2018, the Convention on Biological Diversity developed guidelines on its integration, underscoring the cutting-edge nature of this approach. The EbA informed DRRP framework will be unique in Southern Africa and hopefully replicable across other river basins facing similar climate pressures.

255. The DRR plan will be designed through a gender responsive, multi-stakeholder dialogue, fostering collaboration between resource users and decision-makers, including women, men, and marginalized groups. EbA will serve as a core strategy, leveraging ecosystem restoration to buffer environmental shocks and strengthen resilience. The enabling environment for participatory planning established in Year 1 will be further strengthened to ensure equitable engagement, particularly from those often excluded from formal decision-making processes. This supports the co-creation of innovative, context-specific, and socially inclusive adaptation solutions.

256. The plan will be informed by gender-specific roles and indigenous knowledge systems in ecosystem management. The project will promote equitable participation and benefit-sharing, ensuring women and marginalized groups are not only included but empowered in shaping and benefiting from DRR and EbA actions. Outcomes from this component will be included in case studies providing lessons learned for the integration of EbA into DRR, particularly in regions grappling with climate variability, competing land uses, and persistent socio-economic inequalities.

Innovation 4: Gender responsive adaptation

257. The project adopts an innovative, gender-transformative approach to climate adaptation governance, with a focus on reducing the vulnerability of female-headed households, identified through stakeholder consultations as the most vulnerable to CC. By mainstreaming gender into adaptation planning and decision-making, the project aims to enhance the adaptive capacity of women and address gender-specific barriers to participation. Gender-responsive consultations will be conducted by engaging women and men separately, ensuring that meeting times and venues are accessible to all genders, and using local language for communication. Female facilitators will lead these consultations to encourage greater female participation, and representatives from women's organizations will provide a broader gender perspective. The project ensures that women comprise at least 50% of the beneficiaries and occupy key leadership positions, including in community-level management structures for productive cooperatives. These efforts will not only empower women but also build ownership for the project's activities, promoting broader replication of gender-equitable adaptation practices in resource-scarce, transboundary settings.

C. How the project would provide economic, social, and environmental benefits

258. The project activities are fully consistent with the Environmental and Social Policy of the Adaptation Fund and aim to generate a range of environmental and socio-economic co-benefits. The table below summarizes the project's key features, which are further explained in the sections that follow.

Table 5: Economic, Social and Environmental Benefits

	Economic Benefits	Social Benefits	Environmental Benefits
1.1.1 Water Security Assessment, Ecosystem Valuation and Community-Based Climate Vulnerability and Needs Assessments	- Identifies critical water-dependent livelihood assets (fisheries, agriculture, livestock) & quantify ecosystem services that sustain local economies. - Supports climate-resilient agriculture & value-chain diversification identified through vulnerability analysis. -Reduced drought losses by targeting interventions - drought-resistant crops, rangeland restoration, water infrastructure. -Provides baseline for planning investments that reduce economic shocks & enhance long-term water security for productive sectors.	-Prioritizes underserved groups (women, pastoralists, indigenous groups) by integrating differentiated vulnerabilities into inclusive DRR planning. -Community participation increases ownership of adaptation measures, improving long term sustainability. -Joint risk identification reduces tensions over shared resources like water points or grazing land.	-Maps ecological thresholds, water infrastructure gaps, & ecosystem service values to guide adaptive ecosystem management. -Awareness of sustainable abstraction levels & climate-sensitive recharge prevents over-extraction. -Supports EbA by identifying priority ecosystems for rehabilitation, flood buffers, aquifer recharge, & rangeland restoration. -Strengthens biodiversity protection through ecosystem valuations that inform future restoration & afforestation measures.
1.1.2 Gender-Inclusive Basin-wide DRR Plan (EbA-focused)	- Ensures integration of women's & pastoralist groups' economic needs in climate-resilient livelihood & water resource strategies. - Supports equitable access to adaptation resources (e.g., drought-tolerant seeds, restoration programs, water points).	- Enhances inclusive & gender-responsive risk governance, expanding decision-making power of women, youth, and Indigenous groups. - Reduces vulnerability by ensuring early warnings & preparedness actions reach marginalized groups.	- Anchors DRR in EbA solutions, supporting vegetation restoration, watershed protection, & biodiversity management. - Contributes to carbon sequestration, & long-term ecological resilience through vegetative restoration & EbA planning.

	- Improves long-term productivity & reduces economic losses by embedding EbA strategies into basin-wide planning.	-Enhance social stability by jointly addressing climate risks & resource-related tensions.	- Identifies & protects sensitive ecosystems & climate buffers for habitat protection and climate mitigation.
1.2.1 Stakeholder Engagement Report	- Surfaces economic vulnerabilities of marginalized groups (women producers, informal traders, smallholders) to inform climate-resilient livelihood strategies. - Aligns adaptation interventions with local economic priorities, improving efficiency of adaptation investments.	- Ensures meaningful participation of Indigenous groups, women, elders & youth, and minorities, improving equity in climate planning. - Social cohesion & conflict-sensitive adaptation outcomes through inclusive, dialogue-based engagement. - Empowerment of vulnerable groups via co-planning for adaptation.	-Encourages collective stewardship of natural resources through shared understanding of climate risks and ecosystem pressures. -Supports alignment of community practices with long-term ecosystem protection priorities.
2.1.1 Weather Stations in Micro-Climate Zones	- Enables forecast accuracy for agriculture and pastoralism, reducing crop/livestock losses & stabilizing household income.	-Enhance community preparedness through localized forecasts & timely alerts that improve protection of vulnerable groups. - Facilitates targeted alerts for flood/drought-prone settlements, especially critical for women & children in remote areas.	-Informs & supports adaptive land & water management practices by supplying micro-climate data essential for sustainable rangeland, watershed, & soil management in climate-sensitive ecosystems. - Reduces environmental degradation by enabling data-driven use of natural resources.
2.1.2 Hydrometric Stations on Kunene River	- Improves water resource management benefiting irrigation, livestock & fisheries-based livelihoods. -Decreases economic loss from unexpected water shortages.	-Reduces disaster-impacts on riverine communities via extreme weather forecasting. - Safer water access planning for vulnerable riverine communities.	- Enables sustainable abstraction & flow monitoring, to protect riparian ecosystems & aquatic biodiversity. -Underpins river-based ecosystem management & conservation planning.
2.2.1 Co-designed MH-EWS (with Indigenous Knowledge)	- Informs anticipatory actions to protect economic assets. - Reduces economic losses from climate extremes by enabling anticipatory actions for mitigating disaster-related damage to crops, livestock & infrastructure --Supports climate-smart investment decisions found on timely early warnings.	- Integrates Indigenous Knowledge with scientific forecasting, improving cultural relevance & uptake by semi-nomadic communities - Empowers women & marginalized groups through climate training and empowerment through co-design and participation (2.2.1-2.2.4) - Strengthens community capacity for preparedness, especially among women, youth, & nomadic groups. -Reduces displacement risk & enhances adaptive behavior.	-Supports adaptive ecosystem management by minimizing damage from extreme events. -Reduces human vulnerability & displacement risk; improves decision-making capacity across gender/ethnic groups through localized & accessible weather info. - Enhances environmental stewardship via traditional ecological knowledge in DRR and ecosystem management. (2.2.1-2.2.4)
2.2.2 Big Data Analytics Tool & Dashboard	- Improves planning efficiency across water, agriculture, & disaster management sectors. - Reduces economic losses by enabling faster decision-making & early warnings.	- Improves equitable access to real-time climate information among government, communities, & pastoral groups.	- Timely response minimizing ecosystem degradation during extreme climate events. - Improves monitoring of environmental stressors - drought severity, vegetation decline, & river flow changes.
2.2.3 Operationalized Cross-Border MH-EWS	- Improves coordinated management of shared water, grazing, and livelihoods across borders, reducing climate-related disruptions.	- Reduces cross-border disaster vulnerability of mobile populations (pastoralists) & strengthens cross-border safety protocols.	- Enables EbA disaster preparedness, enhancing basin-wide protection of watersheds, grazing lands, & river system.
2.2.4 Localized Weather Forecasts	- Proactive adaptation choices at the household level, reducing infrastructure & asset damage via actionable warnings – reducing income disruption.	- Ensures inclusive, accessible alerts. -Improved skills for effective use of forecasts across diverse gender group & marginalized people.	- Reduces pressure on land/water resources by aligning usage with climate conditions.

3.1.1 Rainwater Retention Infrastructure	- Expands water supply for agriculture, livestock, domestic use, and small enterprises. - Boosts drought resilience of local economies through improved water storage for productive sectors.	- Eases water collection burden improving school attendance and family wellbeing. - Improves community health via better hygiene and reliable water access. - Reduces resource conflicts by improving equitable access to natural resources. - Empowers vulnerable groups through participation in adaptation planning	- Enhances aquifer and ecological recharge, reducing stress on natural resources. - Prevents soil erosion and land degradation, maintains soil moisture, benefiting surrounding ecosystems and biodiversity. - Infrastructure supportive of EbA and ecosystem function strengthens ecosystems, biodiversity, improves ecosystem services, and reduces environmental degradation.
3.1.2 Groundwater Access Infrastructure	-Year-round home gardens & household water supply & small-scale irrigation stabilizing household income. - Supports livestock maintenance. - Contributes to food security and income generation from home gardens.	- Reduces women's and girls' time burden for water collection, improving school attendance and maternal health. - Improves food and water security.	- Reduces over-reliance on overexploited water sources. - Promotes regulated use of aquifers with sustainable abstraction plans. - Sustainable water sourcing protects riparian ecosystems -Sustainability enhanced through alignment with EbA practices
3.1.3 High Nutrient, Drought-Tolerant Crops	- Stabilizes food supply and income during drought cycles. - Increases agricultural productivity and climate smart agricultural practices. -Water retention of Moringa trees and intercropping value supports home gardens and food stability during drought cycles decreasing food purchases.	- Improved resilience by improved peer-to-peer farmer knowledge. - Reduces food insecurity and increases nutrition. - Supports gender inclusive access to knowledge, tools, and income generation in adaptive farming practices. -FFS training on Moringa tree planting in home gardens benefits women's garden productivity and knowledge.	- Reduces demand for water-intensive crops and external inputs (e.g., water, fertilizer). - Supports climate-resilient food systems. - Supports soil health, agroforestry systems, and lower water loss due to shading and organic matter improvements. - Moringa tree Increases soil stability and porosity, shade decreases water loss and evaporation, reduces irrigation, and supports agroforestry by intercropping systems.[27]
3.1.4 Rangeland Restoration	- Improves fodder availability and livestock health, supporting pastoral economies. - Revives livestock production and associated income supporting pastoralist economies. - Employment generation and increased land productivity for women	- Supports traditional pastoral systems and traditional livelihoods reducing conflict over grazing lands and enabling mobility for pastoralists. - Equitable access to natural resources (e.g., earth dams, retention ponds, rangelands, afforestation) - Empowers women via land ownership and management roles. - Enhanced nutrition and food security from moringa and fruit trees - Strengthened leadership of women in environmental stewardship	- Enhances biodiversity and reduces land degradation. -Safeguards biodiversity. - Improves pasture health and productivity, grazing management for erosion control. - Enhances soil conservation - erosion control measures like gully rehabilitation and planting. - Strengthens ecosystem services including fodder availability& increased biodiversity through agroforestry systems.
3.2.1 Inclusive Coordination Forum	- Aligns donor and government funding toward locally relevant priorities, avoiding duplication and increasing efficiency of adaptation interventions. - Joint planning increases investment impact. - Participation targets (50% women, 30% youth) ensure inclusive governance of shared resources.	- Improved coordination of semi-nomadic agro-pastoralists for natural resource management, gives voice to community leaders & local institutions, strengthens social cohesion. - Conflict reduction through participatory decision-making - Institutional trust-building across sectors and communities - Participation: women (50%) & youth (30%) in resource governance.	- Supports integrated ecosystem management approaches. - Enables collective oversight of ecosystem-sensitive interventions and promotes coordinated resource conservation and restoration strategies. - Strengthens coherent watershed and rangeland management across borders.

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[27] FAO The tree that purifies water: Cultivating multipurpose Moringaceae in the Sudan https://www.fao.org/3/r7750e/r7750e04.htm 95 Motis, Timothy & Longfellow, Joy & Jani, Arun & Lingbeek, Brandon & D'Aiuto, Christopher & Bergen, Joshua. (2017). Productivity of Moringa oleifera augmented with intercropped tropical legumes. Acta Horticulturae. 85-96. 10.17660/ActaHortic.2017.1158.11. https://www.researchgate.net/publication/316832602_Productivity_of_Moringa_oleifera_augmented_with_intercropped_tropical_legumes

		-Mitigates risk of resource mismanagement (tragedy of the commons') by improving participatory governance & collective action.	Shared learning around sustainable resource use - Reinforced protection of natural assets via joint action plans
4.1.1 Climate Change Adaptation Awareness Campaigns	- Strengthens climate-informed livelihood decision-making, improving productivity and income stability. - Productivity gains from improved health and literacy - Economic empowerment of 200+ certified climate leaders	-Challenges norms that exclude women from adaptation leadership, leading to empowerment of women. -Increased awareness of climate risks & sustainable adaptation strategies. -Training for 7,700 community members; 2,400 institutional staff. -Empowerment of vulnerable groups. -Enhanced local decision-making on mitigation, adaptation investments & resource benefit-sharing. -Participation targets set for women (50%) & youth (30%) in resource governance. -Strengthened social cohesion through joint planning & preparedness. -Nutrition security contributes to stronger climate resilience. -Reduced decision-making gender gaps by literacy & leadership programs -Women & youth gain access to reserved governance seats. -Improved agency through awareness campaigns, training & adaptation leadership, 54,200 direct beneficiaries.	- Builds awareness on the importance of ecosystem health and sustainability, promoting behavioral change in land and water use. - Encourages uptake of community-led ecosystem practices. - Increased CC literacy (≥30%) - Behavioral change in natural resource use driven by climate awareness.
4.1.2 Awareness Kit Portal	- Shares market-relevant and adaptation data to local actors reducing losses from climate shocks. - Supports scaling of cost-effective, climate-smart innovations for other regions and actors. - Efficient water governance via real-time data - Reduced losses from disasters via early alerts	- Increases equitable accessibility of adaptation tools. - Builds local pride and recognition of traditional and community-led innovations. - Builds digital literacy training (500+ Himba/Zemba people) and preserves Indigenous Knowledge. - Gender-balanced data hubs increase equity	- Promotes informed conservation & ecosystem use. - Increased knowledge-driven replication of EbA. - Monitoring supports early detection of degradation - Accessible data drives evidence-based conservation planning - Dissemination of sustainable land/water use practices informed by localized data.
4.1.3 Case Studies Shared with Regional Platforms	- Attracts replication funding for successful adaptation solutions. - Provides access and supports extension of replicable innovations and cost-effective practices for other regions and actors.	-Builds local pride and cross-border learning. - Strengthens knowledge sharing networks and peer learning - Global exposure to local voices	- Encourages replication & scaling across SADC region, especially for nature-based solutions. - Disseminates learnings on EbA practices & benefits. - Integrated EbA & MH-EWS increases ecological stewardship - Integrates scientific & traditional knowledge
4.2.1 Institutional Capacity-Building	- Improves resource management and service delivery for water, agriculture, and climate governance. - Improves efficiency in public service delivery and disaster risk governance. - Policy alignment improves resource allocation. - Enhanced CC awareness of 54,200 direct project beneficiaries leads to better decisions for	- Enhances public trust & institutional responsiveness. - Increased awareness of climate risks & sustainable adaptation strategies - Training: 7,700 community members; 2,400 institutional staff - Empowerment of vulnerable groups. - Enhanced local decision-making on mitigation, investments, and resource benefit-sharing.	- Improved skills for sustainable water and climate governance. - Strengthens technical skills in ecosystem restoration, climate-smart agriculture, and natural resource management, reducing environmental degradation and mismanagement. - Increased CC impact awareness for 54,200 direct project beneficiaries, adaptive capacity and its influence on land and water resources.

	maintained production and protection of assets	- Participation targets for women (50%) & youth (30%) in resource governance. - Strengthened social cohesion through joint planning and preparedness. - Strengthens community trust & cooperation through co-management. -Reduces stakeholder conflict by enhanced institutional presence.	- Long-term sustainability of adaptation and conservation efforts - Institutions more capable of enforcing ecological protection laws - Pasture and erosion management supports soil and water conservation.

D. Analysis of the cost-effectiveness of the proposed project

259. This project aims to ensure cost-effectiveness through strategic partnerships with other projects existing or planned initiatives in the KRB. Such collaboration will leverage synergies, reduce duplication, and enhance the capacity of target communities to adapt to the changing climate and its impacts beyond the project's duration.
260. The project will directly benefit 54,200 beneficiaries in the project area. Beneficiaries will have improved resilience to climate shocks through enhanced access to early warnings, DRRP, water, land, and equipment for climate-smart agriculture, and raising adaptive capacity through improved nutrition, climate knowledge, and natural resources management. A further 779,000 indirect beneficiaries will benefit through increased public awareness, access to EWS information, and reduced systemic vulnerability.
261. The selection of the proposed approach was based on a logical, comparative analysis of adaptation alternatives, evaluated against economic, social, and environmental sustainability criteria. The table below compares the 'with' and 'without' scenarios for each project component and demonstrates the lack of feasible or cost effectiveness alternative in the geographical and institutional context of the KRB.

Table 6: 'With' and 'without' Project Scenario Comparison

. **Component**	. **'Without' Scenario**	**'With' Scenario**	. **Alternatives**
. Component 1. Co-design and implementation of a Disaster Risk Reduction Plan through EbA in the KRB (KRB: EbA-DRRP)	. Angola has a national DRR strategy and Namibia has a national DRR policy, but these have not been downscaled into DRR plans at the local level. Thus, DRR planning for the project area is not robust, leaving the communities vulnerable to the impacts of extreme weather events as well as slow-onset hazards. Furthermore, the difficulty in accessing the areas due to their remoteness and lack of infrastructure impedes delivery of disaster relief.	. A DRR Plan for the KRB is developed, with responsibilities of the various stakeholders clarified. . . Furthermore, EbA measures are incorporated into DRR, enhancing the resilience of the beneficiary communities and the ecosystems they depend on.	. There is no viable alternative to DRR planning, as it is essential to safeguarding communities, ecosystems, and infrastructure from the potential impacts of weather-related hazards.
. Component 2. Implementation of a satellite-based MH-EWS for the KRB (KRB: MH-EWS)	. The community does not receive advance warning of extreme weather events or related hazards such as wildfires. This results in loss of human life, livestock, crops, and other valuable resources.	. The beneficiary and surrounding communities receive sufficient advance warning of all adverse weather conditions, extreme weather events, and related hazards, enabling them to take preparatory action. The increased density of meteorological and hydrological observation stations in the Basin leads to more accurate forecasting of floods, droughts and other adverse weather conditions or events.	. There is no viable alternative to an EWS, as these systems are essential to disaster risk reduction, as well as preparedness for altered weather patterns or extreme weather events.
. Component 3. Inclusive, community-based adaptation actions are co-designed and implemented to strengthen climate-resilient livelihoods, natural resource management, and	. Availability of water, food and food are declining, particularly in the lower Basin, which is becoming increasingly arid. Under these conditions, the semi-nomadic agro-pastoralist communities in the lower Basin are unable to sustain their traditional lifestyle, leading to migration of men and boys to urban areas in search of work, while women and girls are left behind in the rural areas, with limited economic opportunities.	. Approximately 54,200 inhabitants of the lower KRB have increased access to water, food, and food to sustain themselves and their livestock. 20 earth/sand dams and 180 boreholes are rehabilitated, while 20 new water retention ponds and 40 rooftop rainwater harvesting units are constructed. Cultivation of drought-tolerant crop varieties using conservation agriculture techniques leads to increased production of food.	. Alternatives to enhancing availability of water, food and food are limited in the project area, due to lack of local capacity to manage complex technology and infrastructure. Thus, interventions proposed are like what the communities are familiar with and able to manage. Nature-based solutions are proposed for enhancing availability of water and fodder, while simple technologies are proposed for implementing conservation agriculture and value addition to drought-tolerant crops. These

water security in the KRB. . . .		Furthermore, 20,000 hectares of rangeland are restored, and 2,000 hectares of multipurpose tree plantations are established, enhancing ecosystem health of the Basin.	interventions build upon the target beneficiaries' current way of life, rather than introducing new activities that would disrupt their lifestyle and livelihoods.
. 4.Strengthening awareness, knowledge, and capacity to adapt to CC and variability and knowledge sharing	. Communities observe the changes that are affecting their livelihoods and wellbeing but lack the knowledge and capacity to overcome these challenges or take maladaptive actions that worsen the situation. Local institutions also lack capacity to help the communities.	. The beneficiary communities and the institutions that support them have the knowledge and capacity to overcome the climate-related challenges that they experience. Lessons learned are shared with other projects and documented for future reference.	. The alternative to capacitating beneficiary communities and local stakeholders would be a non-consultative top-down approach towards managing the people and resources of the Basin.

287. DRR and EWS, addressed in components 1 and 2, are critical in regions where extreme climatic events threaten community livelihood security. Its absence results in communities vulnerable to loss of life and assets. The proposed multi hazard EWS integrates satellite data, local monitoring, and traditional knowledge, making it more accurate and cost effective than top-down technological imports that lack contextual fit. Collaboration with the national meteorological and hydrological agencies and the local communities will ensure that data will be continuously collected, and the climatic hazards monitored and most importantly capacity building to understand EWS information and operationalizing governance in response to this information. Community-based DRR and EWS systems that engage women, youth, and other marginalised groups enable more localised, timely and socially and culturally relevant information on vulnerability and capacity needed, leading to decisions and actions better suited and received in the local context. This results in decisions and actions tailored to the realities and understanding of the community. An inclusive approach, drawing on the knowledge, perspectives, and experiences of all actors, from government officials and climate scientists to vulnerable and marginalized groups, ensures that diverse voices contribute to risk analysis and planning. The resultant interventions will be locally appropriate, co-owned, and more cost-effective and sustainable than conventional top-down approaches.
288. In addition, liaison with regional organisations such as the SADC Water Division, the SADC Groundwater Monitoring Initiative and Water Net will build cost-effectiveness through shared platforms and reduced data redundancy. By upgrading the existing KRB information portal rather than creating new ones, the project decreases IT infrastructure costs while increasing accessibility of data for planning and decision making, as well as institutional capacity building and knowledge sharing. The reactivation of the existing information portal on the KRB means funds will be needed to update the portal and include new data and knowledge.
289. To ensure cost-effectiveness of the community-based adaptation practices under Component 3, the following considerations were applied in selecting them:
    - Adaptation rationale - clarity of concrete adaptation benefits for semi-nomadic agro-pastoralists
    - Gender - how easily the intervention reaches large numbers of women; gender responsive mitigation strategies, equitable access to DRR resources by the different gender subgroups, community training for EWS/DRR targeting women and marginalised subgroups.
    - Sustainability of interventions - ensuring that the interventions continue providing benefits after project closure.
    - Minimal potential for maladaptation.
290. The project avoids implementing costly top-down interventions that may not be fully utilised and maintained by the communities due to lack of ownership or capacity as well as potentially exceeding the technical capacity and maintenance ability of local communities. Such interventions might undermine the current coping strategies of the communities and miss out on building upon indigenous knowledge. DRR planning, EWS and capacity building (Components 1,2 and 4) are essential to effective CC adaptation and do not have comparable substitutes. The agricultural activities under Component 3 are designed to enhance, rather than disrupt, the existing livelihoods and cultural practices of target communities. They build on current land use patterns and traditional knowledge, strengthening climate resilience through context-appropriate innovations that align with local ways of life.
291. The selected approach emphasizes decentralised, inclusive, and flexible solutions that are economically viable, environmentally sound, and socially acceptable. The project deploys an innovative intervention framework which combines scientific knowledge with indigenous traditional knowledge, deployment of a MH-EWS; integration of DRR planning with EbA, climate smart agriculture practices and climate risk buffers such as retention ponds and rainwater harvesting systems as well as gender-responsive adaptation. This is a fundamental departure from the usual responses to climate-induced hazards in the target area, which tend to focus on emergency relief, such as food distribution, cash transfers, and other forms of subsidies. Emergency relief programs in pastoral areas of Africa do little to sustainably relieve the fundamental effects of climate-induced emergencies such as drought and floods, instead providing temporary measures that do not address adaptive capacity or improved resilience To improve meeting the primary needs of pastoralists following severe drought/floods, this project focuses on restoring rangelands, climate risk buffers, and other mechanisms which are co-created with the communities.
292. The regional, transboundary design of the project improves cost-effectiveness and avoids duplication. For instance, one automatic weather station can serve both Namibia and Angola, which is critical given the migratory nature of pastoralist populations. Harmonized service delivery and coordinated adaptation actions enhance efficiency while ensuring comprehensive coverage for mobile communities.
293. A cost-efficiency analysis shows the project offers high value relative to other climate adaptation initiatives in the region. The estimated cost per direct beneficiary is approximately $453, compared with regional projects, where per capita costs range from $152 to $9,296.

294. The table below presents a comparative overview of cost per beneficiary across other climate-financed projects in Angola and Namibia, underscoring the strong value proposition of this proposal.

Table 7: Comparison of Cost per Direct Beneficiary with Ongoing Projects in the Region[28]

Project name	Project budget (USD)	Number of direct beneficiaries	Cost per direct beneficiary (USD)
Proposed project	$24,550,836	54,200	$453
Resilience building as CC adaptation in drought-struck south-west African communities (ADSWAC)	$11,914,038	42,500	$280
Integrating Climate Resilience into Agricultural and Agropastoral Production Systems through Soil Fertility Management in Key Productive and Vulnerable Areas Using the Farmers Field School Approach	$30,287,412	25,000	$1,211
Enhanced Water Security and Community Resilience in the Adjacent Cuvelai and Kunene Transboundary River Basins (CUVKUN)	$176,618,691	19,000	$9,296
Climate Resilient Agriculture in three of the Vulnerable Extreme northern crops growing regions (CRAVE) Namibia	$10,000,000	8,000	$1,250
Improving rangeland and ecosystem management practices of smallholder farmers under conditions of CC in Sesfontein, Fransfontein, and Warmquelle areas of the Republic of Namibia	$10,000,000	30,366	$329
Building resilience of communities living in landscapes threatened under CC through an ecosystems-based adaptation approach, Namibia	$9,100,000	60,000	$152
Namibia Integrated Landscape Approach for Enhancing Livelihoods and Environmental Governance to Eradicate Poverty (NILALEG)	$84,936,588	20,818	$4,080

295. Beyond financial metrics, the project cost-effectiveness is reinforced through its social equity outcomes. n. Studies by the Global Gender and Climate Alliance[29] (GGCA, 2017), show that gender-responsive interventions deliver high returns. This project prioritises women's participation in adaptation planning and decision-making, ensuring more durable outcomes. Local appropriate technologies such as roof top rainwater harvesting can reduce water costs by up to 50%, while simple tools for conservation agriculture enhance food security at minimal cost.
296. The proposed Adaptation Fund financing represents the full and necessary cost required to achieve the project's climate adaptation objectives under current and projected climate conditions in the Kunene River Basin. The selected interventions multi-hazard early warning systems, ecosystem-based disaster risk reduction planning, climate-resilient water infrastructure, rangeland restoration, and community-level adaptation measures are specifically designed to address climate-induced risks that exceed baseline development needs. Lower-cost or development only alternatives would not adequately reduce exposure to climate-related hazards such as recurrent droughts, floods, and increasing climate variability, nor would they generate sustained adaptive capacity among vulnerable agro-pastoralist communities.
297. All project components and output required to deliver measurable adaptation outcomes are fully financed through Adaptation Fund resources. While complementary co-financing may enhance long-term sustainability and scaling, the achievement of the project's core adaptation results does not depend on the availability of external funding. The Adaptation Fund financing therefore constitutes the full incremental cost of adaptation necessary to reduce climate vulnerability and strengthen resilience in the project area.

E. Consistence with national or sub-national sustainable development strategies

298. The project, firmly anchored in and aligned with key regional and national policy and strategic frameworks, at the regional level within the Southern African Development Community (SADC), and at the national levels in Angola and Namibia. The tables below provide an overview of all relevant policies and strategies identified, along with corresponding project output numbers and their alignment. Each entry also highlights the associated Sustainable Development Goals (SDGs).
299. The project reflects national directives that prioritize sustainable socio-economic development, particularly for vulnerable communities, by addressing climate resilience, water and food security, and inclusive adaptation efforts.

Table 8: National and Sub-national Development Strategies

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[28] Sources: https://www.thegef.org/projects-operations/database and https://www.adaptation-fund.org/projects-programmes/ and https://www.greenclimate.fund/countries/namibia

[29] Global Gender and Climate Alliance (GGCA). (2017). Gender and Climate Change: Why Integrating Gender Makes Financial Sense.

Regional Policy/Plan/Strategies	Relevant strategic Elements and Alignment with Project Outputs
Revised SADC Protocol on Shared Watercourses (2020)	Aims to strengthen cooperation and joint management of shared water resources in the SADC region, ensuring sustainable water use and management. The protocol focuses on enhancing transboundary water cooperation, integrated water resources management, and climate resilience in water systems. Transboundary Water Cooperation and Integrated Water Resource Management (IWRM): 2.1.1; 2.1.2; 2.2.3 Sustainable Water Management: 3.1.1; 3.1.2; 2.2.2 Climate Change and Climate Resilience: 3.1.3; 3.1.4; 2.2.4 Data Sharing and Knowledge Exchange: 1.1.1; 2.2.3; 2.2.4; 4.1.2; 4.1.3 Inclusive Stakeholder Participation: 1.2.1; 2.2.1; 3.1.4; 3.2.1; 4.1.1; 4.2.1 SDG 6: Clean Water and Sanitation: 2.1.1-2.2.3, 3.1.1, 3.1.2 SDG 17 – Partnerships for the Goals: 1.2.1; 3.2.1; 4.1.2-4.2.1
SADC Drought Disaster Resilience Strategy (2021–2031)	A comprehensive framework developed by the SADC to address the increasing frequency and severity of droughts in the region. It aims to enhance the resilience of communities, economies, and ecosystems to drought impacts through coordinated and integrated approaches. Drought Monitoring and Early Warning Systems: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 Drought Vulnerability and Risk Assessment: 1.1.1; 1.1.2 Preparedness, Mitigation, and Response: 1.1.1; 1.1.2; 2.1.2; 2.1.2; 2.2.2.2; 2.2.3 2.2.4; 3.1.1; 3.1.2; 3.1.2; 3.1.2; 3.1.3; 3.1.4 Institutional Capacity Building: 3.1.4; 4.1.1; 4.1.2; 4.2.1 Community Engagement and Awareness: 1.2.1; 2.2.1; 2.2.4; 3.1.3; 3.2.1; 4.1.1 SDG 2: Zero Hunger: 3.1.2-3.1.4 SDG 5: Gender Equality: 1.2.1; 4.1.1 SDG 13 – Climate Action: 1.1.1; 1.1.2; 2.1.1–2.2.4; 4.1.1–4.2.1
SADC Climate Change Adaptation Strategy for the Water Sector	A strategic framework developed by the SADC to address the challenges posed by climate change in the region's water sector. The strategy outlines a comprehensive approach to enhancing resilience, promoting sustainable water management, and ensuring the long-term availability of water resources in Southern Africa, which is highly vulnerable to the impacts of climate change. Knowledge and Stakeholder Engagement: 1.1.1; 1.1.2; 1.2.1 Water Management and Infrastructure: 3.1.1; 3.1.2; 3.1.4 Climate Resilience and Ecosystem-Based Adaptation (EbA): 1.1.2; 3.1.3; 3.1.4 Gender and Social Inclusion: 1.1.2; 1.2.1; 3.2.1; 4.1.1 Capacity Building and Stakeholder Coordination: 3.1.4; 3.2.1; 4.1.1; 4.1.2; 4.2.1 Climate Data and Early Warning Systems: 2.1.1; 2.1.2; 2.2.1; 2.2.2 SDG 2: Zero Hunger: 3.1.2-3.1.4 SDG 5: Gender Equality: 1.1.2; 1.2.1; 3.2.1; 4.1.1 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2 SDG 13 – Climate Action: 1.1.2; 2.1.1–2.2.2 SDG 17 – Partnerships for the Goals: 4.1.1- 4.2.1
SADC Policy Paper on Climate Change (2012)	Outlines the SADC strategic approach to addressing climate change impacts, emphasizing the need for both adaptation and mitigation strategies to enhance resilience and promote sustainable development. Early Warning Systems: 2.2.1; 2.2.2; 2.2.3; 2.2.4 Water Resource Management and Conservation: 3.1.1, 3.1.2; 2.1.1; 2.1.2 Community-Based Adaptation and Livelihoods: 1.1.2; 1.2.1; 4.1.1; 4.2.1 Institutional Strengthening and Capacity Building: 3.1.3; 4.1.1; 4.1.2; 4.2.1 SDG 6: Clean Water and Sanitation: 2.1.1; 2.1.2; 3.1.1; 3.1.2 SDG 13 – Climate Action: 1.1.1; 1.1.2; 3.1.3; 4.1.1–4.2.1
SADC Regional Agricultural Policy (2014)	A policy framework for the region's agriculture sector, defining common objectives and measures to guide actions at regional and national levels towards achieving the SADC Common Agenda. Aimed to enhance sustainable agricultural production, productivity, and competitiveness; improve regional and international agricultural trade and access to markets; increase public and private sector engagement and investment in agricultural value chains; and reduce social and economic vulnerability in the context of food and nutrition security and the changing economic and climatic environment. Increased Agricultural Production, Productivity, and Competitiveness: 3.1.3; 3.1.4. Increased Investments in and Access to Finance for Agriculture: 3.1.2 Reduced Social and Economic Vulnerability in the Region: 2.2.4; 1.1.2; 1.2.1; 3.1.4. Improved Food and Nutrition Security for the Region: 3.1.3; 3.1.4; 3.1.2 SDG 2: Zero Hunger: 3.1.2-3.1.4

300. The project aligns strongly with Namibia's climate adaptation and development priorities, as reflected across national policies, strategies, and planning frameworks. It supports the country's ambition to build climate resilience, reduce vulnerability, and promote sustainable, inclusive economic growth, particularly in rural and drought-prone regions. Key thematic areas addressed by the project include sustainable agriculture, water resource management, disaster risk reduction, institutional capacity building, and community-based adaptation. Through its integrated approach, the project contributes to national goals for food security, infrastructure development, environmental sustainability, and human wellbeing, while reinforcing gender-sensitive and locally led adaptation efforts. These alignments are outlined in the table below.

301. Table 9: Alignment with Namibia National Development Strategies, Plans and Policies

Policy/Plan/Strategy	Alignment with Project Outputs
Namibia's Nationally Determined Contribution (2023)	Climate-Resilient Agriculture: 3.1.3; 3.1.4; 3.1.4 Sustainable Water Management Practices: 3.1.1; 3.1.2 DRR and EWS – Enhanced Climate Information and Early Warning Systems: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 Inclusive Stakeholder Engagement and Capacity Building: 1.1.2; 1.2.1; 4.1.1; 4.2.1 SDG 2: Zero Hunger: 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2 SDG 13: Climate Action: 2.1.1; 2.1.2; 2.2.1-2.2.4 SDG 17: Partnerships for the Goals: 1.1.2; 1.2.1; 4.1.1; 4.2.1
NDC Implementation Strategy and Action Plan 2021–2030	Water Resource Management: 3.1.1; 3.1.2; 2.1.1; 2.1.2 Agriculture and Food Security: 3.1.3; 3.1.4 Disaster Risk Reduction and Early Warning Systems: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 Stakeholder Engagement and Capacity Building: 1.1.2; 1.2.1; 4.2.1 Gender Equality and Social Inclusion: 1.1.2; 1.2.1; 3.2.1; 4.1.1 SDG 2: Zero Hunger: 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2 SDG 13: Climate Action: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 SDG 17: Partnerships for the Goals: 1.1.2; 1.2.1; 4.2.1
National Climate Change Policy (2011)	Sustainable Access to Water: 3.1.1; 3.1.2; 2.1.1; 2.1.2 Food Security and Sustainable Resource Base: 3.1.3; 3.1.4 Public Awareness, Participation and Access to Information: 2.2.4; 4.1.1; 4.1.2; 4.1.3 Disaster Reduction and Risk Management: 1.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 Technology Development and Transfer: 2.2.2; 2.2.4; 4.1.2 Education, Training, Capacity Building, and Institutional Strengthening: 4.2.1; 1.2.1; 3.2.1 Policy Development: 1.1.1; 1.1.2; 3.2.1 Gender Issues: 1.1.2; 1.2.1; 3.2.1; 4.1.1 SDG 2: Zero Hunger: 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2 SDG 13: Climate Action: 2.2.1; 2.2.2; 2.2.3; 2.2.4 SDG 4: Quality Education: 4.2.1; 1.2.1; 3.2.1 SDG 5: Gender Equality: 1.1.2; 1.2.1; 3.2.1; 4.1.1
National Climate Change Strategy & Action Plan 2013-2020	Food security and sustainable biological resource base**:** 3.1.3; 3.1.4 Sustainable water resources base**:** 3.1.1; 3.1.2; 2.1.1; 2.1.2 Human health and well-being**:** 2.2.1; 2.2.2; 2.2.3; 2.2.4; 3.1.1; 3.1.2 Infrastructure development**:** 3.1.1; 3.1.2; 2.2.2 Capacity building and institutional strengthening**:** 4.2.1; 3.2.1 Public awareness, participation, and access to information**:** 4.1.1; 4.1.2; 4.1.3 Gender equality and social inclusion**:** 1.1.2; 1.2.1; 3.2.1; 4.1.1 SDG 2: Zero Hunger: 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2 SDG 13: Climate Action: 2.2.1; 2.2.2; 2.2.3; 2.2.4 SDG 5: Gender Equality: 1.1.2; 1.2.1; 3.2.1; 4.1.1
National Development Plan 6 (NDP6)	Achieving inclusive, sustainable, and equitable economic growth: 1.1.2; 1.2.1; 4.1.1; 4.2.1; 3.1.1, 3.1.2; 3.1.3; 3.1.4 Building capable and healthy human resources: 1.1.2; 1.2.1; 2.2.2; 2.2.3; 2.2.4; 4.1.1; 4.2.1 Ensuring a sustainable environment and enhancing resilience: 2.2.2; 2.2.3; 2.2.4; 3.1.1; 3.1.2; 3.1.3; 3.1.4 Promoting good governance through effective institutions: 1.1.2; 1.2.1; 4.1.1; 4.2.1; 2.2.2; 2.2.3; 2.2.4 SDG 8: Decent Work and Economic Growth: 1.1.2; 1.2.1; 4.1.1; 4.2.1; 3.1.1; 3.1.2; 3.1.3; 3.1.4 SDG 3: Good Health and Well-Being: 2.2.2; 2.2.3; 2.2.4; 4.1.1; 4.2.1 SDG 13: Climate Action: 3.1.1; 3.1.2; 3.1.3; 3.1.4 SDG 16: Peace, Justice, and Strong Institutions: 1.1.2; 1.2.1; 4.1.1; 4.2.1
Third National Action Project to implement the	Reduce climate change impacts on Namibia's key sectors and vulnerable communities: 1.1.2; 1.2.1; 2.2.1; 2.2.2; 2.2.4; 3.1.1; 3.1.2; 3.1.3; 3.1.4; 4.1.1; 4.2.1.

UNCCD 2014-24	Develop and enhance capacities at all levels and strengthen institutions to ensure successful implementation of climate change response activities.: 1.2.1; 3.2.1; 4.2.1. Food Security and sustainable biological resources: 3.1.3; 3.1.4 Sustainable water resources base [Harvesting and capturing water during rainy season; promote conservation of water; improve transboundary cooperation]: 3.1.1; 3.1.2; 2.1.1; 2.1.2; 3.2.1; 4.2.1. SDG 2: Zero Hunger: 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2 SDG 13: Climate Action: 1.1.2; 2.2.1; 2.2.2; 2.2.4; 3.1.1; 3.1.2 SDG 5: Gender Equality: 1.1.2; 1.2.1; 3.2.1; 4.1.1
Harambee Prosperity Plan II (HPPII) 2021-2025	Effective Governance: 1.1.2; 1.2.1; 4.1.1; 4.2.1 Economic Advancement: 3.1.3; 3.1.4; 3.1.4 Social Progression: 2.2.1; 2.2.2; 2.2.3; 2.2.4 Infrastructure Development: 2.1.1; 2.1.2; 3.1.1; 3.1.2 International Relations and Cooperation: 2.2.1; 2.2.3 SDG 8: Decent Work and Economic Growth: 3.1.3; 3.1.4 SDG 13: Climate Action: 2.2.1; 2.2.3 SDG 16: Peace, Justice, and Strong Institutions: 1.1.2; 1.2.1; 4.1.1; 4.2.1 SDG 9: Industry, Innovation, and Infrastructure: 3.1.1; 3.1.2; 2.1.2; 2.1.2
National Drought Policy and Strategy	Ensure that household food security is not compromised by drought: 3.1.3; 3.1.4. Encourage and support farmers to adopt self-reliant approaches to drought risk: 1.1.2; 1.2.1; 4.1.1; 4.2.1. Preserve adequate reproductive capacity in livestock herds during drought periods: 3.1.3. Ensure continuous supply of potable water to communities, livestock, schools, and clinics: 3.1.1; 3.1.2. Minimize degradation of the natural resource base during droughts: 3.1.4. Enable rapid recovery of rural inhabitants and the agricultural sector post-drought: 3.1.3; 3.1.4. Ensure the health status of all Namibians is not threatened by drought effects: 2.2.1; 2.2.2; 2.2.3; 2.2.4. Finance drought relief programs efficiently through an independent National Drought Fund: 1.1.2; 1.2.1; 4.1.1; 4.2.1. SDG 2: Zero Hunger: 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2 SDG 13: Climate Action: 2.2.1; 2.2.2; 2.2.3; 2.2.4 SDG 3: Good Health and Well-Being: 2.2.1; 2.2.3; 2.2.4
Namibia Water Policy White Paper	Integrated Water Resources Management (IWRM): 1.1.2; 1.2.1; 2.2.1; 4.1.1; 4.2.1 Water Use and Conservation: 1.1.2; 1.2.1; 2.2.1; 4.1.1; 4.2.1 Economic and Financial Issues: 1.1.2; 1.2.1; 4.1.1; 4.2.1 Legislation and Regulations: 1.1.2; 1.2.1; 4.1.1; 4.2.1 Institutional and Community Participation: 1.1.2; 1.2.1; 4.1.1; 4.2.1 Human Resources Development: 1.1.2; 1.2.1; 4.1.1; 4.2.1 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2; 2.1.1; 2.1.2 SDG 13: Climate Action: 2.2.1; 4.1.1
Water Supply and Sanitation Policy	Universal Access to Water and Sanitation: 3.1.1; 3.1.2; 3.1.3; 3.1.4 Community Participation and Ownership: 1.1.2; 1.2.1; 4.1.1; 4.2.1 Environmental Sustainability and Efficient Resource Use: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 Affordability and Cost Recovery: 1.1.2; 1.2.1; 4.1.1; 4.2.1 Institutional Coordination and Decentralization: 1.1.2; 1.2.1; 4.1.1; 4.2.1 Capacity Building and Human Resources Development: 1.1.2; 1.2.1; 4.1.1; 4.2.1 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2; 3.1.3; 3.1.4 SDG 3: Good Health and Well-Being: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4
Namibia Agriculture Policy	Increase agricultural production and productivity: 3.1.3; 3.1.4. Promote investment in agricultural production: 3.1.3; 3.1.4. Promote skills development in agricultural production: 1.1.2; 1.2.1; 4.1.1; 4.2.1. Improve the quality of agriculture products: 3.1.3; 3.1.4. Promote food safety: 2.2.1; 2.2.2; 2.2.3; 2.2.4. Maintain and improve animal and plant health: 2.2.1; 2.2.2; 2.2.3; 2.2.4. Promote agro-forestry: 3.1.3; 3.1.4. Develop and diversify agricultural production: 3.1.3; 3.1.4. Promote agricultural research and adaptation of appropriate technology: 1.1.2; 1.2.1; 4.1.1; 4.2.1; 4.2.1. Develop stakeholder capacity to meet national and export market agriculture standards: 1.1.2; 1.2.1; 4.1.1; 4.2.1. Promote sustainable resources used for agricultural production: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4. Contribute and support disaster preparedness: 2.2.1; 2.2.2; 2.2.3; 2.2.4. Improve food and nutrition security at household and national levels: 3.1.3; 3.1.4. Contribute to the attainment of food self-sufficiency: 3.1.3; 3.1.4. Increase income from agricultural production at household and national levels: 3.1.3; 3.1.4. Safeguard the sustainability of agricultural sector: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4.

	SDG 2: Zero Hunger: 3.1.3; 3.1.4 SDG 12: Responsible Consumption and Production: 2.1.1; 2.2.1; 2.2.2; 2.2.3; 2.2.4 SDG 8: Decent Work and Economic Growth: 1.1.2; 1.2.1; 4.1.1; 4.2.1

302. As seen in the table below, the outputs of the project are in alignment with Angola's national climate commitments and development priorities. The project aims to reduce vulnerability, strengthen resilience, and enhance adaptive capacity by supporting sustainable ecosystem management and improving the livelihoods of semi-nomadic agro-pastoral communities through increased access to water, food, and fodder.
303. Additionally, it contributes to national goals for sustainable development and poverty reduction by strengthening EWS and DRR mechanisms, promoting conservation agriculture, and restoring degraded land which are key priorities embedded in Angola's climate, land, and agricultural strategies.
304. In drought-prone regions, the activities support national efforts to reduce poverty and inequality by boosting agricultural productivity through the introduction of drought-tolerant crops and water retention infrastructure. It also advances long-term drought recovery objectives by reinforcing agricultural systems and ecosystem resilience.

Table 10: Alignment with Angola's National Development Strategies, Plans and Policies

Policy/Plan/Strategy	Alignment with Project Outputs
Angola's Nationally Determined Contribution	Agriculture and Food Security: 3.1.3; 3.1.4 Water Resources Management: 2.1.1; 2.1.2; 3.1.1; 3.1.2 Disaster Risk Reduction and Early Warning Systems: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 Climate Adaptation and Resilience Building: 1.1.2; 1.2.1; 4.1.1; 4.2.1 SDG 2: Zero Hunger: 3.1.1; 3.1.2; 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2; 2.1.1; 2.1.2 SDG 13 – Climate Action: 1.1.1; 1.1.2; 2.1.1–2.2.4; 3.1.1–3.1.4 4.1.1–4.2.1
National Strategy for Climate Change 2020-2035	Enhancing resilience to climate impacts (agriculture, water, ecosystems): 3.1.1; 3.1.2; 3.1.3; 3.1.4; 3.1.4 Water resource management and conservation: 2.1.1; 2.1.2; 3.1.1; 3.1.2 Ecosystem-based adaptation (EbA) and land restoration: 1.1.1; 1.1.2 3.1.4; 3.1.4 Disaster risk reduction and early warning systems: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 Capacity building and institutional strengthening: 1.2.1; 3.2.1; 4.1.1; 4.1.2; 4.2.1 Gender-inclusive climate adaptation planning: 1.1.2; 1.2.1; 4.1.1 Sustainable livelihoods and food security: 3.1.3; 3.1.4 SDG 5: Gender Equality: 1.1.2; 1.2.1; 3.2.1; 4.1.1 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2; 2.1.1; 2.1.2 SDG 13 – Climate Action: 1.1.1; 1.1.2; 2.1.1–2.2.4; 3.1.1–3.1.4; 4.1.1–4.2.1 SDG 15: Life on Land: 1.1.1; 3.1.4 SDG 17 – Partnerships for the Goals: 3.2.1; 4.2.1; 4.1.3
Long-term Development Strategy for Angola 2025	Poverty alleviation and socio-economic development: 3.1.1; 3.1.3; 3.1.4 Ecosystem and land restoration: 3.1.4 Water resource management and improved access: 3.1.1; 3.1.2 Capacity building for sustainable development: 1.2.1; 4.2.1 Gender-responsive climate adaptation: 1.1.2; 4.1.1 Sustainable agricultural practices and food security: 3.1.3; 3.1.4 SDG 5: Gender Equality: 1.1.2; 1.2.1; 3.2.1; 4.1.1 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2; 2.1.1; 2.1.2 SDG 17 – Partnerships for the Goals: 3.2.1; 4.2.1; 4.1.3
Medium-Term Development Plan for the Agrarian Sector 2018–2022	Sustainable agricultural development and productivity: 3.1.3; 3.1.4 Water management for agriculture: 3.1.1; 3.1.2 Ecosystem restoration and rangeland management: 3.1.4 Climate resilience and drought mitigation: 2.2.1; 2.2.3; 2.2.4 Capacity building for agrarian institutions: 1.2.1; 4.2.1 SDG 2: Zero Hunger: 3.1.1; 3.1.2; 3.1.3; 3.1.4
National Action Program to Combat Desertification	Desertification prevention and land restoration: 3.1.4 Sustainable land management and ecosystem restoration: 3.1.3 Water conservation and management: 3.1.1; 3.1.2 Climate-resilient agricultural practices: 3.1.3 Capacity building and stakeholder involvement: 1.2.1; 4.2.1 SDG 15: Life on Land: 1.1.1; 3.1.4
. National Development Plan (PDN) 2023–2027 .	Poverty reduction and social inequality: 3.1.1; 3.1.3; 3.1.4 Water management and drought resilience: 3.1.1; 3.1.2; 2.2.1 Agricultural development and climate resilience: 3.1.3; 3.1.4 Ecosystem restoration and biodiversity protection: 3.11.3; 3.1.4 Capacity building and institutional strengthening: 1.2.1; 4.2.1

	SDG 2: Zero Hunger: 3.1.1; 3.1.2; 3.1.3; 3.1.4
National Development Plan for the Agriculture Sector 2018-2022	Sustainable agricultural development: 3.1.3; 3.1.4 Water management for agricultural use: 3.1.1; 3.1.2 Rangeland restoration and soil improvement: 3.1.3; 3.1.4 Climate-resilient farming practices: 3.1.3; 3.1.4 Capacity building for agricultural institutions: 3.2.1; 4.2.1 SDG 2: Zero Hunger: 3.1.1; 3.1.2; 3.1.3; 3.1.4
National Adaptation Project of Action	Facilitate capacity building for the preparation of adaptation activities: 3.1.3; 4.1.1; 4.1.2; 4.2.1. Strengthening disaster risk reduction (DRR) mechanisms to reduce the impacts of extreme weather events: 2.1.1; 2.1.2; 2.2.1; 2.2.2; 2.2.3; 2.2.4 Water resource management and increase water availability: 3.1.1, 3.1.2; 2.1.1; 2.1.2. Increase the resilience of agricultural systems: 3.1.3; 3.1.4. SDG 2: Zero Hunger: 3.1.1; 3.1.2; 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2; 2.1.1; 2.1.2 SDG 13 – Climate Action: 1.1.1; 1.1.2; 2.1.1–2.2.4; 3.1.1–3.1.4; 4.1.1–4.2.1
Strategic Plan for Disaster Risk Prevention and Reduction of Drought in Angola	Drought Risk Management: 3.1.1; 3.1.2 Disaster Risk Reduction (DRR): 2.2.1; 2.2.2; 2.2.3; 2.2.4 Early Warning Systems (EWS): 2.2.1; 2.2.2; 2.2.3; 2.2.4 Water Resource Management: 3.1.1, 3.1.2; 2.1.1; 2.1.2 Agriculture and Food Security: 3.1.3; 3.1.4 Ecosystem Restoration and Protection: 3.1.4 Institutional Strengthening: 3.2,1; 4.2.1 Community Engagement: 1.1.2; 1.2.1; 2.2.1; 3.2.1 4.1.1 Financing and Resource Mobilization: 1.1.2; 3.1.3 SDG 5: Gender Equality: 1.1.2; 1.2.1; 3.2.1; 4.1.1SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2; 2.1.1; 2.1.2; 2.1.2; 2.1.2; 2.1.2; 2.1.2 SDG 13 – Climate Action: 1.1.1; 1.1.2; 2.1.1–2.2.4; 3.1.1–3.1.4; 4.1.1–4.2.1 SDG 15: Life on Land: 1.1.1; 3.1.4; 3.1.4 SDG 17 – Partnerships for the Goals: 3.2.1; 4.2.1; 4.1.3
Post-Disaster Needs Assessment (PDNA) for Drought in Angola	KRB is within one of the three provinces that were assessed. Priority actions and sectors for medium- and long-term drought recovery: Agriculture and CSA Practices: 3.1.3; 3.1.4 Community water infrastructure: 3.1.1; 3.1.2 Income diversification: 3.1.3 Sustainable farming technologies: 3.1.3; 3.14 Water Resource Management: 2.1.1; 2.1.2; 3.1.1, 3.1.2 Capacity Building: 3.1.3; 4.1.1; 4.1.2; 4.2.1 SDG 2: Zero Hunger: 3.1.1; 3.1.2; 3.1.3; 3.1.4 SDG 6: Clean Water and Sanitation: 3.1.1; 3.1.2; 2.1.1; 2.1.2 SDG 15: Life on Land: 1.1.1; 3.1.3 SDG 17 – Partnerships for the Goals: 3.2.1; 4.2.1; 4.1.3

307. At regional level, the 2020 Revised SADC Protocol on Shared Watercourse prompts the Member States to identify and adopt strategies for the integrated management of shared water bodies, including planning, data collection and sharing, as well as implementation support. This project would contribute towards the SADC poverty eradication agenda included in the SADC Drought Disaster Resilience Strategy (2021 – 2031).[30] The KRB has a Joint Technical Committee (JTC) tasked to enact the Protocol, but it lacks sufficient resources. This project will support the JTC by developing the EbA DRR Plan that will contain recommendations for high-level management activities of the JTC including fund-raising. Furthermore, the project also responds to the SADC Climate Change Adaptation Strategy for the Water Sector[31].

308. The national legislation, policies and strategies of Angola and Namibia in respect of CC, transboundary water management and Disaster Risk Reduction are in line with the regional and international agenda, and this project fits into the national directives on supporting sustainable socio-economic development opportunities for vulnerable communities. In both countries, furthermore, different sectors and legislation are of relevance to the interventions proposed here, as discussed below:

Angola

309. The project, aligned with Angola's NDC, focuses on reducing vulnerability, strengthening resilience, and increasing the country's adaptive capacity to protect ecosystems, people, livelihoods, strategic sustainable development, and economic investment. These objectives will be achieved by enhancing

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[30] Dlamini, T.S., Manyatsi, A.M., Dlamini, W.M., & Hlanze, Z. (2021). *The SADC Drought Disaster Resilience Strategy (2021 – 2031).* SADC/IUCN, Gaborone, Botswana.

[31] SADC. (2011). Climate Change Adaptation in SADC: A Strategy for the Water Sector. Gaborone, Botswana.

ecosystem management in the KRB through rangeland restoration, as well as supporting the semi-nomadic agro-pastoralists in sustaining their livelihoods through increased access to water, food, and fodder.

310. Furthermore, the project is aligned with the National Strategy for Climate Change 2020-2035, Long-Term Development Strategy for Angola 2025 aimed at 'transforming Angola into a prosperous, modern country, without poverty and with a growing insertion in the world and regional economy" by alleviating poverty in the Basin and reducing loss of assess through improved EWS and DRR. Consistent with the country's Medium-Term Development Plan for the Agrarian Sector 2018-2022 and National Action Program to Combat Desertification, the project fosters conservation agriculture and reforestation of degraded areas.
311. In alignment with the National Development Plan (PDN) 2023-2027 that aims to reduce poverty and social inequality, and to widen in a sustainable way the productivity of regions subject to drought, the project aims to increase agricultural output from the Basin by fostering adoption of drought-tolerant crops varieties and increasing retention of water for use during dry periods. In addition, the Strategic Plan for Disaster Risk Prevention and Reduction of Drought in Angola includes priority actions and sectors for medium- and long-term drought recovery, which include agriculture and ecosystem management, both addressed by this project.

Namibia

312. Namibia's Nationally Determined Contribution (NDC), updated in 2021, emphasizes further improvement in adaptation and developing climate resilience to reduce climate risk to the populations and their livelihoods. Ambition to achieve resilient growth is evidenced by a range of ongoing initiatives, such as the Community Based Adaptation projects focusing on agricultural and pastoral communities in the north-central and far north-east region of the country, undertaking community-based projects to build resilience to CC by increasing resilience against climate-induced land degradation. The NDC encourages efforts to achieve the government's vision for a green economy that encourages balanced economic development while safeguarding the environment. The proposed project contributes towards achieving these goals, through involvement of the beneficiary communities in design and implementation of concrete adaptation activities, as well as building the capacity of local institutions in the Basin to effectively implement adaptation interventions.
313. Namibia promulgated the National Climate Change Policy in 2011 and the National Climate Change Strategy and Action Plan 2013-2020 (NCCSAP), now replaced by the NDC Implementation Strategy and Action Plan for 2021-2030. According to this Plan, "Namibia has placed more focus on adaptation, that is currently implemented under four key critical themes, namely, food security and sustainable biological resources; sustainable water resources base; human health and wellbeing; and infrastructure development".[32]The project contributes towards all four of these themes. DRR planning and MH-EWS under Components 1 and 2 safeguard human health and wellbeing, the rehabilitation and development of water resources infrastructure under Component 3 enhances the water resources base and overall infrastructure development in the Basin, the agricultural activities under Component 3 sustain food security and biological resources, and the capacity building under Component 4 builds adaptive capacity of the local institutions and the population they serve.
314. In addition to Namibia's current medium-term policy framework, the country's fifth National Development Plan (NDP5), acknowledges the potential contribution of agriculture towards economic growth, social transformation, and environmental sustainability. The centrality of agriculture is further articulated in the Harambee Prosperity Plan (HPP) which focuses on raising agricultural production and productivity to address poverty and hunger in rural communal areas. The GoN has also identified broader rural economic development as a key driver of economic progression in the country. The outcomes of this proposed project clearly align with these priorities, by supporting agricultural development in rural areas as a means of adapting to the changing climate.
315. The alignment with the National Drought Policy and Strategy, which encourages and supports farmers to adopt self-reliant approaches to drought risk. The Namibia Water Policy White Paper includes Shared Watercourses Principles and Water Use and Conservation Principles, which underpin the transboundary approach of this project; while the Water Supply and Sanitation Policy aim at contributing to improved public health, reducing the burden of collecting water, and promoting community-based social development, taking the role of women into special account. Thus, this project will assist the Namibian government in implementing priority areas for adaptation and the most vulnerable sectors, namely water resources, agriculture, human health, and disaster risk management.

F. Compliance with national technical standards

316. The project adheres to the relevant laws governing its activities, including those related to environmental protection, agriculture, and water resource management. The active participation of the appropriate line Ministries in both countries reinforces the project's legal compliance and alignment with national policies. These Ministries have been engaged during the project's design and planning stages to ensure all activities meet applicable national standards. The table below gives an overview of the most relevant laws and acts in the addressed sectors, and their relevance to the project.
317. To implement adaptation activities in the KRB, project proponents must comply with a range of national technical standards and secure necessary approvals in both Angola and Namibia. This includes obtaining environmental clearance certificates through comprehensive ESIAs, securing water use permits for abstraction and infrastructure works, and formalizing land use rights with written consent from both government authorities and traditional leaders. Additional requirements involve building permits for infrastructure, forestry permits for tree planting or harvesting, certification for new crop varieties, and technical approval for installing meteorological stations and data platforms. Throughout, the process emphasizes inclusive community consultations and FPIC, ensuring that the project adheres to national standards, safeguards local rights, and fosters cross-border compliance for sustainable climate resilience.

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[32] Republic of Namibia. (2021). Namibia's Updated Nationally Determined Contribution 2021. https://unfccc.int/sites/default/files/NDC/2022-06/Namibia's%20Updated%20NDC_%20FINAL%2025%20July%202021.pdf

318. **Environmental Assessment Standards**: The project will comply with the environmental assessment regulations of both Angola and Namibia. This involves conducting comprehensive Environmental and Social Impact Assessments (ESIA) in accordance with the Environmental Management Act of Namibia (2007) and Basic Environmental Law No. 5/98 and Decree No. 51/04 on Environmental Impact Assessment of Angola. The ESIA was carried out to identify potential environmental impacts and propose mitigation measures to minimize negative effects on the environment. It also included public consultations to ensure that the views and concerns of the affected communities were considered. All infrastructure components have been screened, and an environmental and social management plan has been developed to guide implementation in monitoring.
319. **Building Codes and Infrastructure Standards**: All construction developments within this initiative will adhere to the national building codes and standards. In Namibia, this means following the National Building Regulations and Building Standards Act No. 103 of 1977, which guarantees that construction activities meet safety, health, and structural integrity requirements. In Angola, the project will abide by the General Regulations on Urban Buildings (Decree No. 1/92) to ensure conformity with national construction norms and standards. Moreover, the project will make sure that all buildings and structures are resilient to climate conditions, integrating design elements that can withstand severe weather occurrences such as floods and droughts.
320. **Water Management Standards**: The project will adhere to national water management standards to promote the sustainable use and conservation of water resources. In Namibia, this will involve compliance with the Water Resources Management Act (2013), while in Angola, adherence to Law No. 6/02 on Water use will guide the sustainable management of water resources within the KRB. The project will introduce integrated water resource management (IWRM) practices, encourage efficient water use, and minimize water wastage through modern irrigation techniques and water harvesting systems.
321. **Agricultural Practices and Livestock Management**: The project will promote sustainable agricultural practices and livestock management in line with national guidelines. In Namibia, this involves complying with the Agricultural (Commercial) Land Reform Act (1995) and the Communal Land Reform Act (2002), ensuring that land use practices are sustainable and equitable. In Angola, the project will align with the Development Plan of the Agriculture Sector (2018 - 2022) to enhance agricultural resilience and productivity. Sustainable practices will include agroforestry, conservation agriculture, and rotational grazing to maintain soil health and prevent land degradation.
322. **Health and Safety Standards**: The project will ensure that all workers and community members 79. involved in project activities comply with national health and safety standards to protect their well-being. This will involve following occupational health and safety regulations, providing the necessary training and protective equipment to workers, and implementing safety protocols during both the construction and operational phases.
323. The project is committed to upholding the Environmental and Social Policy of the Adaptation Fund, implementing robust safeguard measures to prevent, mitigate, and manage environmental and social risks. This includes ensuring environmental sustainability, prioritizing social equity and inclusion, and developing a strong risk management plan. In line with the Adaptation Fund's Gender Policy, the project will integrate gender considerations throughout its design and implementation. Efforts will focus on engaging a wide range of stakeholders, establishing a robust monitoring and evaluation framework, and fostering collaboration and partnerships to build inclusive resilience to CC for semi-nomadic agro-pastoral communities in the KRB. Table 9 provides an overview of the most relevant laws and acts for each proposed intervention and project relevance in both countries.

Table 11: Compliance with National Regulations, Policies, Strategies, and Standards

Proposed concrete adaptation activity	National Regulations, Policies, Strategies and Standards to be complied with		
	Angola	Namibia	How Compliance will be Achieved
Undertaking a Water Security Assessment in the Kunene Basin	Water Law (Law no. 6/02 of 21 June); Decree No. 82/14 of 21 April; Environmental Law (Law No. 5/98 of 5 June); EIA Decree (Decree No. 51/04 of 23 July); National Biodiversity Strategy and Action Plan (Resolution n.º 42/06 de 26 de July); National Institute of Meteorology and Geophysics (INAMET) (Presidential Decree 230/14 of 4 September)	Water Resource Management Act 13 of 2013; Water Cooperation Act 12 of 1997; Environmental Management Act 7 of 2007; National Policy on Climate Change for Namibia 2011; National Water Policy 2003; National Water Act 12 of 1997	The project will submit assessment methodology to MINAMB and MEFT. Conduct screening and submit ESIA reports. Secure clearance certificates and align with national hydromet strategies.
Undertaking Ecosystem Goods and Services quantification and valuation in Protected Areas and Conservancies, Communal	Water Law (Law no. 6/02 of 21 June); Decree No. 82/14 of 21 April; Environmental Law (Law No. 5/98 of 5 June); EIA Decree (Decree No. 51/04 of 23 July); National Biodiversity Strategy and Action Plan (Resolution n. º 42/06 de 26 de July); Law of Forest and Wildlife (6/17 of 24 January); Strategic Plan of Conservation Areas; The	Water Resource Management Act 13 of 2013; Water Cooperation Act 12 of 1997; Environmental Management Act 7 of 2007; National Policy on Climate Change for Namibia 2011; National Water Policy 2003; Water Act 12 of 1997 Forest Act 12 of 2001, National Rangeland Management Policy & Strategy 2012; National Development Forestry Policy 2001; World Meteorological Organization Standard	The project will submit assessment methodology to MINAMB and MEFT. Conduct screening and submit ESIA reports. Secure clearance certificates and align with national hydromet strategies.

Areas, and private ranches	Iona/Skeleton Coast Transfrontier Conservation Area (Resolution 41/06 24 July)		
Develop a basin-wide gender-inclusive Disaster Risk Reduction Plan focused on EbA	Basic Environmental Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Civil Protection Basic Law, 2003 (Law No. 28/03), National Policy on Gender Equality and Equity, 2013, National Biodiversity Strategy and Action Plan, 2007-2012, National Strategy for Climate Change, 2018-2030, Land Law, 2004 (Law No. 9/04), Forestry Law, 2010 (Law No. 6/10), National Plan for Agricultural Development, 2018-2022, General Labor Law, 2015 (Law No. 7/15)	Management Act, 2013 (Act No. 11 of 2013), Disaster Risk Management Act, 2012 (Act No. 10 of 2012), National Gender Policy, 2010-2020, Nature Conservation Ordinance, 1975 (Ordinance No. 4 of 1975), National Policy on Climate Change, 2011, Urban and Regional Planning Act, 2018 (Act No. 5 of 2018), Forest Act, 2001 (Act No. 12 of 2001), National Agriculture Policy, 2015, Occupational Health and Safety Act, 2007 (Act No. 11 of 2007), National Occupational Safety & Health Policy November 2021; National Resilience Building Strategy and Costed Action Plan for Namibia	The Civil protection department and disaster risk units will be engaged in plan validation. and ensure gender and EbA integration through consultation and compliance with policy frameworks.
Facilitate engagement and co-planning of the KRB by its stakeholders	Law on Territorial Organization and Urbanization, 2015 (Law No. 3/04), Law on Local State Administration, 2007 (Law No. 2/07), Traditional Authorities Law, 2001 (Law No. 9/01), Environment Framework Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Civil Protection Basic Law, 2003 (Law No. 28/03)	Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000), Environmental Management Act, 2007 (Act No. 7 of 2007), Water Resources Management Act, 2013 (Act No. 11 of 2013), Disaster Risk Management Act, 2012 (Act No. 10 of 2012)	Obtain written approvals from traditional leaders and local councils. Use national planning guidelines for basin development forums. Record minutes and resolutions.
Facilitate the development of Free, Prior, Informed Consent (FPIC) Plan.	Traditional Authorities Law, 2001 (Law No. 9/01), Environment Framework Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Civil Protection Basic Law, 2003 (Law No. 28/03), Law on Local State Administration, 2007 (Law No. 2/07)	Traditional Authorities Act, 2000 (Act No. 25 of 2000), Environmental Management Act, 2007 (Act No. 7 of 2007) - Water Resources Management Act, 2013 (Act No. 11 of 2013), Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992)	Conduct culturally sensitive FPIC using translated tools. Engage elders, traditional leaders, and youth. Document consent through signed declarations.
Facilitate dialogue between beneficiary gender and ethnic subgroups and related stakeholders	Traditional Authorities Law, 2001 (Law No. 9/01), Basic Environmental Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Civil Protection Basic Law, 2003 (Law No. 28/03), Law on Local State Administration, 2007 (Law No. 2/07)	Traditional Authorities Act, 2000 (Act No. 25 of 2000), Environmental Management Act, 2007 (Act No. 7 of 2007) - Water Resources Management Act, 2013 (Act No. 11 of 2013), Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992)	Angola: Engage sobas and traditional councils following Law No. 9/01; coordinate with municipal authorities and provincial environmental/water offices for inclusive participation; involve Civil Protection for risk-related dialogue. Namibia: Consult Traditional Authorities under Act No. 25/2000; align with ESIA stakeholder processes under EMA 2007; involve Water Point Committees and secure dialogue endorsement from Regional Councils and Local Authorities. Use gender-sensitive methods and local languages.
Develop localized climate-smart conservation, climate risk, and adaptation assessment tools	Basic Environmental Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Forestry Law, 2010 (Law No. 6/10), National Strategy for Climate Change, 2018-2030, National Biodiversity Strategy and Action Plan, 2007-2012	Environmental Management Act, 2007 (Act No. 7 of 2007), Water Resources Management Act, 2013 (Act No. 11 of 2013), Forest Act, 2001 (Act No. 12 of 2001), National Policy on Climate Change, 2011, Nature Conservation Ordinance, 1975 (Ordinance No. 4 of 1975)	Validate tools with INAMET/NMS. Submit project design to meteorological authorities. Integrate data standards as per WMO compliance.
Installation of automatic weather stations across the KRB	The National Institute of Meteorology and Geophysics (INAMET) (Presidential decree 230/14 of 4 September), Basic Environmental Law, 1998 (Law No.	World Meteorological Organization Standard, Environmental Management Act, 2007 (Act No. 7 of 2007), Water Resources Management Act, 2013 (Act No. 11 of 2013	Secure site approvals from hydrology and meteorology offices. Follow sitting, calibration, and maintenance protocols. Include in ESMP.

	5/98) - Water Law, 2002 (Law No. 6/02)		
Installation of hydrometric stations along the Kunene River	Water Law (Law no. 6/02 of 21 June); Environmental Law (Law No. 5/98 of 5 June), Traditional Authorities Law, 2001 (Law No. 9/01)	National Water Policy 2003; Water Act 12 of 1997; Water Resource Management Act 13 of 2013, Traditional Authorities Act, 2000 (Act No. 25 of 2000),	Validate tools with INAMET/NMS. Submit project design to meteorological authorities. Integrate data standards as per WMO compliance.
Design the MH-EWS in consultation with beneficiary communities	Basic Environmental Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Forestry Law, 2010 (Law No. 6/10), National Strategy for Climate Change, 2018-2030, Law on Territorial Organization and Urbanization, 2015 (Law No. 3/04), Law on Local State Administration, 2007 (Law No. 2/07), Traditional Authorities Law, 2001 (Law No. No. 9/01)	Disaster Risk Management Act, 2012 (Act No. 10 of 2012), Environmental Management Act, 2007 (Act No. 7 of 2007), Water Resources Management Act, 2013 (Act No. 11 of 2013), Forest Act, 2001 (Act No. 12 of 2001), National Policy on Climate Change, 2011, Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000)	National communications authorities and ministries responsible for ICT and disaster risk management in both countries will be engaged early in the process. Project will align with data governance protocols, interoperability standards, and local language dissemination. Collaboration with local government councils and traditional authorities to ensure buy-in and legal authorization, particularly where data collection, alerts, or installation of infrastructure crosses jurisdictional or customary lines. Establish protocols for secure, legal, and ethical data exchange between Namibia and Angola in compliance with both countries' electronic transaction and telecommunications regulations. Selected platforms will allow for data ownership by the respective national meteorological agencies, in line with public data mandates. Third-party audits and in-country verification mechanisms will ensure compliance throughout the implementation.
Identify and select providers of suitable data platform and user interface for the MH-EWS	Telecommunications Law, 2001 (Law No. 8/01), Electronic Communications and Transactions Law, 2011 (Law No. 7/11), Law on Local State Administration, 2007 (Law No. 2/07), Traditional Authorities Law, 2001 (Law No. 9/01)	Communications Act, 2009 (Act No. 8 of 2009), Electronic Transactions Act, 2019 (Act No. 4 of 2019), Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992)	Providers will be screened for legal eligibility to operate under national ICT laws. Contractual terms will include mandatory compliance with data security, privacy, and electronic communications standards. Clauses will be included in procurement contracts requiring vendors to comply with national electronic communications laws and local governance provisions. Selected platforms will be required to support coordinated data sharing mechanisms that are in line with the legal requirements in both Angola and Namibia. Local authorities will be consulted and involved in approving infrastructure sitting and data system integration within their jurisdictions.
Operationalize a MH-EWS for the KRB	Basic Environmental Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Forestry Law, 2010 (Law No. 6/10), National Strategy for Climate Change, 2018-2030, Law on Territorial Organization and Urbanization, 2015 (Law No. 3/04), Law on Local State Administration, 2007 (Law No. 2/07), Traditional Authorities Law, 2001 (Law No. No. 9/01)	Disaster Risk Management Act, 2012 (Act No. 10 of 2012), Environmental Management Act, 2007 (Act No. 7 of 2007), Water Resources Management Act, 2013 (Act No. 11 of 2013), Forest Act, 2001 (Act No. 12 of 2001), National Policy on Climate Change, 2011, Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000)	Use national planning guidelines for basin development forums. Record minutes and resolutions.
Support meteorological agencies to simplify, translate, and disseminate seasonal, weekly, and daily weather forecasts in local languages	Basic Environmental Law, 1998 (Law No. 5/98), Telecommunications Law, 2001 (Law No. 8/01), Law on Local State Administration, 2007 (Law No. 2/07), Traditional Authorities Law, 2001 (Law No. 9/01)	Environmental Management Act, 2007 (Act No. 7 of 2007), Communications Act, 2009 (Act No. 8 of 2009), Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000)	Coordination with subnational authorities to ensure proper endorsement, local integration, and consistency with decentralization frameworks. Forecasts will be simplified and translated into local languages, advancing the principles of equity and access enshrined in both countries' climate and communication policies. This also strengthens community adaptive capacity, particularly for marginalized groups.

spoken in the KRB			
Rehabilitate existing earth dams and construct new rainwater retention ponds	Basic Environmental Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Soil Conservation Law, 2010 (Law No. 17/10), Law on Local State Administration, 2007 (Law No. 2/07), Traditional Authorities Law, 2001 (Law No. 9/01), EIA (Decree No. 51/04 of 23 July)	Environmental Management Act, 2007 (Act No. 7 of 2007), Water Resources Management Act, 2013 (Act No. 11 of 2013), Soil Conservation Act, 1969 (Act No. 76 of 1969), Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000), Water Cooperation Act 12 of 1997	Conduct culturally sensitive FPIC using translated tools. Engage elders, traditional leaders, and youth. Document consent through signed declarations.
Rehabilitation of existing boreholes for vegetable gardens and domestic use	National Biodiversity Strategy and Action Plan (Resolution n. ° 42/06 de 26 de July); Strategic Plan of Conservation Areas; Law of Forest and Wildlife (6/17 of 24 January), The Iona/Skeleton Coast Transfrontier Conservation Area (Resolution 41/06 24 July)	Water Resource Management Act 13 of 2013, Water Cooperation Act 12 of 1997	The rehab process will entail permits for water abstraction, adherence to sustainable yield assessments, and coordination with basin-level water management institutions. The project will work with local Water Point Committees to ensure regulated and equitable access to water. Environmental safeguards will be applied to avoid adverse impacts on critical habitats and protected species, following biodiversity and wildlife laws. Environmental screening will be conducted to determine whether further assessments or mitigation measures are needed.
Procure and install processing equipment for selected specific value chains	Export Diversification and Import Substitution (PRODESI - Presidential Decree 169/18); Program to Support Agriculture Credit (PAC) (Presidential Decree No. 159/19)	National Policy on Climate Change for Namibia 2011; Agricultural Marketing & Trade Policy & Strategy 2011; National Agricultural Policy (MAWF 1995); Forest Act 12 of 2001	Procurement and installation will compliance with national laws. Procurement processes will consider the carbon footprint, durability, and adaptability of technologies in climate-stressed environments.
Provide training and labor-saving technologies for conservation agriculture	Development Plan of the Agriculture Sector (2018 - 2022), Law on Professional Training 21-A/92:	Comprehensive CA Project for Namibia 2015-2019; Namibia Agricultural Policy (MAWF 2015); National Policy on Climate Change for Namibia 2011, National Rural Development Policy – March 2012	Training programs and technology used will align with Angola's Development Plan of the Agriculture Sector (2018–2022), which emphasizes sustainable agricultural intensification, soil conservation, and farmer capacity-building. Technologies promoted will be suitable for smallholder systems and ecologically appropriate. Capacity-building activities will comply with the Law on Professional Training (21-A/92), ensuring training providers are accredited, and curricula meet national standards for technical and vocational education. All technologies and practices promoted will be aligned with the Namibia Agricultural Policy and National Rural Development Policy (2012), ensuring they are suited for resource-poor farmers, promote food security, and enhance resilience to drought. Training and technologies will contribute to carbon sequestration, improved soil moisture retention, and reduced emissions- minimum tillage, mulching, and diversified drought-resistant cropping.
Promote drought-tolerant food crop varieties	Decree No. 15/18 of 25 January on animal breeds and crop varieties; Executive Decree 574/17; Executive Decree No. 388/17; Executive Decree No. 387/17; Executive Decree No. 386/17; Decree that approves the Biosafety Regulation (Decree No. 62/11 of 14 April)	Seed and Seed Varieties Act 23 of 2018; Plant Breeder & Farmer Right Bill 2006; National Policy on Climate Change for Namibia 2011	Drought-tolerant crop varieties introduced or promoted will be certified and registered, in compliance with control standards, and approved for sale and distribution. Varieties promoted will respect and, where possible, integrate traditional knowledge systems and be socially acceptable to local farmers. Farmers will have the right to save, use, and exchange seeds.
Create nurseries for drought-	Basic environment Law, 1998 (Law No. 5/98), Water Law, 2002 (Law No. 6/02), Forestry Law, 2010 (Law	Environmental Management Act, 2007 (Act No. 7 of 2007), Water Resources Management Act, 2013 (Act No. 11 of	An EIA will be conducted once USP is identified. Nursery development is authorized by local authorities.

resistant fodder crops, adjacent to the *chimpacas*	No. 6/10), Land Law, 2004 (Law No. 9/04), Soil Conservation Law, 2010 (Law No. 17/10), Law on Local State Administration, 2007 (Law No. 2/07), Traditional Authorities Law, 2001 (Law No. 9/01)	2013), Forest Act, 2001 (Act No. 12 of 2001), Agricultural (Commercial) Land Reform Act, 1995 (Act No. 6 of 1995), Soil Conservation Act, 1969 (Act No. 76 of 1969), Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000)	Use of water for nursery irrigation will comply with the water law, including obtaining water use rights and licenses. Traditional leaders will be consulted to ensure community support, access to customary land, and conflict avoidance.
In collaboration with the local traditional leaders, identify and secure 20,000 hectares of land for rangeland restoration	Basic Environmental Law, 1998 (Law No. 5/98), Land Law, 2004 (Law No. 9/04), Soil Conservation Law, 2010 (Law No. 17/10), Traditional Authorities Law, 2001 (Law No. 9/01), Law on Local State Administration, 2007 (Law No. 2/07), Forestry Law, 2010 (Law No. 6/10)	Environmental Management Act, 2007 (Act No. 7 of 2007), Land Reform Act, 1995 (Act No. 6 of 1995) - Soil Conservation Act, 1969 (Act No. 76 of 1969) - Traditional Authorities Act, 2000 (Act No. 25 of 2000) - Regional Councils Act, 1992 (Act No. 22 of 1992) - Local Authorities Act, 1992 (Act No. 23 of 1992) - Forest Act, 2001 (Act No. 12 of 2001)	Angola: Land use rights from local authorities will be obtained for the rangeland restoration. Consent will be requested from traditional authorities – engaging with local councils. Environmental screening will be conducted to obtain approval as per national environmental laws. Restoration activities will prevent erosion and degradation. Namibia: Application to the Land Board or Ministry of Land Reform will be made to formalize securing the land. Sub-national institutions to participate in land allocation will be involved early in planning. The project will maintain participatory mapping and transparent documentation of land allocation and planned use.
Establish plantations of multi-purpose trees, e.g., moringa plantations, to be owned and managed by women's groups	Basic Environmental Law, 1998 (Law No. 5/98), Forestry Law, 2010 (Law No. 6/10), National Policy on Gender Equality and Equity, 2013, Land Law, 2004 (Law No. 9/04) - Soil Conservation Law, 2010 (Law No. 17/10), Law on Local State Administration, 2007 (Law No. 2/07), Traditional Authorities Law, 2001 (Law No. 9/01)	Environmental Management Act, 2007 (Act No. 7 of 2007), Forest Act, 2001 (Act No. 12 of 2001), National Gender Policy, 2010-2020, Agricultural (Commercial) Land Reform Act, 1995 (Act No. 6 of 1995), Soil Conservation Act, 1969 (Act No. 76 of 1969), Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000)	Conducting environmental screening or EIA, if required, to assess impacts of plantation development and obtain environmental clearance for plantation projects. Follow tree planting, including guidelines for species selection and sustainable use. Secure land through procedures outlined in the Land Law. Use erosion-preventive and sustainable land preparation techniques.
Awareness raising and knowledge sharing on locally appropriate climate change adaptation measures	Basic Environmental Law (Law No. 5/98 of 5 June); National Strategy for Climate Change (Resolution No. 120/17 of 7 June); National Environmental Education Strategy (Decree No. 190/12 of 24 August)	National Climate Change Strategy & Action Plan 2013-2020; Environmental Management Act 7 of 2007; Education Act 16 of 2001; National Environmental Education Policy of 2012	Align with Angola and Namibia's National Education strategy by integrating environmental and climate change content into public education campaigns, materials, and outreach programs. By promoting messages that reflect national adaptation priorities and sectoral vulnerabilities. Respect the rights related to public participation, access to environmental information, and environmental protection. Awareness raising efforts aligned with Angola's and Namibia's Climate Change Strategies and NDCs.
Provide nutrition and literacy training to the beneficiary communities, to enhance community adaptive capacity	Education Law, 2016 (Law No. 17/16) Public Health Law, 2015 (Law No. 21/15), National Policy on Climate Change, 2018, National Policy on Gender Equality and Equity, 2013, Law on Local State Administration, 2007 (Law No. 2/07) Traditional Authorities Law, 2001 (Law No. 9/01)	Education Act, 2001 (Act No. 16 of 2001), Public Health Act, 2015 (Act No. 36 of 2015), National Policy on Climate Change, 2011, National Gender Policy, 2010-2020, Regional Councils Act, 1992 (Act No. 22 of 2), Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000)	Literacy training will align with national educational standards, prioritize adult education, and support inclusive access to basic education services. Topics will reflect public health standards and promote preventive health measures in line with national health priorities. Integrate climate adaptation messaging to enhance understanding of the links between nutrition, resilience, and climate variability. Align literacy programs with the national adult basic education framework and collaborate with the Ministry of Education where feasible.
Reactivate and update the online Kunene River Awareness Kit	Information and Communication Technologies Strategy (Presidential Decree No. 31/18)	National ICT Policy (2009); Electronic Transactions Act 4 of 2019; Environmental Management Act 7 of 2007	Align the platforms objectives with the national digital transformation goals.
Case studies from the project for submission to IFAD and	Basic Environmental Law, 1998 (Law No. 5/98), Scientific Research Law, 2001 (Law No. 5/01), Traditional Authorities Law, 2001	Environmental Management Act, 2007 (Act No. 7 of 2007), Research, Science and Technology Act, 2004 (Act No. 23 of 2004), Traditional Authorities Act, 2000	Ensure environmental data in case studies reflect accurate, lawful environmental assessment practices. Secure FPIC from traditional leaders for any community-specific data used in case studies.

FAO knowledge systems, SADC-GMI and WaterNet will be developed and further disseminated	(Law No. 9/01), National Strategy for Climate Change, 2018-2030, Water Law, 2002 (Law No. 6/02), Civil Protection Basic Law, 2003 (Law No. 28/03), Law on Local State Administration, 2007 (Law No. 2/07)	(Act No. 25 of 2000), National Policy on Climate Change, 2011, Water Resources Management Act, 2013 (Act No. 11 of 2013), Disaster Risk Management Act, 2012 (Act No. 10 of 2012), Regional Councils Act, 1992 (Act No. 22 of 1992), Local Authorities Act, 1992 (Act No. 23 of 1992)	Align case study topics with national climate adaptation priorities and reflect contributions to long-term resilience. Case studies will reflect sound environmental management practices and reference approved project-level EIA/ESMP documentation.
Institutional capacity building and strengthening	Science, Technology and Innovation Policy, Law on the National System of Education and Training (Law No. 17/16 of 7 October); Public Administration Reform Strategy (Decree No. 09/13 of 7 June)	Training Policy of Public Service of Namibia 1999; Human Resource Development Policy Framework 2012	Develop training modules with civil service colleges. Track participation via national M&E systems. Share quarterly reports with NPCs and line ministries
Convene quarterly development partners meetings in the project areas	Traditional Authorities Law, 2001 (Law No. 9/01), Law on Territorial Organization and Urbanization, 2015 (Law No. 3/04), Law No. 1/11 on the Basic General Regime of the National Planning System	Regional Councils Act, 1992 (Act No. 22 of 1992, Local Authorities Act, 1992 (Act No. 23 of 1992), Traditional Authorities Act, 2000 (Act No. 25 of 2000), Public Service Act, 1995 (Act No. 13 of 1995), National Planning Commission Act, 2013 (Act No. 2 of 2013)	Meetings will be coordinated with traditional leaders to ensure cultural considerations are respected and local knowledge is integrated. Meeting agendas will be developed in line with existing municipal and intermunicipal development plans to ensure coherence with national urbanization strategies. Outcomes from meetings will be communicated to the national planning commission to inform national development strategies.

G. Avoidance of duplication with other projects in the target area

324. Though Angola and Namibia have some completed and ongoing projects that address water security, DRR, climate resilience, and agro-pastoralist livelihoods, the proposed project is designed to build on, complement, and fill critical gaps left by these initiatives, particularly with respect to transboundary coordination, community-led risk governance, gender-responsive MH-EWS, and EbA in the KRB.
325. The project will contribute to strengthening meteorological and hydrological observation systems within the KRB by building existing infrastructure and networks in other regions, avoiding duplication while reinforcing regional data systems. Concrete adaptation activities will focus on rehabilitating and upgrading existing infrastructure, restocking or reintroducing native plant and livestock species, and integrating scientific and Indigenous knowledge to enhance the adaptive capacity of communities. Rather than introducing new systems, the project will reinforce and scale up existing adaptive capacities. Gender equality and social inclusion will be mainstreamed throughout the intervention, with a specific focus on addressing the differentiated needs, roles, and capacities of women and marginalized groups in agro-pastoralist systems. This includes promoting equitable access to resources, decision-making, and livelihood opportunities. It will also leverage experienced civil society organizations operating in the region to scale inclusive and sustainable approaches to natural resource management.
326. Importantly, the project introduces a set of methodological innovations that optimize climate risk knowledge generation and application in the basin, particularly tailored to the vulnerabilities of semi-nomadic and cross-border communities. By triangulating ecological, climatic, and socio-cultural data, the project offers a replicable model for integrating Indigenous and scientific knowledge in DRR scenario planning. While these knowledge systems are often siloed, the project seeks to harmonize them to support more inclusive and adaptive decision-making. This integrated approach will not only enhance outcomes for KRB communities but will also contribute to the regional evidence base for knowledge-informed adaptation in arid and transboundary river basins.
327. Current regional and national projects have been reviewed to ensure there is not duplication and instead this project can capitalize on lessons learning and scale up successful interventions. Synergies and opportunities for collaboration will be further leverages at project inception and throughout implementation.
328. The identification and design of sub-projects will be coordinated with ongoing initiatives in the region to leverage knowledge and avoid duplication. Key projects such as ADSWAC, CREW Angola, CUVKUN, and others will be consulted to ensure that activities complement existing efforts and that data collected by these projects, such as water resources assessments, are shared to avoid replication and maximize synergies. Collaborative efforts with agencies such as UNDP, FAO, and the Ministry of Environment will ensure the project builds prior knowledge and addresses existing gaps. A non-exhaustive list is provided below:

Table 12: Avoidance of Duplication with Ongoing Initiatives

Ongoing projects	Project duration	Budget and funder	Implementing and executing entities	Project objective	Potentially duplicative activity	Solution

Resilience Building as Climate Change Adaptation in Drought-Struck South-Western African Communities Angola And Namibia	2022-2027	$12 M	Sahara and Sahel Observatory (OSS) and Ajuda de Desenvolvimento de Povo para Povo Angola (ADPP), Namibia: Dapp (Development Aid from People to People)	Enhance adaptation capacity and resilience of communities to climate change impacts and variability in the transboundary region between Angola (Cuando-Cubango) and Namibia (Kavango East & West)	-Water-related projects, like CRIDF and RECLIMA, operate in the same region supporting water security and WASH -crop diversification -farmer focused -Capacity building	-Coordinate with national water authorities - Use such initiatives for synergies such as joint sampling, shared equipment, and integrated planning. -Share monitoring data and co-implementing with ongoing projects to enhance sustainability and avoid redundancy -training to complement – climate specific innovation
Empowering Women Groups to Build Resilience to Climate Impacts in the Province of Cunene in Southwest Angola (CREW Angola)	2025-2030	$10 M GCF and ADPP	Sahara and Sahel Observatory (OSS) and Ajuda de Desenvolvimento de Povo para Povo Angola (ADPP)	To build climate-resilience in targeted rural communities in all six municipalities in Cunene Province, Angola. The project will apply a gender-transformative approach, integrating the key, climate-vulnerable. sectors of agriculture, environment, water, and nutrition, with a focus on enabling factors, through investing in financial literacy, improved farming technologies, and education.	Water resources assessment, small-scale water infrastructure, tree cultivation	At project inception, the implementers of the CREW Angola project will be invited to share the data collected by the project's water resources assessment, to ensure that the data collection exercise is not duplicative. Plans for rehabilitation and/or construction of small-scale water infrastructure will be aligned between the two projects so that they benefit different communities. Tree cultivation activities will also be coordinated between the two projects to ensure that different locations are covered.
Building Resilience of Communities (SAP006)	2019-2026	$9.06 million, GCF and Gov't of Namibia	EIF Namibia	To boost climate resilience across eight Namibian landscapes using Ecosystem-based Adaptation (EbA), strengthening ecosystem services, safeguarding food, and income sources, and enhancing community adaptive capacities	EbA is the only area of overlap	Though this project does take place in the North and South Kunene landscape, it is not a river basin project, nor does it have transboundary coordination with Angola. While overlap in some activities exists, this project is strictly EbA focused. Synergies can be promoted by establishing a MOU for collaboration – potentially sharing vulnerability assessments, community based EbA lessons, monitoring and evaluation results. Capacity and knowledge exchanges
Enhanced Water Security and Community Resilience in the Adjacent Cuvelai and Kunene Transboundary River Basins (CUVKUN)	2024-2029	$11.2 M, GEF	United Nations Development Program (UNDP) and Global Water Partnership - Southern Africa (GWP-SA)	Enhancing water resources management in the basin through basin-wide e-flows assessment; modelling of water resources development; detailed Transboundary Diagnostic Analysis; flood EWS; finalization of a long-term Integrated Water Resources Management (IWRM) Plan and a five-year investment program.	Water resources assessment. flood EWS,	The purpose of the CUVKUN project is fundamentally different, as it is a water resources management project, while the proposed AF project is a is primarily a livelihoods project, focused on the semi-nomadic agro-pastoralist indigenous inhabitants of the lower Kunene Basin. Engagement with UNDP and GWP-SA has commenced during the project development phase and will be continued throughout the project implementation period, to ensure that the water resources assessments conducted are not

Building resilience of communities living in landscapes threatened under climate change through an ecosystems-based adaptation approach,	2020-2026	$9.1 M Green Climate Fund	Environmental Investment Fund (EIF)	This project applies EbA (EbA) to enhance ecosystem integrity to support food production and income generation, to reduce the severity of negative socio-economic impacts of climate change on vulnerable rural households. In target regions Erongo, Kunene, and Otjozondjupa	EbA activities	Coordination will be facilitated between the projects' PMUs during implementation to ensure that EbA activities are complementary, not overlapping in the same areas.
Improving rangeland and ecosystem management practices of smallholder farmers under conditions of climate change in Sesfontein, Fransfontein, and Warmquelle (Kunene Region), Namibia (IREMA)	2019-2024	$10 M Green Climate Fund	Environmental Investment Fund (EIF)	This project addresses the impacts of increasing temperature and higher water evaporation on crop production and bush encroachment on land and livestock productivity. It increases the efficiency with which rainfall is used to maintain agricultural and rangeland production.	EWS	This project is targeted at three settlements in the Kunene Region of Northern Namibia, while the proposed project covers the whole river basin, across both Angola and Namibia. Collaboration with EIF will ensure that the weather stations and other EWS procured and installed by the two projects are compatible, and that the data from all the stations are integrated into the MH-EWS.
Namibia Integrated Landscape Approach for Enhancing Livelihoods and Environmental Governance to Eradicate Poverty (NILALEG)	2019-2025	$10 M Global Environment Facility	UNDP and Ministry of Environment, Forestry and Tourism (MEFT)	To promote an integrated landscape management approach in key agricultural and forest landscapes, reducing poverty through sustainable nature-based livelihoods, protecting, and restoring forests as carbon sinks, and promoting Land Degradation Neutrality	Reforestation activities	Coordination will be facilitated between the projects' PMUs during implementation to ensure that reforestation activities are complementary, not overlapping in the same areas.
Smallholder Resilience Enhancement Project (SREP)	2019-2026	$150 M; IFAD, Arab Bank for Economic Development in Africa (BADEA) and Agence Française de Development (AFD)	IFAD	Strengthening capacity for improved extension services, investing in public rural infrastructure for climate resilience and market access, investment in family farming	Rural infrastructure investment (nature-based water infrastructure)	As IFAD will be the implementer of both projects, IFAD will ensure complementarity and alignment of the investments.
Fortalecimento da Resiliência e da Segurnça Alimentar e Nutricional em Angola (FRESAN)	2018-2025	65 M EUR, European Union,	FAO, UNDP, Instituto Camões, Vall d'Hebron Institut de Recerca	Reduction of hunger, poverty and vulnerability to food and nutrition insecurity in the southern provinces of the country most affected by climate change - Cunene, Huíla and Namibe – by strengthening sustainable family farming, improving the population's nutritional situation, access to water, strengthening information	Water access, nutrition education, institutional capacity building	At inception phase, the PMU will engage extensively with the FRESAN PMU to ensure that this project builds upon rather than duplicates what FRESAN has achieved.

H. Learning and Knowledge Management

329. This project embeds a comprehensive Learning and Knowledge Management (KM) system designed not only to support adaptive management during implementation, but also to strengthen climate adaptation strategies beyond the project's direct beneficiaries. The KM system ensures that lessons, tools, and evidence generated through project activities are systematically captured, validated, and disseminated to inform policy processes, institutional practices, and replication across other river basins and adaptation programmes at national and regional levels. The project employs a comprehensive, gender-responsive knowledge management strategy that integrates community-based learning, digital innovation, and regional exchange to strengthen adaptive capacity across the KRB utilizing the strength of the countries' academia. A cornerstone of this strategy is the creation of community-led knowledge hubs that blend scientific hydrological data with Indigenous flood prediction methods. These hubs will be established through more than 20 village assemblies and governed by steering committees with at least 50% women representation. Participatory climate awareness campaigns and planning workshops, aligned with AF best practices, will ensure co-development of locally appropriate adaptation plans, and target a 30% increase in climate literacy among participants, with a focus on women and marginalized groups.
330. To support equitable knowledge access, the project integrates adult literacy and nutrition training with gender-transformative leadership development. Over 200 women and youth will be certified in climate governance and connected to decision-making bodies such as water user associations and adaptation planning committees, enhancing long-term institutional learning and empowerment.
331. Digital platforms will play a central role. The Kunene River Awareness Kit (RAK) platform will be reactivated and upgraded as a multilingual, mobile-optimized tool that integrates real-time hydroclimate data from 12 IoT-based sensors and five traditional community observer networks. Eight community data hubs equipped with satellite internet will enable offline access and community-led data uploads, while 15 digital literacy workshops will build capacity among over 500 Himba and Zemba users.
332. The project also fosters regional knowledge exchange through South–South cooperation with the Niger Basin Authority, including the development of a tri-lingual knowledge-sharing protocol and alignment of metadata standards across platforms. Knowledge generated through projects such as EbA approaches, MH-EWS development, and integration of traditional knowledge—will be captured in case studies for submission to IFAD, FAO, SADC-GMI, and WaterNet platforms.
333. The project framework includes knowledge management throughout its activities with the goal of disseminating project results, best practices, and lessons learned in sub-national, national, and international forums to inform broader adaptation planning. It aims both to generate valuable knowledge to support evidence-based adaptation and to embed this knowledge directly into the co-design and implementation of adaptation interventions. Both scientific and traditional knowledge systems are fundamental to the success and sustainability of this project. The knowledge generated through the inclusive stakeholder engagement process, particularly via the Scenario Planning methodology, will be systematically documented and applied. As part of this inclusive approach, the project will recognize, integrate, and safeguard Indigenous knowledge systems through co-created knowledge hubs, participatory risk mapping exercises, and Indigenous-led monitoring processes. These practices will be embedded within a flexible, iterative learning framework, ensuring that Indigenous insights meaningfully inform climate risk assessments, local adaptation planning, and ecosystem governance in culturally appropriate and context-specific ways.
334. The KM system facilitates scaling and replication by integrating scientific climate data with Indigenous knowledge through community knowledge hubs, documenting evidence on ecosystem-based adaptation, multi-hazard early warning systems, and sustainable water and rangeland management, and disseminating these through case studies, guidelines, and digital platforms. The reactivated Kunene River Awareness Kit (RAK) serves as an open-access regional repository for data, tools, and knowledge products, enabling government institutions, basin organisations, and regional partners to adopt and adapt successful approaches beyond the project sites.
335. Institutional capacity-building programs will ensure that regional and national water governance entities in Angola and Namibia are equipped with the skills, tools, and structures to manage and apply climate knowledge sustainably. These programs will strengthen inclusive policy implementation, improve data use, and support long-term knowledge retention within the KRB governance framework. In sum, the project establishes a robust, multi-level knowledge management system that promotes inclusive learning, gender equity, and climate resilience through participatory design, open access to information, and institutional capacity strengthening.
336. The project recognizes key constraints related to knowledge generation, learning, and dissemination in the target region, including limited availability and interpretation of local-level climate vulnerability information, insufficient integration of CC adaptation measures into community plans, and limited familiarity with successful adaptation actions. Additionally, there is inadequate sharing and exchange of climate adaptation experiences within and between countries, primarily due to the relatively novel nature of CC adaptation concepts in the region.
337. To overcome these barriers, the project will kick off by conducting local vulnerability assessments and systematically documenting their methodologies and findings for broad dissemination. Community-level awareness-raising and targeted capacity-building will be conducted to facilitate the integration of climate adaptation measures into local development plans. Successful adaptation actions, including their best practices, challenges, and lessons learned, will be carefully documented and shared widely among local, national, and regional stakeholders. Moreover, the project will organize exchange visits within and between participating countries and support stakeholder participation in peer-to-peer learning. Comprehensive training and capacity building and outreach efforts, supported by engaging, accessible awareness materials, will further enhance stakeholder familiarity with climate adaptation concepts.

Table 13: Learning and Knowledge

Component		Stakeholders	Methods	Responsible Persons	Timeline (Years)

	Specific Training/Knowledge Generating Activity				1	2	3	4	5
Component 1: Co-design and implementation of a Disaster Risk Reduction Plan through EbA in the KRB	Activity 1.1.1.1 Conduct a participatory Water Security Assessment in the KRB, with a focus on gender-responsive and EbA risk reduction	FAO, Relevant Ministries in Namibia and Angola, Local Communities, Women's Groups, CSOs and other local partners	Community surveys and interviews, Participatory Mapping, Workshops and focus groups	Lead: FAO Regional Project Coordinator, Water Management Experts (from FAO and Ministries), Gender Experts (from Ministries, CSOs), Local Community Representatives, Training Facilitators					
	Activity 1.1.1.2 Undertake a participatory and gender responsive Ecosystem Goods and Services (EGS) quantification and valuation	Local NGOs, Community Based organizations (CBOs), National ministries, and regional partners	Participatory consultation, assessment, data collection	Lead: Local NGOs and CBOs, National Ministries, Regional Partners					
	Activity 1.1.2.1 Facilitate the co-development of a basin-wide, gender-responsive DRRP focused on EbA through an inclusive, participatory stakeholder engagement process	Local Community Members – including semi-nomadic groups, Local, Provincial, and National Governments- Relevant Ministries (e.g., Environment, Agriculture, Water), NGOs and CBOs, Regional partners, Climate Change and Disaster Reduction Experts	Scenario Planning Workshops – exploring local ecological knowledge, facilitated group discussions, gender-responsive adaptation planning; Capacity building sessions on gender-responsive adaptation planning.	Facilitators from local NGOs, CBOs; Government Ministries (Local, Provincial, National); Regional Partners and Climate Experts; Gender and Inclusion Specialists					
	Activity 1.2.1.1 Facilitate inclusive stakeholder engagement and co-planning across the KRB	Local Authorities (National, Provincial, Municipal levels in Angola and Namibia); CBOs. Women's, Youth, and Indigenous Groups. Vulnerable and Marginalized Groups. Project Implementing Partners	Participatory Stakeholder Engagement Workshops; community feedback meetings, surveys; Workshops on Gender-Responsive Participation; Scenario Planning and Co-development of the EbA-DRR Plan	Facilitators from Local NGOs and CBOs; Government Representatives (National, Provincial, Municipal); Gender and Inclusion Experts; Project Management Team					
	Activity 1.2.1.2 Facilitate the development and implementation of a Free, Prior and Informed Consent (FPIC) Plan for indigenous communities	Indigenous Communities (in both Angola and Namibia). Community-endorsed Institutions (e.g., traditional leadership, local councils). National Ministries. NGOs or Consultants with Expertise in FPIC. Local Authorities (supporting coordination and implementation)	FPIC Awareness Workshops; Culturally Sensitive Consultation Methods	Expert Consultant/NGO with FPIC Experience; Ministries of Environment/Indigenous Affairs; Project Implementation Team					
	Activity 1.2.1.3 Facilitate inclusive dialogue among gender and ethnic subgroups using	Diverse Community Members (women, men, youth, elders, people with disabilities,	Scenario Planning Workshops. Gender-Responsive Facilitation Training; Women's	Facilitators from NGOs and CBOs – Lead the scenario planning exercises, ensuring inclusive participation.					

	participatory scenario planning approaches	Indigenous peoples); CBOs Local NGOs. Provincial and National Government Representatives. Project Partners and Consultants (to support scenario planning)	Leadership and Capacity-Building	Gender and Inclusion Experts; Government Representatives – Ensure alignment with national climate strategies and disaster risk reduction plans; Project Management Team					
Component 2. Implementation of a satellite-based Multi-Hazard Early Warning System for the KRB	Activity 2.1.1.1 Install 24 automatic weather stations (AWS) across the KRB in collaboration with national meteorological agencies	Technical staff (meteorological and hydrological agencies in Namibia and Angola); local community members; regional partners and climate adaptation organizations.	Stakeholder engagement; in-person workshops, hands-on training, field demonstrations; data collection	National meteorological experts; technical trainers from local meteorological agencies; project management team.					
	Activity 2.1.2.1 Install16 hydrometric and water quality monitoring stations along the Kunene River, in collaboration with the national hydrological agencies	National hydrological agencies in Angola and Namibia; local authorities; water resource management bodies; Local communities; national environmental ministries; climate adaptation agencies.	Consultations: Baseline assessments for site selection; focus group discussions on local input. Monitoring: Real-time data transmission and integration into national hydrological systems.	Hydrological agencies in Angola and Namibia, local CBOs; Installation teams, regional hydrology specialists.					
	Activity 2.2.1.1 Facilitate participatory design of the MH-EWS with national institutions and local communities, ensuring gender and social inclusion	National meteorological agencies; local authorities; community leaders; women's organizations; indigenous communities; FAO; CBOs; local technical experts	Workshops; stakeholder meetings; focus group discussions; participatory scenario planning	Lead: FAO experts, national meteorological agencies. Local Implementers: Community focal points, CBOs, technical staff.					
	Activity 2.2.2.1 Develop and operationalize a real-time Big Data Analytics platform and user interface to support MH-EWS forecasting and dissemination	Meteorological and hydrological staff, cross-border technical teams, disaster risk management staff	Cross-border task forces; harmonization of protocols; joint workshops. Joint training programs and simulation exercises.	Platform developers; meteorological and hydrological agencies; data science experts; technical trainers; platform developers; CBOs; community leaders for feedback integration.					
	Activity 2.2.3.1 Establish the Institutional and Technical Foundation for a harmonized, cross-border, multi-sectoral MH-EWS in the KRB	National meteorological and hydrological agencies; government institutions; water resource bodies	Cross-border task forces; harmonization of protocols; joint workshops; joint training programs and simulation exercises.	National meteorological agencies; hydrological agencies; cross-border task force; local government and CBO representatives.					
	Activity 2.2.4.1 Co-design, simplify, translate, and disseminate gender-responsive weather forecasts in local languages spoken in the KRB	National meteorological agencies; local government; women's organizations; marginalized groups.	Participatory dialogue with marginalized groups to assess needs; workshops	Gender experts; meteorological agencies; local trainers; women's organizations; CBOs; local radio stations					

		Secondary Stakeholders: Local radio stations, community leaders, CBOs.							
Component 3. Inclusive, community-based adaptation actions are co-designed and implemented to strengthen climate-resilient livelihoods, natural resource management, and water security in the KRB.	Activity 3.1.1.1 Rehabilitate 20 existing earth or sand dams	Local communities, women's groups, pastoralists, water user committees, NGOs, FAO, national water agencies	On-site technical training on dam rehabilitation, climate-smart design, and maintenance; Gender-responsive participatory planning workshops	FAO engineers, NGOs, gender/inclusion experts, local hydrologists, government water departments; Indigenous facilitators					
	Activity 3.1.1.2 Construct 20 new rainwater retention ponds	Community leaders, Indigenous people, pastoralists, women, youth, local NGOs, FAO	Participatory design sessions; Technical training on pond maintenance; targeted capacity building; establishment of water committees; Gender-inclusive scenario planning	NGOs, FAO technical teams, social facilitators, hydrologists, and geotechnical specialists					
	Activity 3.1.1.3 Install rooftop rainwater harvesting systems on public buildings for community use	Teachers, health workers, community groups, women's groups, local laborers, school boards	Technical skills training on installation and O&M; Community sensitization sessions; User committees with gender equity	Local NGOs, district councils, engineers, gender specialists, community educators					
	Activity 3.1.2.1 Rehabilitate existing boreholes for home gardens and domestic use	Women, youth, home gardeners, community elders, water point committees	Training on groundwater monitoring, pump maintenance, and water governance; Gender-balanced water committee setup	FAO, Ministries of Water and Agriculture, extension services, CBOs					
	Activity 3.1.3.1 Promote drought-tolerant food crop varieties	FFS facilitators, women farmers, youth, home gardeners	Climate-resilient crop training; FFS demos on sustainable farming, nutrition; Gender-responsive extension support	FAO, national ag research institutions, local extension teams					
	Activity 3.1.4.1 Establish community-led nurseries for drought-resistant fodder crops adjacent to water retention ponds	Women's groups, youth, pastoralists, extension workers	Nursery establishment workshops; Gender-equitable land tenure dialogues; Hands-on seed propagation training	Ministries of Environment & Forestry, NGOs, local gov't					
	Activity 3.1.4.2 Rehabilitate 20,000 ha of rangeland in partnership with traditional leaders and local institutions	Herders, traditional leaders, local councils, women/youth groups	Training on rotational grazing, reseeding techniques, community zoning, and enforcement; Climate awareness workshops	Traditional leaders, CBOs, MoA, rangeland technicians					

	Activity 3.2.1.1 Establish and Operationalize a multi-stakeholder coordination forum for Climate Adaptation and Sustainable Livelihoods in the KRB	PIUs, CSOs, private sector, gov't reps, women/youth leaders, researchers	Launch workshop, quarterly forums, climate-gender governance training, joint M&E training, participatory planning	PIUs (Angola/Namibia), gender & climate consultants, DRR experts					
Component 4. Strengthening awareness, knowledge, and capacity to adapt to climate change and variability and knowledge sharing	Activity 4.1.1.1 Enhancing community capacity through gender-responsive climate knowledge and awareness	Women, youth, traditional leaders, marginalized groups, county governments	Participatory workshops (PRA), village assemblies, gender-sensitive risk mapping, adaptation planning tools	Executing Entity, NGOs, Local Facilitators					
	Activity 4.1.1.2 Enhancing adaptive capacity through integrated nutrition and literacy support	Women and youth in target villages	FFS, adult literacy classes, nutrition awareness sessions, leadership academies	FAO, Health & Education Ministries, NGOs					
	Activity 4.1.2.1 Reactivate and update the Kunene River Awareness Kit (RAK) online platform to support inclusive, data-driven water governance	Water user groups, basin authorities, Indigenous observers, IT developers	IoT sensor integration, multilingual dashboard design, digital literacy training, satellite terminal setup	PJTC, Executing Entity, Data Engineers					
	Activity 4.1.3.1 Case study development	IFAD, FAO, SADC-GMI, WaterNet, national ministries	Field documentation, community interviews, video storytelling, photo essays	Executing Entity, M&E and Learning Consultants					
	Activity 4.2.1.1 Institutional capacity building and strengthening for effective management of gender-responsive climate change adaptation initiatives	Water ministries, river basin orgs, local water user associations	Customized training, institutional diagnostics, conflict resolution sessions	International Experts, Basin Authorities, PJTC					

338. IFAD and FAO have significant experience and systems in place for knowledge management, documentation, and dissemination across countries through publications, events, websites, as well as through social media accounts. IFAD and FAO will use their networks of Country and Regional Offices in Africa to disseminate the knowledge and the lessons learnt through the project.
339. Knowledge products to be developed such as case studies, training manuals, training reports, practical guidelines on natural resources management in CC vulnerable contexts, community engagement reports as well as videos and photos from the field where the project activities will be implemented, will be useful tools for future projects. Good practices and key lessons from project interventions will be identified and documented as case studies.
340. Knowledge management activities will ensure that lessons learned are shared in a gender-responsive manner, highlighting the experiences and needs of women and marginalized groups in climate adaptation. The project will develop case studies that focus on gender-inclusive adaptation strategies, ensuring that the learning materials are accessible to all community members, including those with limited literacy. These case studies will be shared with regional and international platforms to encourage the scaling of gender-responsive climate adaptation strategies.

I. Stakeholder consultation

The consultation process captured a broad range of perspectives on climate change vulnerabilities, impacts, and adaptation priorities across the Kunene River Basin (KRB). Gender considerations were systematically integrated throughout the consultation process, ensuring the meaningful participation of women, men, and youth across diverse social, ethnic, and livelihood groups. Special efforts were made to amplify the voices of women, Indigenous Peoples, youth, elderly persons, persons with disabilities, and other marginalized groups, recognizing their differentiated vulnerabilities to climate risks and their central role in locally led climate adaptation. This inclusive approach ensured that gender-differentiated needs, priorities, and Indigenous knowledge systems were systematically captured and directly reflected in project design choices, component prioritization, and implementation modalities.

Stakeholder consultation for this project was conducted in two phases i) a project conceptualization phase in November 2019, during initial project design, and (ii) a proposal formulation and validation phase in May–June 2024, undertaken to update findings, validate priorities, and finalize the proposal.

Findings from these two phases were consolidated and used to refine project objectives, geographic targeting, adaptation interventions, and institutional arrangements, as presented below.

Stakeholder consultation phase 1: project conceptualization, November 2019

Step 1 - Meetings with regional stakeholders: Regional-level consultations: A series of consultations were held with regional stakeholders, including the Southern African Development Community (SADC) Secretariat and the Kunene Permanent Joint Technical Commission (PJTC), some of which were conducted on the margins of the Southern African Regional Climate Outlook Forum (SARCOF). The SADC Climate Services Centre supported the identification, alignment priorities related to transboundary disaster preparation, early warning, and coordinated response mechanisms. The SADC Water Division gave input on transboundary water governance and integrated water resources management priorities under increasing climate variability

Consultations were also held with the Climate Resilient Infrastructure Development Facility (CRIDF), a UK FCDO-funded programme supporting climate-resilient water infrastructure in Southern Africa, to align long-term water adaptation solutions with basin-level needs.

Inputs from regional stakeholders directly informed the design of the transboundary Multi-Hazard Early Warning System (Component 2) and basin-wide EbA-focused DRR planning (Component 1).

Step 2 - National level consultations National level consultations were conducted in the capital cities of Angola and Namibia through one-multistakeholder workshops. The main purpose of the workshops was to obtain input and contributions of national-level stakeholders in terms of overall design and relevance of interventions. In addition, the consultation was aimed at ensuring compliance with national and local policies, rules, regulations as well as alignment with ongoing projects and projects, in line with the AF's requirements. Stakeholders were identified by government counterparts based on their mandates and active roles in climate change adaptation, water management, agriculture, and disaster risk reduction.National-level feedback influenced component scope, institutional roles, and ensured alignment with national adaptation strategies and existing programmes.

Step 3 - Provincial and district-level consultations. Consultations were facilitated by regional and provincial authorities, including the Kunene Regional Council, elected councilors and regional representatives of various Ministries. . Stakeholders were briefed on proposed project objectives and provided guidance on site selection, local priorities, and feasibility considerations.on the proposed project objectives, and guided project design for the optimal target sites. The site selection criteria for selecting the sites were based on adaptation needs, complementarity with ongoing initiatives, and directed by potential for success. These consultations provided critical insights on ecosystem service availability, land and water management practices, historical climate trends, and locally appropriate adaptation options. Provincial-level inputs informed the selection of target sites and the prioritization of rangeland restoration, water infrastructure rehabilitation, and climate-smart agricultural interventions under Component 3. Highlights were made on some of the actual and potential adaptation responses to the decline in local ecosystem services and the effects of climate and other drivers on ecological conditions, as well as agricultural innovations for increasing productivity. This information was critical for formulating the project, especially for understanding the impacts and trade-offs resulting from climate-induced spatial, temporal, and seasonal changes in the availability of local ecosystem services, and the adaptive capacity of the local communities to climate-induced changes.

Step 4 – Community level consultations: This was one of the most important and intensive parts of the consultation process where target direct and indirect beneficiaries on the ground within the selected geographical areas provided their views on impacts of CC on their livelihoods and proposed solutions for adaptation. Community level consultations in both countries were held in November 2019, using the Community Vulnerability Assessment and Adaptation Planning (CVAAP) approach. A total of 266 community members were consulted in Angola and 191 in Namibia. The consultations were gender-responsive, with women representing more than 50% of participants at each site. Consultations explicitly explored differentiated climate impacts on women, men, youth, and Indigenous groups, including semi-nomadic pastoralist communities (Himba and Zemba).

Community inputs directly shaped the selection of concrete adaptation measures, including water harvesting systems, rangeland rehabilitation, drought-resilient crops, and livestock support interventions.

The consultation process sought to understand the differential impacts of CC on women, men and youth and their adaptation solutions. The process captured community perspectives regarding their natural environment, ecosystem services locations as well as assessing the effect of drivers of change on ecological conditions hence service provision and adaptation responses.

The community-level consultations directly informed the development of the concrete adaptation actions that are included in this proposal. The consultations facilitated participatory decision-making processes in climate adaptation planning by bringing together diverse stakeholders. . In particular, the process prioritized the active inclusion of often marginalized groups, especially women, youth, persons with disabilities, the elderly, and ethnic minorities, alongside traditional leaders, local NGOs and CBOs, government line ministries. Community-identified priorities were translated into project activities through participatory co-design, ensuring interventions reflect local realities, Indigenous knowledge, and gender-differentiated needs. The primary purpose of these consultations was to work with the beneficiaries to identify and co-design suitable adaptation responses, pathways and interventions that are informed by their respective local context, including indigenous knowledge and citizen science, to build resilience and reduce poverty associated with climate-induced hazards, as well as identify needs and priorities for different gender and social subgroups ensuring the resulting actions are equitable and locally relevant. Importantly, the participation of local government representatives helped enhance their accountability and credibility within their constituencies.

Feedback from stakeholder consultations, especially from women: The preliminary consultation process identified water, grazing land, livestock, and crops as the main livelihood assets. Unfortunately, due to the El Niño induced drought and CC, these livelihood assets have been threatened over the years. Consequently, most of the community depends on the public social protection project (grants, subsidies, food parcels). It was noted that the effects of CC, particularly the loss of these livelihood assets, have gender-differentiated impacts. Women, who often bear the responsibility for household food security and water collection, are disproportionately affected by reduced access to water and agricultural productivity. Men, who are more likely to manage livestock and engage in wage labor, also face significant challenges, particularly when grazing lands are degraded. Gender-diverse individuals may experience unique vulnerabilities due to limited access to resources, decision-making processes, or social protection mechanisms. The communities

identified drought and floods as key climate hazards that threatened their livelihoods the most. Lightning, wind, pests and diseases of crops and livestock were also identified as potential hazards, though not at the same impact level as drought and floods.

Furthermore, CC has had an impact on exacerbating malnutrition due to crop failure and reduced yields in the target area. Since most of the agriculture is rainfed, this makes it sensitive to CC. Livestock production has been affected through reduced forage and water availability as well as increased pests and disease. Women tend to be more vulnerable to CC than men due to underlying power relations, structures, and gender inequities. Rural women have low adaptive capacity due to lack of ownership and control over resources such as land, livestock, technologies, and assets to increase their adaptive capacity; as well as limited access to finance/credit. Women also have a huge workload of fetching fuelwood and water, in addition to reproductive and childcare roles. Women have less opportunities for training in relation to CC adaptation and CSA, and limited participation in decision-making.

Step 5 – Validation workshop: After the community consultations, a validation workshop was held on 27-29 November 2019 to present the findings to the project stakeholders, with participants from government departments and civil society organizations operating in the target communities. Recommendations pointed to the need to unify interventions at catchment/transboundary level for sustainable and impactful outcomes. The workshop also screened the communities' proposed interventions for gender, environmental and social suitability. This analysis was critical for formulating the project's concrete adaptation activities.

Key issues raised and integration into project design

Across both consultation phases, stakeholders consistently identified drought, water scarcity, rangeland degradation, livestock losses, food insecurity, and weak early warning systems as the most critical climate risks.

- Women emphasized the disproportionate burden of water collection, household food insecurity, limited land rights, and lack of access to finance and training. These inputs directly informed:
- The prioritization of water harvesting, borehole rehabilitation, and women-led water governance structures (Component 3).
- Targeted capacity building and leadership training for women (Components 1 and 4).
- Indigenous pastoralist communities highlighted declining grazing resources, loss of mobility corridors, and erosion of traditional coping mechanisms. These inputs informed:
- Ecosystem-based rangeland restoration and rotational grazing interventions (Component 3).
- Integration of Indigenous knowledge into DRR planning and early warning systems (Components 1 and 2).
- Local and national authorities emphasized fragmented climate information and limited preparedness capacity, directly shaping the design of the transboundary Multi-Hazard Early Warning System (Component 2).

Stage 2 Stakeholder consultation. Proposal formulation, May-June 2024

During the proposal formulation stage, missions in Angola and Namibia were conducted, to verify or update and verify the findings from the consultations held in 2019.

These missions confirmed the continued relevance of identified climate risks and validated the proposed adaptation interventions.

In Angola consultations were conducted in two phases. The first phase 20-27 May 2024

The project design team met with the project's Designated Authority and executing entity the National Directorate for Climate Action and Sustainable Development (DNACDS), Ministry of Environment. The DNACDS described the Government's investment in the Cafu canal in Kunene Province, a 160km canal which provides irrigation water for the people living along it. The main intervention needed is to support the local small-scale farmers to acquire solar pumps and drip irrigation equipment that will enable them to access and use the water from the canal.

One of the challenges discussed was the need to ensure that all meteorological and hydrological equipment installed in the basin can transmit data, as this is currently not happening. The Government intends to operationalize a National observatory on Climate Change and Environmental management, which will host an online platform for climate information and early warning systems.

DNACDS also highlighted the need for capacity building to enable its staff to fully understand project documents so that they can implement all projects effectively. Furthermore, the project design team was advised to collaborate with the Civil Protection Service in development of the EbA DRR Plan, to build upon existing DRR plans for the project area.

Thereafter, the project design team had a series of meetings with UN entities active in and around the basin, to discuss their current projects and how this project could build upon or complement them. Meetings were held with WFP, UNDP, FAO and WHO. In addition, the project design team met with ADPP, an international NGO serving as implementing partner of various developmental projects in the country.

Angola mission part 2: 11-16 June 2024

The project design team had meetings at provincial level, which included the provincial office of the Ministry of Environment, the provincial office of the National Institute for Agricultural Development, and the provincial representative of FAO. The project design team described the project, and the provincial officers gave guidance on the community consultations. Thereafter, the project design team proceeded to the target area, Chitado Commune, and met with the local officials, including the Communal Administrator, traditional leaders, religious leaders, police, firefighters, and teachers. The local officials described the developmental challenges in the area and how these have been exacerbated by CC. Thereafter, the project design team visited two of the targeted communities, namely Kutanga and Ndaveva, and held consultations with them. All participants in the community consultations were from the Himba ethnic group.

Further details on consultation participants, methodologies and outcomes are provided in stakeholder engagement report in Annex 8 for further details on these meetings.

In Namibia stakeholder consultations were held from 27 May – 3 June 2024 following a similar structure

The Namibia mission proceeded similarly to the Angola ones, with meetings held at national, provincial, local and community levels. At national level, the Ministry of Environment, Forestry and Tourism, Ministry of Agriculture, Water and Land Reform, Ministry of Works, and Transport - Meteorology Directorate, National Planning Commission, as well as several development partners, were consulted. Similar sets of stakeholders were met at provincial and local levels. Farmers Representatives and Community consultations, including traditional authorities, women and youth were all represented were thereafter conducted in Okanguati and Epupa areas of Epupa Constituency. Almost all the participants in the community consultations were of the Himba ethnic group. Please see the stakeholder engagement report further details.

Additional consultations will be undertaken during the inception phase to further strengthen community ownership, refine intervention design, and inform socio-economic and environmental baseline studies of this proposed project, to strengthen community ownership of the interventions. Consultations will also be done at community level during socio-economic and environmental baseline studies at the inception phase.

Overall, the stakeholder consultation process was meaningful, inclusive, and iterative. Inputs from women, Indigenous communities, and other marginalized groups were systematically integrated into project decision-making, directly shaping project components, geographic targeting, and implementation modalities. This ensures strong ownership, social legitimacy, and alignment with AF requirements for gender-responsive, locally led adaptation.

J. Justification for funding requested.

341. This proposal requests USD 24,550,836 from the Adaptation Fund to finance full-cost adaptation interventions aimed at increasing the climate resilience of the semi-nomadic agro-pastoralist people of the KRB. The KRB is in critical need of adaptation interventions because its water resources and ecosystems underpin the livelihoods and food security of extensive rural and peri-urban settlements, whose survival has been progressively threatened by CC. Both Angola and Namibia face significant institutional, technical, and financial constraints in addressing the needs of vulnerable basin populations and in preparing them for increasing temperatures, reduced and more erratic rainfall—particularly in the middle and lower sections of the basin—and declining water availability exacerbated by unsustainable groundwater abstraction. Without targeted adaptation interventions, communities in the KRB face escalation vulnerability and declining adaptive capacity. If current trends continue, climate induced displacement will accelerate, forcing rural populations to migrate to urban and peri areas already characterized by inadequate infrastructure and limited-service delivery capacity. Notwithstanding the risk of continuous reliance on government food banks for survival, as it is currently the case due to climate induced migration from Angola into Namibia , increase in urban slums where water insecurity and malnutrition are rife will lead to disease and death, and lack of access to education will leave children, especially girls, without the means to address their future needs and at the mercy of human trafficking and exploitation. This scenario is unfortunately common in the urban areas of Southern Africa and in peri-urban areas along commercial routes but can be avoided by planning for sustainable rural development in the context of a changing climate.

342. Annex 2 Climate Risk Analysis, provides the climate hazards affecting the project area, including their current and potential future impacts. The dominant climate hazard in the project area is recurrent and intensifying drought, which severely constrains access to drinking water for communities and livestock, reduces water availability for food and fodder production, and accelerates land and ecosystem degradation. 17 summarizes the principal drought-related impacts in the KRB and the corresponding adaptation interventions designed to address these risks. All project components have been designed exclusively to address the additional risks and vulnerabilities arising from climate change and climate variability and therefore qualify for full-cost adaptation financing under the Adaptation Fund. The project applies a structured full-cost adaptation approach, whereby AF resources finance the incremental costs required to reduce climate vulnerability beyond a "without-project" scenario characterized by unmanaged drought risk, declining water security, and ecosystem degradation. Specifically:

• Component 1 finances the co-design and implementation of a gender-responsive, ecosystem-based Disaster Risk Reduction Plan to address climate-induced risks that are not covered under baseline development planning.

• Component 2 finances the establishment of a transboundary Multi-Hazard Early Warning System, including weather and hydrometric stations, which are required due to increased climate variability and extremes and would not be justified in the absence of climate change.

• Component 3 finances climate-resilient water, rangeland, and livelihood infrastructure designed explicitly to withstand projected drought and heat stress conditions.

• Component 4 finances climate adaptation knowledge generation, institutional capacity strengthening, and inclusive governance mechanisms necessary to sustain climate-informed decision-making.

These investments include early warning systems, climate-resilient water and rangeland infrastructure, drought-resilient value chains, gender-inclusive governance mechanisms, and institutional strengthening, all of which directly address climate-driven risks rather than baseline development gaps.

No project activities are contingent on co-financing. All critical adaptation outputs—including 24 automatic weather stations, 60 borehole rehabilitations, 20 water retention ponds, community-based training programs, and climate-resilient agro-processing units—will be fully financed through AF resources. Technical assistance and knowledge support will be leveraged from FAO and IFAD; however, these contributions provided primarily in the form of technical backstopping, quality assurance, and capacity strengthening and are not accounted for as financial co-financing. While national and local institutions are the primary implementers of adaptation actions, FAO and IFAD technical support is critical during the design and early implementation phases to ensure that adaptation measures are climate-informed, gender-responsive, and aligned with international best practice. This support is specifically aimed at transferring knowledge, strengthening institutional systems, and embedding technical capacity within national and community-level structures, thereby enabling countries and communities to independently sustain and scale adaptation outcomes beyond the project period.

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343. In line with AF guidance, the requested USD 24,550,836 is fully justifiable by the scale, urgency and transboundary significance of the climate risks facing the KRB. All proposed investments are designed to directly reduce climate vulnerability and address climate-induced risks that are not part of any baseline development activity. The requested funding will enable Angola and Namibia to implement a replicable locally led climate resilient rural

development model in the KRB, centered on inclusion, ecosystem sustainability and long-term institutional capacity with adaptation objectives fully achievable without reliance on additional donor financing.

Table 14: Project outputs and activities designed to address the impacts of drought.

Drought impact	Relevant project outputs and activities	Adaptation results
Decreased food security: Water scarcity and declining soil quality reduce the quantity and quality of food produced. The already marginal agricultural conditions in the lower basin are expected to deteriorate further. disproportionately affecting women who are often responsible for household food production and nutrition. Yields of drought-resistant crops such as sorghum and millet could decrease by 20-30% under severe climate scenarios. The viability of rain-fed agriculture may be threatened in many areas, potentially necessitating a shift towards more resilient pastoral systems or irrigated agriculture where feasible [33] . Access to alternative agricultural systems is often unequal. Men generally have more control over land and livestock, while women face barriers to land ownership, credit, inputs, and water infrastructure. Gender-diverse individuals may also be excluded from agricultural support services.	Output 3.1.1; Activities 3.1.1.1, 3.1.1.2 Output 3.1.2; Activity 3.1.2.1 Output 3.1.3; Activity 3.1.3.1	Rehabilitation of 20 earth/sand dams and construction of 20 new rainwater retention ponds will facilitate irrigation of crops during dry spells. Considering the specific water access needs of women and marginalized gender groups, who often bear the responsibility for household water and food production. Rehabilitation of 180 boreholes will enable the surrounding communities to access water and establish vegetable gardens in an inclusive and equitable manner. Procurement of labor-saving devices for conservation agriculture will help increase agricultural output and reduce the workload, particularly of women, if access is equitable, even under harsh climatic conditions. Promotion of drought-tolerant crop varieties will improve yield of staple food crops, and equitable access for women and marginalized groups will enhance household food security and climate resilience. Value chain support will prevent loss and waste of agricultural produce, enabling more of it to be processed and sold. This improves food security for the surrounding communities as well. Ensuring women and marginalized groups have equal opportunities in value chain activities will further improve food security and livelihoods in the surrounding communities.
Child malnutrition: Beyond yield reductions, CC may also affect crop quality. Higher CO_2 levels could reduce the protein content of some cereal crops by 5-10%, potentially exacerbating nutritional challenges in the region.[34] Children who do not receive sufficient variety and quantity of nutritious food end up both physically and mentally underdeveloped. Women and caregivers—who often manage child nutrition—face increased pressure as children lacking sufficient nutritious food risk physical and mental underdevelopment.	Output 3.1.3; Activity 3.1.3.1 Output 4.1.1; Activity 4.1.1.2	Food quality will be enhanced through support to conservation agriculture, which facilitates conservation of organic matter and water in the soil. Selection of drought resistant high nutrition crops for women's groups will ensure that the highest nutritional value selected crop is utilized, contributing to improved food security and livelihoods.
Loss of livestock productivity: Drought reduces the availability of water and forage for livestock, which lowers milk production, growth rates, and the health status of livestock. Women, who often manage livestock care and dairy processing, are particularly affected by these impacts. In cases of extreme water scarcity, livestock die of dehydration and hunger threatening household livelihoods and food security. Livestock production, particularly important in the middle and lower basin, faces multiple climate-related challenges, which affect men and women differently due to their distinct roles in animal husbandry, management, and processing: Heat Stress: Increased temperatures and more frequent heat waves will impact animal health and productivity. Milk production in dairy cattle could decrease by 10-20% during severe heat waves significantly affecting women who traditionally manage dairy activities and are central to household nutrition. Growth rates in beef cattle may reduce by 5-15% due to increased metabolic stress from higher temperatures[35] impacting men who typically oversee livestock herding and migration.	Output 3.1.4; Activities 3.1.4.1, 3.1.4.2,	The restoration and sustainable management of 20,000 hectares of rangelands using drought-tolerant fodder crops will increase availability of fodder for livestock. Ensure both women and men, especially from pastoralist communities (e.g., the Himba), are included in consultations, planning committees, and decision-making processes related to rangeland restoration. The establishment of 2,000 hectares of multipurpose tree plantations will also increase availability of food for livestock, as some tree products such as moringa leaves can be used as animal feed. Ensuring women's access and participation, especially those managing small livestock, will enhance household food security and promote gender-equitable benefits. Furthermore, the rehabilitation of 20 earth/sand dams and construction of 20 new rainwater retention ponds will provide more drinking water for livestock. Ensuring that women, who often care for small livestock and manage household water use, are involved in the planning and have equitable access to these resources will strengthen both gender equity and community resilience.

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[33] Government of Namibia. (2022). Second National Communication on Climate Change. United Nations Framework Convention on Climate Change. Retrieved from https://unfccc.int

[34] Intergovernmental Panel on Climate Change. (2021). Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. https://www.ipcc.ch/report/ar6/wg1

[35] Ministry of Environment, Forestry and Tourism. (2020). *Namibia National Climate Change Strategy and Action Plan*. Retrieved from https://www.met.gov.na/services/environmental-management/climate-change

Forage Availability: Changes in precipitation patterns and increased aridity will affect pasture and forage availability. In the middle basin, pasture productivity could decrease by 10-25% due to reduced rainfall and increased evapotranspiration. The lower basin may see reductions in rangeland carrying capacity of 20-40% under severe climate scenarios, potentially forcing significant changes in pastoral practices[36] . These shifts will impact men and women differently. Men often manage herd movement and grazing decisions, while women typically handle daily livestock care and household nutrition.		Rehabilitation of 180 boreholes will enable watering of small livestock during dry spells. This will particularly benefit women, who are often responsible for managing small livestock and household water use, by reducing their workload and supporting household food security.
Declining water supply: Drought decreases the availability of water for domestic purposes, resulting in increased time spent fetching water by women and girls, who are primarily responsible for household water collection, as well as consumption of poor-quality water leading to health risks. The distance that pastoral communities need to travel to water sources during dry seasons could increase by 30-50% in some areas of the lower basin. This places additional strain on both men, who manage herd mobility, and women, who are often responsible for fetching water for household and small livestock use, intensifying their time burden and physical workload. Increased competition for water resources between livestock, crops, and other uses may lead to conflicts and forced migration of pastoral communities. Women, who are responsible for household water and food security, and men, who manage herd movements, are affected differently. Migration can increase women's vulnerability, disrupt livelihoods, and limit access to essential services, while also straining traditional roles and responsibilities within communities.	Output 3.1.1; Activities 3.1.1.1, 3.1.1.2, 3.1.1.3 Output 3.1.2; Activity 3.1.2.1	Increased water availability from the 20 earth/sand dams, 20 rainwater retention ponds, 20 rooftop rainwater harvesting units and 180 boreholes will increase water availability for the target beneficiaries' domestic use and consumption. This will particularly benefit women and girls, who typically bear the responsibility for water collection and household water management, reducing their time burden and improving health and wellbeing. The proposed interventions will reduce the distance pastoral communities need to travel to water sources, easing the burden on men who manage herd movement and women who often fetch water for household use, thereby. With more water available for all users, competition or conflict over water resources may decrease, leading to greater community cohesion. This can particularly ease pressures on women and girls, who often face the greatest challenges in accessing water, and support more equitable resource sharing among all community members.

344. This project offers the opportunity to the Ministries of Environment of Angola and Namibia to establish a systematic process for designing, planning and implementation of strategies and actions for CC adaptation, in collaboration with local stakeholders. It does so by promoting collaborative dialogue among parties, developing skills in negotiation and conflict resolution, providing timely scientific information to discuss and plan for adaptation and reduction of negative impacts from climate hazards, and by enhancing the one-stop portal for knowledge on the KRB. The project aims to provide required knowledge, goods, and services, and in doing so, demonstrating how to deliver on the national, regional, and international commitments for CC and transboundary water management, piloting a set of methodologies that can be applied elsewhere in the region and beyond in transboundary water systems. Thus, the scale of funding required to address all the climate-related challenges in the Basin requires that this proposal requests the maximum amount of funding available from the Adaptation Fund for a regional project.

J. Sustainability of the project outcomes

345. This project is designed as a multi-scale intervention to build long-term climate resilience among semi-nomadic pastoralists and small hold farmers in the KRB, integrating EbA and DRR planning approaches. Sustainability, as part of the Sustainable Development Goals for climate action and water, is embedded across environmental, institutional, social, technical, and economic dimensions. It also provides a framework for cooperative governance to be established and implemented between the target communities including women and different gender subgroups and other stakeholders, including sedentary communities, local and national government, donor agencies, and the private sector. The co-design of concrete adaptation actions is chosen as a methodology to ensure that proposed actions continue through direct interventions of the stakeholders in time, beyond the lifespan of the project. Building the project on both indigenous traditional knowledge and scientific knowledge, for the nomadic agro-pastoralist groups and including preferable adaptable solutions of these stakeholders enhances the project's sustainability.
346. To ensure sustainability of gender considerations and outcomes beyond completion of the project, the project will appoint a gender expert within the PIU. The project's staff will be made aware of gender mainstreaming and provide backstopping for gender-sensitive project implementation. The executing agencies are also expected to appoint gender focal points. This team of gender expertise will train different gender subgroups impacted by the project, to elaborate their needs and take advantage of the opportunities that the project will generate for them. The team will also carry out regular review meetings with men and women beneficiaries in support of gender equity and social inclusion. Monitoring identifies constraints to gender responsive implementation and informs efforts to address and mitigate them during implementation, through adaptive management. The gender action plan and gender-responsive measures will be reviewed and adjusted as needed. The inclusion of women in the decision-making processes through quotas, especially women from marginalized communities, will ensure gender balance. Planned activities will be adjusted based on lessons learned.
347. Emphasis on capacity building and dialogue will ensure that the structures established, as well as the interventions implemented, will continue beyond the scope and the duration of the project. The project's components and activities are built upon national and sub-national strategies and priorities and will be integrated into national and sub-national projects. The project will establish and institutionalize linkages between communities, representatives

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[36] CRIDF. (2020). Climate Resilient Infrastructure Development Facility Report. Retrieved from https://www.cridf.com

of traditional leadership and local government officials, as well as a cross-sectoral and cross-border platforms that will monitor the continuation of the project's achievements. The project's exit strategy will be developed together with all stakeholders considering environmental, economic, technical, social, and institutional sustainability.

348. This project will facilitate long term action by supporting the entrenchment of inclusive climate-smart livelihoods and climate informed decision making. Through value chain support, the beneficiaries will be empowered to go beyond subsistence agriculture to producing finished products, which they are likely to sustain beyond the lifespan of the project. An important requirement for interventions to be locally owned and hence sustainable is the extent to which local indigenous knowledge and expertise are entrenched. This project through the platforms for co-creation of knowledge with local and indigenous communities and fostering ownership and in project planning, implementation and monitoring facilitates ownership of interventions by local communities. This is further enhanced by the embedding of EbA interventions in farmer and agro-pastoral field schools, communities of practice, knowledge action networks and learning sites at different levels, which will be formed and operationalized by the project.
349. The project will be integrated within existing regional, national, and private sector institutions. At the regional level, the Southern Africa Regional Climate Outlook Forum (SARCOF) process will be key in ensuring sustainability of measures to reduce exposure to climate-related risks and enhance people's resilience. At the River Basin level, the PJTC will be the main institution through which implementation will take place. At the national level, the Ministries of Agriculture and Ministries of Environment, National Meteorological and Hydrological Services (NMHS) and National Climate Outlook Forums (NACOF) will be engaged and capacitated in various activities through the project.
350. Long-term sustainability will be further ensured by focusing on existing extension staff, field workers and community focal points and building their capacity in CC adaptation. This will be enhanced by making use of institutions that are already in that field of specialization, so that when the project comes to an end, activities continue. In addition, by taking advantage of IFAD and FAO's global modalities for knowledge dissemination in agriculture, food and nutritional security, the reach and spread of project outcomes will be enhanced. This will lay the foundation for the widespread scaling up of inclusive climate adaptation in the region and globally by IFAD, FAO, and the participating international NGOs.
351. Sustainability will be ensured through the active involvement of local communities in the management of the adaptation measures. Specific attention will be given to ensuring that women's groups are empowered with the knowledge, skills, and resources to sustain the initiatives. Training in leadership, land rights, and water management including the operation and maintenance of drip irrigation systems for women will be integral to building community ownership and ensuring that the project's benefits are maintained after its completion. The project will aim for at least 60% of Water-EWS Action Committees to be led by women by the end of the project.
352. The long-term sustainability of adaptation benefits is reinforced through deliberate planning for the maintenance and financing of key project investments. Infrastructure such as rainwater harvesting systems, rehabilitated grazing lands, automatic weather, and hydrometric stations will be managed by community institutions with support from local government structures. The project will establish local Water User Committees, Rangeland Management Groups, and Community Forecasting Teams, with clearly defined mandates, training, and tools for operation and maintenance. These structures will take full ownership of infrastructure and practices after project closure.
353. To ensure financial sustainability, the project has calculated the estimated annual recurrent costs at approximately $31,600. These include the maintenance of 24 automatic weather stations ($ 2,400), 32 hydrometric stations ($3,200), the Kunene River Assessment Toolkit and online portal ($ 5,000), water infrastructure such as retention ponds and rooftop systems ($ 6,000), rangeland management activities ($5,000), and refresher training and governance support ($ 10,000). These costs are expected to be covered through a combination of local government budget allocations, in-kind community contributions, revenue from supported value chains, and partnerships with private sector actors such as telecommunications or agri-business firms. Municipalities will also be supported to establish Maintenance Reserve Funds during the project's final two years.
354. Institutional responsibility for the long-term operation of EWS and adaptation services will be embedded in the mandates of national meteorological, hydrological, and agricultural institutions. The Ministries of Agriculture and Environment will adopt farmer field schools and resilience training programs into their national extension models, while data systems will be absorbed into national databases and maintained by trained government technicians. This ensures that the infrastructure remains functional, integrated, and technically supported post-project. The sustainability of these interventions is further enhanced by integrating legal recognition of local rules and protocols, codified through community bylaws or conservancy agreements where appropriate. This legal embedding of adaptation responsibilities helps to safeguard local ownership and incentivize community investment in the continued upkeep of shared resources. The project establishes the foundation for adaptation benefits that will be resilient, inclusive, and institutionally supported long after the final project disbursement.
355. The adaptation benefits generated by the project will be sustained beyond closure through a combination of (i) institutional embedding of mandates within national meteorological, hydrological and agricultural services; (ii) community-based management structures with clearly defined O&M responsibilities; and (iii) a concrete plan for financing recurrent costs without reliance on future donor funding. The project has estimated annual recurrent costs at approximately USD 31,600 for maintenance of climate information infrastructure, water harvesting systems, rangeland management and refresher training. These costs will be covered through local government budget allocations, in-kind contributions from beneficiary communities, revenues from climate-resilient value chains supported by the project, and partnerships with private sector actors. Municipalities will also establish Maintenance Reserve Funds during the final two years of implementation to ensure that funds are available for future repairs and upgrades.

K. Environmental and social risks

356. A preliminary E&S impacts and risks assessment was conducted during the design phase to ensure the project complies with the 15 principles of AF's Environmental and Social Policy (ESP). The project is assessed as Category B based considering potential environmental and social impacts are site-specific, reversible, and manageable with appropriate mitigation measures. The initial results of screening are presented in the table below.

357. No significant negative environmental impacts are foreseen under Component 1, which is dedicated to optimizing procedures at the regional level through EbA in Disaster Risk Reduction Planning (DRRP). This component aims to enhance the resilience of local communities and ecosystems by incorporating a gender responsive DRRP for the KRB. This strategy is not solely tailored for the recipient communities but co-created with them to ensure their active participation and impact on the process. The DRRP will advance ecosystem recovery and sustainable means of living while addressing gender disparities in natural resource access and management.
358. Component 2, focuses on establishing a MH-EWS (MH-EWS), requires meticulous attention due to potential adverse environmental impacts. The core activities involve setting up automatic weather and hydrometric stations, necessitating thorough environmental evaluations to mitigate risks such as habitat disturbances and pollution and adherence to all national regulations and technical standards. A key highlight is the proactive approach to address the gender-specific impacts of CC on automated weather stations. This involves actively engaging women in the design and dissemination of weather data, ensuring equitable access and benefits for all gender groups, and making everyone feel included and valued in the process.
359. Component 3, focuses on inclusive community-based adaptation actions utilizing early warning alerts and seasonal forecasts generated from Component 2, merges the outcomes of the preceding sections to bolster the adaptability of ecosystems and target populations. Initiatives within this segment encompass constructing and restoring water storage facilities, rehabilitating existing boreholes, providing processing tools, promoting conservation farming, and introducing drought-resistant food and fodder crop varieties. These efforts strengthen agricultural resilience, enhance water availability, and sustain livelihoods. The project acknowledges the different roles and needs of women, men, and gender-diverse individuals, ensuring women's active participation in adaptation activities. It provides targeted support to promote equitable access to resources, training, and decision-making, strengthening inclusive climate resilience. Expected environmental risks include potential hazards to water quality and soil integrity, to be addressed through sustainable methodologies and climate-conscious agriculture. Social concerns will be alleviated through comprehensive dialogues and gender-inclusive strategies, making the audience feel reassured and involved, with particular attention to disadvantaged and at-risk demographics.
360. No significant negative environmental impacts are foreseen under Component 4, which focuses on creating awareness, fostering learning, and effectively managing knowledge. Its primary goal is to encourage knowledge sharing to enhance adaptation planning and execution. Key activities include increasing awareness and sharing information about CC adaptation measures, revitalizing, and enhancing the Kunene River Assessment Toolkit, and strengthening institutional capabilities. While there are no or few environmental and social risks associated with this component, the focus lies on promoting gender-sensitive metrics, ensuring comprehensive stakeholder participation, and combining scientific and traditional knowledge to shape adaptation approaches.
361. To effectively manage the environmental and social risks associated with the project, an Environmental and Social Risk Management Plan: Annex 9 was developed. This plan will be regularly updated as pending environmental and social risk assessments are carried out once USPs are identified. A quota system, alongside targeted evaluations, will be implemented to ensure fair participation and prevent bias Discussions on inclusion will continue to be held to address any potential negative impacts on marginalized and vulnerable communities. Gender disparities will be addressed through comprehensive analysis and gender-sensitive decision-making platforms.
362. To minimize risks to ecosystems and biodiversity, nature-based adaptation strategies will be adopted, alongside the cultivation of native plant species. Strict adherence to international standards and the execution of additional evaluations will mitigate risks associated with pollution and inefficient resource use. Efforts to protect the physical and cultural heritage of communities will focus on promoting indigenous knowledge and conducting targeted studies. Across all components, the project will recognize and integrate Indigenous knowledge systems through co-created knowledge hubs, participatory planning, and Indigenous-led monitoring processes. A flexible, iterative framework will ensure that Indigenous insights shape risk assessments, livelihood strategies, and ecosystem governance in culturally appropriate and context-specific ways. Traditional ecological knowledge will be integrated into environmental management practices and climate adaptation strategies, with specific attention given to indigenous methods for ecosystem restoration, water management, and disaster risk reduction.
363. Sustainable practices, including climate-resilient agricultural techniques, will be employed to address land and soil degradation risks. These practices will be informed by a fusion of scientific and indigenous knowledge, ensuring more culturally relevant and effective climate adaptation outcomes. Throughout all components, the project will prioritize the participation of Indigenous peoples in project activities and traditional knowledge gathering. It will involve regular consultations with Indigenous communities and establish a grievance redress mechanism specifically tailored to the needs of migratory Indigenous populations.
364. ESIAs will be conducted for all required activities, and their results will be incorporated into the project design and implementation processes. The PMUs, with the support of IFAD, will ensure compliance with the AF's ESP, including the implementing FPIC protocol for affected communities. Regular monitoring and evaluation of these safeguards will be integrated into the project's overall M&E framework to ensure compliance.
365. At project inception, assessments will determine the site location, scope, and beneficiaries of the interventions – for those currently classified as Unidentified Sub-Projects (USPs). As each USP is defined, a comprehensive USP Environmental, Social, and Gender Screening checklist (Annex 10) will be carried out in compliance with the AF's policies. This checklist must be completed and formally cleared up prior to the implementation of any USP to ensure full alignment with the project's Environmental and Social Management Plan (ESMP). No USP will be approved, financed, or implemented until it has undergone comprehensive environmental, social and gender screening; has been risk-classified; and has received formal clearance from IFAD in accordance with applicable AF requirements.
366. The screening process will classify each USP according to its risk level (Category A, B, or C) and identify the need for site-specific ESMPs or targeted mitigation measures where applicable. The checklist serves as a critical tool for the executing entity to systematically assess the potential environmental, social, and gender-related impacts of subprojects and determine whether they trigger relevant safeguards under the AF or IFAD frameworks. It is designed to guide screening, classification, and evaluation during project preparation and implementation. USPs will be subject to ongoing monitoring, documentation, and access to grievance redress mechanisms in line with the overarching safeguards of the full project.

367. Potential environmental and social risks associated with the project are presented in the table below. They are discussed in more detail in the ESIA (Annex 11).

Table 15: Environmental and social risks identified.

Checklist of environmental and social principles	No further assessment required for compliance	Potential risks – further assessment and management required for compliance
1. Compliance with the Law	~~X~~ ~~USPs will be screened against the USP Risk Screening Framework~~	**Low risk:** Limited risk of non-compliance with laws due to ongoing consultations with local authorities and adherence to national legal frameworks in both Namibia and Angola Some risks of local or national permits for water infrastructure or land-use planning not secured and transboundary legal frameworks (Angola-Namibia) not fully respected or harmonized. The project has been designed with both countries and has, and will ensure compliance with all relevant national, customary, and international legal frameworks. throughout project implementation. In addition to consultations with regional authorities, Namibian and Angolan national authorities, local regulatory bodies will be engaged regularly to ensure ongoing compliance with specific legal requirements related to land use, water access, climate resilience, and FPIC as prescribed by national and international laws. USPs will be screened against the USP Risk Screening Framework which applies the exclusion list, the 15 AF ESPs and whose outcome will update the ESMP and Gender Action Plan
2. Access and Equity	~~The siting of weather and hydrometric stations will be conducted through participatory mapping and consultations to ensure accessibility and coverage~~	**Medium risk**: Potential risks include inequitable distribution of resources or benefits; exclusion of marginalized groups such as women, elderly, or indigenous people; and potential conflicts over resource allocation. Additionally, there is a risk that users may not receive timely or adequate information, leading to a lack of awareness and reduced unwillingness to participate. The location of weather stations may also be inaccessible to some communities, resulting in unmet needs and exclusion from key decisions regarding adaptation strategies. These risks are addressed as follows: Inclusive stakeholder engagement processes will be implemented to ensure representation from all social groups, with special attention to women, elderly persons, and indigenous populations during planning, implementation, and monitoring phases. Equitable resource allocation will be guided by a needs-based approach and gender-responsive budgeting. Transparent communication channels and local language information campaigns will be established to enhance awareness, promote knowledge sharing, and foster cooperation. The siting of weather and hydrometric stations will be conducted through participatory mapping and consultations to ensure accessibility and coverage, especially for vulnerable and remote communities. Conflict resolution mechanisms will be integrated at community and institutional levels to manage disputes over resources or data use.
3. Marginalized and Vulnerable Groups		**Low risk**: Potential risks include overlooking the specific needs of marginalized groups, the potential for increased vulnerability if such needs are not adequately addressed, and the risk of social exclusion. Additionally, marginalized, and vulnerable groups, including indigenous people, men, women, and gender subgroups, may also face barriers to participating in consultations o may be unaware of how to access value addition projects. These risks have been addressed as follows: Marginalized and vulnerable groups, especially women and indigenous people, - were actively consulted during the development of the proposal and will continue to be engaged during the project inception phase to ensure their needs and priorities are fully integrated. This project will empower vulnerable groups to participate in decision-making related to concrete adaptation actions, recognizing and incorporating their traditional and local knowledge. Inclusive engagement will be further strengthened through structured representation mechanisms, including a minimum target of 50% participation by women in project-related meetings. Targeted outreach and information dissemination strategies will also be employed to ensure all vulnerable groups are aware of and able to access project benefits.
4. Human Rights		**Medium risk**: The Human Rights ESP is considered moderate risk because the project operates in regions with Indigenous Peoples and vulnerable communities, where access to land, water, and resources may be contested or unequally distributed. While the project affirms international human rights standards, the absence of national ratification of instruments like ILO 169 and the potential for unintended exclusion or marginalization during implementation warrant proactive safeguards and monitoring. These risks have been addressed as follows: The project is fully aligned with international human rights standards and affirms the rights and dignity of all individuals, including Indigenous Peoples and other vulnerable groups. It has been designed using a participatory, inclusive approach that engaged stakeholders from government, civil society, and local communities, with specific efforts to ensure representation of women, Indigenous Peoples, and marginalized populations.

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		No project activities have been identified that would contravene internationally recognized human rights. On the contrary, the project seeks to advance fundamental rights—such as equitable access to water, land, and ecosystem services—by enhancing climate resilience and adaptive capacity. To ensure these rights are upheld during implementation, the project will incorporate targeted social and environmental safeguards, including measures to protect land and water access, particularly for Indigenous Peoples and customary land users. These safeguards will align with principles of FPIC and include culturally appropriate consultation and grievance redress mechanisms. The project will also monitor human rights-related indicators to ensure compliance and accountability throughout its duration.
5. Gender Equity and Women's Empowerment		**Low risk**: Potential risks include the cultural norms and legal frameworks in Angola and Namibia may restrict land rights, financial autonomy, or leadership roles for women reinforcing existing gender disparities if not adequately addressed. This could result in the, the exclusion of women from decision-making processes, and insufficient support for women's empowerment initiatives. Social norms and restricted access to resources or decision-making forums may further limit the participation of women and other marginalized groups. This has been addressed as follows: The meaningful consultative process formed the basis for identifying interventions that promote gender equity and women's empowerment, while respecting customary systems and advancing gender equality, e.g., working with female and male traditional authorities to build consensus around women's participation. Targeted consultations with women were conducted to inform the design of an upgraded, gender-responsive business model. Gender considerations will be systematically integrated across project activities to ensure inclusivity and women will be supported and trained to take leadership roles. The project will actively promote women's leadership in public spaces and decision-making processes related to CC adaptation, food security, and nutrition as well as ensuring participation in budgeting and monitoring processes, not just in consultations. Women will be encouraged to participate in the FFS, leveraging the FAO's proven methodologies and experience in promoting gender equality within such setting. In addition to a target of at least 50% female participation, the project will deliberately promote women's leadership in adaptation planning and resource management. Gender-disaggregated indicators will be embedded in the M&E framework to track participation levels. Leadership roles, and empowerment outcomes over time. The project will also implement regular feedback loops designed to capture gender-specific barriers and adapt interventions accordingly. To address structural and logistical barriers to participation, especially for the semi-nomadic groups, the project will schedule meetings at times and locations convenient to women, provide transportation or have mobile outreach in remote areas, and ensure project documents and training are available in local languages and appropriate literacy levels.
6. Core Labor Rights	~~X~~	**Low risk**: Namibia and Angola have both ratified the 8 core ILO Core Labor Conventions but when assessed has not consistently fulfilled its commitment. Potential risks include labor rights violations, exploitation of workers, and inadequate working conditions if not properly monitored. This will be addressed as follows: The project will enforce respect for international and national labor laws and codes for both countries. All labor-related matters will be conducted as per the relevant laws. The ILO Conventions on labor rights will be upheld and enforced through inclusion of anti-discrimination clauses in all employment contracts and procurement documents, age verification requirements, monitor hiring practices and disaggregate employment data by sex, age, and other relevant factors, can. The project will include regular audits of labor practices and ensure that all contractors and partners adhere to international and national labor standards. A designated labor rights focal point will oversee compliance during implementation. A labor Rights and Safety Compliance Checklist (Annex 12).
7. Indigenous Peoples	X ~~Ongoing FPIC implementation and participative, meaningful consultation~~	**Medium risk**: Namibia and Angola have not signed ILO 169, nor have national legislation mandating FPIC protocol – though both countries voted for UNDRIP, which is a non-binding declaration reflecting a commitment to standards for the survival, dignity, and well-being of Indigenous peoples. Potential risks include impacts on indigenous peoples' rights and livelihoods, insufficient engagement with indigenous communities, and potential conflicts over resource use. This was addressed as follows: Engaging in meaningful and participative consultation during project design provided a basis for identification of interventions that ensure respect of indigenous peoples and inclusion in the decision making for identifying needs and project design. Extensive, participatory and inclusive consultation guided by FPIC protocols will take place throughout project implementation, for planning and feedback to ensure the project appropriately incorporates the priorities and needs of the communities involved in project design and planning activities under the upgraded model, the project will ensure that the priorities, needs, and rights of Indigenous peoples—such as agro-pastoralist and migratory communities—are fully considered and integrated. All participatory processes and project activities will be inclusive of Indigenous groups, ensuring meaningful engagement from the outset. The project will align with relevant IFAD and FAO policies on Indigenous peoples' inclusion and adhere to principles of FPIC protocol. Indigenous communities will actively participate in monitoring and evaluation processes, allowing for the recognition and incorporation of traditional knowledge, especially in areas such as agro-pastoral practices, land use, and natural resource management. Furthermore, the project will establish

		grievance redress mechanisms that are specifically designed to accommodate the migratory nature of these groups, ensuring accessible, timely, and culturally appropriate channels for addressing concerns throughout the project's implementation.
8. Involuntary Resettlement		**Low risk**: Potential risks include community displacement, social and economic disruptions, and restricted access to homes, schools, and businesses or disruption of migratory patterns or grazing norms. This was addressed as follows: The project is committed to selecting sites that avoid crowded areas and sensitive ecosystems. Existing infrastructure sites will be used, when possible, to reduce new disturbances. Local communities will be involved in a participatory, inclusive planning process to understand community needs and minimize negative impacts on their lives. Engaging with affected communities early and throughout the project helps gather input, address concerns, and build trust. In the event of any temporary disruption to livelihoods, the project will provide support through alternative livelihoods initiatives, ensuring no adverse socio-economic impacts on affected communities.
9. Protection of Natural Habitats		**Low risk**: Potential risks include habitat degradation or loss, negative impacts on local biodiversity, and unintended ecological consequences. These are addressed as follows: Project activities are designed to protect and conserve natural habitats. The project will ensure the protection of natural habitats by implementing EbA activities such as agroforestry and water conservation efforts. In addition, consultations with government stakeholders, community leaders, and communities will ensure that the conversion or degradation of critical natural habitats (including those that are legally protected, officially proposed for protection, recognized for their high conservation value, or recognized as protected by traditional or indigenous local communities) is avoided. the project will integrate ecological monitoring to track the health of local habitats and biodiversity, ensuring that all infrastructure projects avoid critical habitats and use best practices for habitat preservation
10. Conservation of Biological Diversity		**Low risk**: Potential risks include loss of biodiversity, introduction of invasive species, negative impacts on ecosystem services, and damage to critical habitats. Road construction and maintenance may disrupt local wildlife habitats. To ensure this risk is addressed, this project will prioritize local species and multi-species plantations and avoid the use of non-native and invasive species. The introduction of any new breeds and varieties will be done in strict adherence to national standards, and in prioritization of improved local species. The project will incorporate wildlife crossings and minimize habitat disruption during road construction to protect local fauna. Long-term biodiversity monitoring protocols will be established to track the impacts of restoration activities, ensuring that any potential negative effects on local species and ecosystems are mitigated.
11. Climate Change	X ~~Periodic climate resilience assessments~~	**Low risk**: Potential risks include unintended negative impacts on local climate resilience and maladaptation practices. This will be addressed as follows: The project will not generate any significant emissions of greenhouse gases and will not contribute to CC in any other way. The project will improve adaptive capacity to CC in the targeted areas, and at the national levels through the development of climate policies and products to inform national and regional planning. Climate resilience assessments will be conducted periodically to ensure that all activities continue to enhance adaptive capacity and do not inadvertently contribute to maladaptation.
12. Pollution Prevention and Resource Use Efficiency		**Low risk**: Potential risk includes noise and dust pollution due to construction. Energy efficiency, optimization of material resource use, and minimization of waste generation will be embedded in project design. Installing noise barriers, using low-noise machinery, and scheduling construction activities to limit noise pollution, especially during sensitive times. The project will prioritize sustainable building materials and ensure that waste is minimized, recycled, or repurposed during infrastructure development to reduce the environmental footprint.
13. Public Health		**Low risk**: Potential risks include unintended public health impacts such as water and air pollution, insufficient awareness and education efforts, and increased vulnerability to health risks if not properly managed. The project could lead to risk from water-borne, zoonotic, or vector-borne diseases because of stagnant water in the small-scale water collection infrastructures. This will be addressed as follows: The project aims to have indirect public health benefits by improving the water and food security situation of the beneficiaries. The project will be designed and implemented in a way that avoids any negative impact on public health. Attention will be given to activities related to water harvesting and storage and communities will be sensitized to how to use and store the water in a safe and efficient way. The project will install effective drainage systems and use permeable materials to manage runoff and safeguard water quality. The project will apply water, dust suppressants, or alternative materials to control dust pollution The project will incorporate **public health education** campaigns focused on safe water storage to minimize health risks, especially for vulnerable groups The project will implement proper infrastructure design and maintenance (e.g., drainage, sealed covers), biological and chemical controls (e.g., larvicolous fish, safe larvicides), community education safe water handling, as well as regular

		health surveillance and integrated vector management can help mitigate water-borne, zoonotic, or vector-borne disease risks associated with stagnant water in small-scale water collection infrastructures.
14. Physical and Cultural Heritage		**Low risk**: Potential risks include damage to or destruction of cultural or historical sites during water infrastructure development, loss of cultural heritage, and conflicts with local communities over heritage conservation. This will be addressed as follows: Project activities respect and protect physical and cultural heritage sites. Traditional and local knowledge will be understood and enhanced with scientific information for environmental management and food security and nutrition. Any physical cultural heritage present on the project sites will be identified together with the local stakeholders and potential negative impacts avoided during design of concrete adaptation actions at the sites. Furthermore, both countries are signatories to the UNESCO Convention Concerning the Protection of the World Cultural and National Heritage, and the project area does not encompass any protected cultural heritage sites. Cultural heritage assessments will be included in the Environmental and Social Impact Assessments (ESIA) for all activities that could affect cultural sites, ensuring that these areas are respected and preserved
15. Land and Soil Conservation		**Low risk**: Potential risks include soil degradation, loss of agricultural productivity, and negative impacts on local ecosystems if not properly managed. This will be addressed as follows: Project activities promote sustainable land and soil management practices. The agricultural management practices proposed will include management techniques to improve soil conservation and prevent land degradation. This project will aim to rehabilitate and restore degraded lands and restore degraded soils through natural regeneration, planting of native nitrogen -fixing plants, agroforestry, and water harvesting. The project will ensure the stabilization of loose soil, controlled excavation, preservation of vegetation cover, controlled transportation of raw materials, and appropriate landscaping. The project will establish soil health monitoring systems to assess the long-term effectiveness of conservation techniques and adjust practices based on results.

368. Based on the assessment of environmental and social risks and their potential impacts, mitigation measures have been proposed, primarily for those impacts assessed as medium or significant. These measures were embedded into specific project activities and tailored to the national contexts and are detailed in Part III, Section C. During the consultative process and the various assessments related to ecosystems, natural resources, population, economic activities, and infrastructure, potential project impacts were presented and discussed. Stakeholders and technical experts were invited to propose mitigation actions, which were subsequently evaluated and refined to align with the project's scope and budget.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Arrangements for project management at the regional, national, and local level

369. **Implementing Entity:** IFAD will implement the project and provide fiduciary and project management oversight as well as participate in the Regional Project Steering Committee, ensuring alignment with AF and IFAD policies and safeguards, including those related to gender equality, transparency, anti-corruption, and social inclusion.
370. Funds will flow from AF to IFAD, governed by a financing agreement. IFAD will disburse project funds to the EEs, the Angola's Ministry of Environment and Namibia's Ministry of Environment Forestry and Tourism, via signed subsidiary agreements. The budget will include dedicated line items for fiduciary oversight, annual audits, third-party procurement monitoring, and governance capacity support.
371. Disbursement will occur in traches based on achievement of deliverables and submission of verified financial reports, following a performance-based disbursement schedule.
372. IFAD will report and account to the AF in strict adherence to fiduciary standards. To mitigate financial and operational risks, IFAD will ensure:
    - Annual independent financial audits
    - Periodic fiduciary reviews
    - Active GRM explained and accessible in appropriate language and cultural context.
373. IFAD will also ensure that grievance redresses mechanisms and safeguards address gender-based risks and corruption-related concerns. All implementing partners will be trained on ethical project delivery, including gender-sensitive and transparent financial management practices, as detailed in the project's Gender Action Plan and Risk Management Framework.
374. As part of its oversight responsibilities, IFAD will monitor the integration of gender-responsive strategies in implementation, including the participation of women and marginalized groups in governance structures and the collection of sex- and age-disaggregated data through the Monitoring and Evaluation (M&E) system. IFAD will also ensure that grievance redress mechanisms and safeguards address gender-based risks and that all implementing partners are trained in gender-sensitive project delivery, as further outlined in the project's Gender Action Plan.
375. **Executing Entities**: The project will be implemented through a multi-level and inclusive approach, engaging stakeholders at regional, national, and local levels. regional, national, and local level, comprised of a consortium of partners led by the Angola's Ministry of Environment and Namibia's Ministry

of Environment Forestry and Tourism. Both Angola's Ministry of Environment and Namibia's Ministry of Environment Forestry and Tourism will be directly responsible for executing project activities within their respective countries and ensure alignment with national priorities, effective resource mobilization, and harmonized implementation across borders in coordination with FAO Country and Sub-regional Offices.

FAO will execute key project activities, including conducting Water Security Assessments in the KRB, design of the multi-hazard early warning system (MH-EWS) through a participatory approach, rehabilitation of earth and sand dams and boreholes, and construction of rainwater retention ponds. FAO will also deliver climate-smart agriculture training through FFS, moringa cultivation, promote the introduction of drought-tolerant crops, strengthen income and nutrition security through the cultivation of high-value, resilient crops. In addition, FAO will lead the production of gender-responsive knowledge products and policy briefs. FAO will also provide a Regional Coordinator for technical and cross-border advisory support, working closely with the Ministries (EEs) and IFAD to harmonize activities, cross-border collaboration, knowledge management, safeguards, and gender responsive approaches. As a member of the Regional Project Coordinating Committee (RPCC), FAO and PTJC will provide strategic oversight, technical review, and joint supervision mission participation, advising on implementation bottlenecks or risks. FAO will lead the development of gender-responsive knowledge products, policy briefs, and technical reports.

376. The PJTC, a long-standing Angola–Namibia bilateral body for transboundary water cooperation, will provide advisory support to facilitate joint planning, harmonization of technical standards, and timely exchange of hydrological, climate, and disaster risk information between the two countries. The PJTC will work closely with the RPCC and FAO to align project activities with existing basin management agreements and to resolve cross-border implementation challenges. Its involvement will ensure that transboundary water and ecosystem interventions are coordinated, equitable, and sustainable, in line with the project's gender and social inclusion commitments. PJTC will not execute activities or manage project funds.
377. The EEs (Ministries) will implement national-level activities under IFAD oversight, liaise with Ministries of Finance to set up Designated Accounts, and for the disbursement of project funds, subject to independent audit, and recruit PMU and PIU staff. The Ministries or Agencies responsible for agriculture, water, disaster management, public works, and meteorological services will facilitate execution of the activities under their respective areas of responsibility.
378. **Regional Project Coordinating Committee (RPCC):** IFAD will lead the RPCC, with participation from the Ministries (EEs), FAO (executing and regional coordinator), PJTC (advisory), NGOs, CSOs, CBOs and women and youth representatives. The RPCC will have a strategic oversight role, providing guidance, reviewing progress, approving work plans and budgets, and facilitating cross-border coordination. Operational implementation of activities will be the responsibility of the national PMUs, PIUs, and FAO, as defined in the project execution arrangements.
379. The RPCC will meet quarterly. It will also serve as a platform for coordination with other initiatives and development partners, identifying opportunities for collaboration, synergies, and resource pooling. Representatives from other projects with complementary activities, such as EWS and knowledge management, may be co-opted for relevant agenda items.
380. **Project Management Units (PMUs)** will be implemented through two PMUs, one in each country, hosted within the respective EE Ministries and staffed with a National Project Manager, a Financial and Administrative Officer, and a Driver. Staff may be seconded by government agencies, and recruitment will be conducted competitively, with gender and social inclusion criteria integrated throughout. Each PMU will be responsible for day-to-day project implementation, including technical supervision, financial management, monitoring and evaluation, and coordination with local implementing partners. The PMUs will be closely overseen by IFAD in its role as the IE. FAO will provide a Regional Coordinator who will work across both PMUs to ensure harmonization of activities, cross-border collaboration, knowledge management, and adherence to safeguards and gender-sensitive approaches. The Ministries manage national execution, IFAD retains oversight, and FAO technical and regional coordination support.
381. The National Project Managers will oversee inter-ministerial coordination, supervise project activities, and compile consolidated annual progress reports based on inputs from each country. They will also guide the recruitment of Project Implementation Unit (PIU) staff and consultants, ensuring adherence to social and environmental safeguards, including FPIC protocols and the Adaptation Fund's Gender and Environmental Policies.
382. The PIU will be based on the project areas of each country, led by a Project Coordinator, and supported by technical staff including a DRR and EWS Specialist, a Gender and Social Inclusion Specialist, and a Climate-Smart Agriculture Specialist. PIUs will be responsible for day-to-day activity implementation, while PMUs will provide overall managerial coordination and reporting.
383. The PMUs and PIUs will coordinate closely with key ministries and agencies, including those responsible for Environment, Agriculture, Finance, Water, Meteorology, Public Works, and Disaster Risk Management. These entities will participate in the Regional Project Coordinating Committee (RPCC), National Implementation Teams (NITs), and PMUs through government-nominated personnel. The involvement of disaster management agencies (e.g., Angola's CNPC and Namibia's DDRM) and meteorological services (INAMET and Namibia Meteorological Service) will support delivery under Outcome 1 and Component 2, respectively.

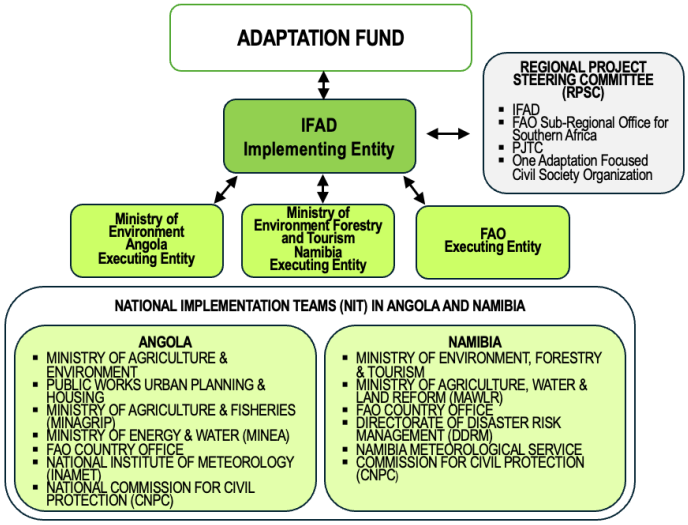
National Implementing teams will be established in both Angola and Namibia to coordinate and oversee national level project implementation. In Angola, the NIT will be comprised of representatives from the Ministries of Agriculture and Environment, Ministry of Public Works, Urban Planning and Housing, Ministry of Agriculture & Fisheries, Ministry of Energy & Water, FAO Country Office, National Institute of Meteorology, National Commission for Civil Protection. In Namibia, the NIT will include representatives from Ministry of Environment Forestry &Tourism, Ministry of Agriculture, Water & Land Reform, FAO Country Office, Directorate of Disaster Risk Management and Namibia Meteorological Service. The PMU will serve as secretariat to the NIT, which will report to the Regional Project Coordinating Committee (RPCC). The NITs will be gender-balanced and inclusive, ensuring active participation of women, youth, and ministry gender focal units. To strengthen inclusive governance, participating institutions will be encouraged to nominate gender-balanced representatives, including from gender focal units. Targeted capacity building on gender-sensitive planning and reporting will be provided to the RPCC, NITs, and PMUs to support consistent implementation and monitoring of the project's gender equality and social inclusion commitments.

384. A Monitoring, Evaluation, and Learning (MEL) system will be developed in alignment with the Adaptation Fund's Results Framework. It will track gender-disaggregated indicators across climate adaptation outcomes and socio-economic impacts. The PMUs will consolidate data from PIUs, FAO

will review technical outputs for executed activities, and IFAD will submit reports to the AF. Gender-responsive monitoring will be integrated through oversight of data collection, activity tracking, and regular coordination with Gender Specialists. A dedicated knowledge management system will facilitate feedback loops, lesson learning, and knowledge exchange across regional initiatives.

385. Early in the project, sustainability and exit strategies will be defined by PMUs, PIUs, Ministries, and FAO will jointly define sustainability plans for institutional ownership, local capacity-building, and continuation of adaptation interventions post-project.

Figure 6: Implementation arrangements.



386. Other Partners: Several organizations were identified during stakeholder consultations as potential contributors to project implementation and members of the National Implementing Teams (NITs) in each country. Their roles—at both national and local levels—will align with their existing mandates and be further refined during each country's project inception workshop. Table 14 lists the national stakeholders identified through this process.

Table 16: Proposed National Stakeholders in Project Implementation

Angola	Namibia
Ministry of Agriculture and Forestry Agriculture Development Institute (IDA) Ministry of Water and Energy National Water Resources Institute (INRH) Ministry of Agriculture and Forestry Forest Development Institute (IDF) Ministry of Fishery and Marine Resources Artisanal Fishers Institute (IPA) Polytechnic Institute of Cunene Gabinete de Administração das Bacias Hidrográficas dos rios Cunene, Cubango e Cuvelai (GABHIC) Irrigated Perimeters Development Society/ Sociedade de Desenvolvimento dos Perímetros Irrigados (SOPIR) Development partners including various NGOs. **Private sector participants** ANO Association Farmers Associations and Cooperatives Commercial Banks Telecommunications Companies	Desert Research Foundation of Namibia (DRFN) Ministry of Industrialization, Trade and SME Development Ministry of Fisheries and Marine Resources Ministry of Urban and Rural Development Ministry of Poverty Eradication and Social Welfare University of Namibia (UNAM) Namibia Water Corporation (NamWater) Namibia University of Science and Technology (NUST) National Commission on Research, Science and Technology (NCRST) National Climate Change Committee Development partners including various NGOs. **Private sector participants** Namibia National Farmers Union Local Farmers' Associations and Cooperatives Agro-Marketing and Trade Agency Agricultural Business Development Agency (AgriBusDev) Local millers and food processors Agricultural and Commercial Banks Telecommunications companies

B. Project and financial risk management

387. Potential project and financial risks measures for both countries (ranked High-H, Medium-M, and Low-L)

Table 17: Main Financial and Project Risks and Mitigation Measures

Risk	Risk Level	Risk Probability	Risk mitigation measure(s)
FINANCIAL			
Instability in currencies, market prices, and availability of project inputs	L	M	-Funds will be maintained in USD to reduce the impact of price and currency fluctuations. -Procurements plans will align with the project work plan to ensure timely availability of inputs.
Project Financial Management	M	L	-Project financial management and accountability systems will be upheld and governance established to ensure proper and approved procedures are used - in compliance with AF and IFAD rules and regulations, including internal and external auditing procedures. -Separation of roles in financial management will strictly be enforced and adhered to. - Funds will be disbursed in small tranches to reduce the risk of having large project funds being trapped in a political conflict. - Each disbursement must be justified to proceed with the next disbursement.
Delays in financial disbursements			-EEs will be engaged through formal agreements that ensure timely disbursement of funds, with provisions for sound financial management, transparent procurement, and safeguards to minimize corruption risks.
Uneven speed of implementation and expenditure rate among the partners may hamper overall project performance	M	M	-The project design ensures a joint management set-up where the partners will jointly steer and manage the intervention through the RPSC. Through this mechanism, it will be possible to spot at an early stage any potential delays among any of the partners and thus enable early corrective action.
ENVIRONMENTAL			
Occurrence of a major natural disaster in the project area	M	M	-Since the project focuses directly on supporting climate resilience, its main interventions are not likely to be disrupted at times of extreme climate events. In fact, such events may boost interest and buy-in for the project. The project will aim to ensure that priority initiatives continue alongside any potential emergency work that could result from occurrence of a major natural disaster.
			-
Governments continue to prioritize emergency initiatives over development initiatives	L	M	A key part of the project will be advocacy related to the need to enhance investments in resilience building in the river basins as a more efficient and cost-effective means of enhancing adaptation to CC and promoting food security rather than short term measures.
Limited coordination with other ongoing adaptation initiatives in the target countries	L	L	-A thorough review of ongoing initiatives has already been conducted, and partners will be continually consulted to ensure that there is alignment with these and other initiatives in the target countries. -Knowledge sharing and leveraging from past work will enhance strength of project and its implementation.
SOCIAL			

Inter-community differences regarding adaptation planning priorities	M	M	-The use of community-based approaches to adaptation planning will aim to ultimately ensure that all views are heard and included in the adaptation planning process as well as prioritized based on agreement of the community.
Vulnerable groups with low levels of technical, management and financial capacities are challenged by implementing climate resilient activities.	M	M	-Increase awareness, capacity and knowledge across vulnerable stakeholder groups improving the ability to participate in project activities and contribute to its implementation and governance -FFS, leadership training, stakeholder engagement, culturally inclusive trainings will create conditions for success.
Language differences between the groups and countries affect communication and implementation	H	H	- The IE and EEs' experience in cross-border projects and communication. - Translation will be provided during meetings that involve participants from both sides of the border. - Project manuals, documents, and tools will be translated in English and Portuguese. - Although national languages are different, local languages spoken are similar across the border. - Assure us that field staff speak the local languages as well as the respective national languages. -Field experts and specialists with FPIC will speak the appropriate languages.
INSTITUTIONAL			
Different pace of project implementation across countries may delay overall implementation	L	L	Regional inception, annual planning, biennial reviews, experiential learning meetings; strong oversight and coordination structures at all levels.
Non-formalized relationships between executing and implementing bodies	L	L	-The relationship between IFAD and each executing entity will be detailed in a formal agreement. Standard and well-proven formats will be used for fund disbursement between IFAD and the Ministries of Environment, including formats and standards for reporting and financial accounting. - Relevant institutions have been engaged in the design stage and will be integral in early stages of project implementation, as well as during progress reviews, reporting, and other vital processes.
National, subnational governments and river basin institutions might have alternative implementation approaches	L	M	-The project is committed to a multi-stakeholder participatory approach, to ensure that all stakeholders including national, subnational governments and river basin institutions work in a harmonized and coordinated manner.
Political issues affect project implementation	L	L	-The project target areas are relatively stable politically and all effort will be made to ensure that project activities are conducted with participation of all relevant stakeholders including government departments and local structures, to aid resolution should any conflict arise. -- Authorities have demonstrated commitment to the projects. - Continuous consultations, involvement and reporting with relevant institutions during the entire project cycle - The EEs are well known in the targeted areas and are trusted organizations amongst government and local leaders
Partners and stakeholders fail to cooperate and/or project data is not shared between stakeholders.	M	M	-The inception workshop will further define stakeholders' responsibilities and project management arrangements to align them with responsibilities and capacities of national and local organizations. -Formal MOUs that define roles and responsibilities will be used and data dissemination and sharing procedures will be established that are mutually agreed and beneficial for all concerned. -Appropriate tools/templates and reporting structures and procedures will be put in place

388. Project monitoring and evaluation will incorporate monitoring and reporting on these risks; any identified during the selection of USPs and those that may emerge during project implementation. Critical issues and changes to the risk level will be reported in a timely manner so that mitigation actions can be taken before risks spiral.

C. Environmental and social risk management

389. During project development, an initial global environmental and social impacts and risks assessment was conducted in accordance with the national standards of the two beneficiary countries. The environmental and social risk analysis for the project indicated that significant environmental or social impacts are limited, as per the Environmental and Social Policy of the AF, demonstrated in Table 16 below. The assessed impact levels were classified as low or medium risks. The project has been classified under Category B, indicating that its activities are expected to have small-scale impacts, confined to the project area, and can be effectively mitigated through sound environmental and social management practices. Additionally, the project will conduct ESIA assessments as necessary, depending on the scale of the activities to be implemented and assessments for all USPs.
390. The project was screened against the 15 Environmental and Social Principles of the AF. This multi-phase process incorporated a risk assessment based on the assumption that the management measures and plans detailed in the respective columns below would be effectively implemented to mitigate the identified risks. In addition to this initial screening, all Unidentified Sub-Projects (USPs), once defined, will be screened using the same methodology described below to ensure full compliance with the AF's ESP. The methodology applied during this screening is further outlined in the ESMP (Annex 9).
391. The results of the screening identified the project as low or medium risks, and classified as Category B, indicating project activities have potential small-scale impacts, limited to the project area and easily mitigated.

Table 18: Summary of Potential Impacts and Mitigation Measures

Checklist of E&S Principles	Potential Impact	Mitigation Measure
Conformity with the law	- The uncertainty of the physical locations for the community-based adaptation measures causes USPs, which inherently hold risk as they have yet to be identified and thus screened. Without confirmed sites, environmental and social risks, such as ecosystem disturbance, land disputes, or exclusion of vulnerable groups, cannot yet be fully assessed, creating potential compliance issues with national laws and the AF's ESP.	- Ensure ongoing compliance with both Angola and Namibia's environmental, land, and indigenous rights laws. New or expanded risks, as well as USPs, will be assessed and mitigated and fully integrated into project implementation and be added to the ESMP and Gender Action plan. - Risk assessment for the USPs will be implemented according to the USP methodology of Impact Assessment and Risk Management detailed below. - Customary law and traditional leadership structures and authorities in land access and rangeland management, particularly among semi-nomadic communities, will be recognized. - Add a requirement that all water infrastructure (e.g., boreholes, small dams) will obtain necessary environmental and water use permits prior to implementation.
Access and Equity	- Limited access to land, resources, and information of historically marginalized groups (such as women, youth, pastoralists, and indigenous communities) resulting in constraints that may result in barriers to participation – especially in decision-making processes. - Sedentary and nomadic livelihoods sensitivity or conflict may impede equitable access to shared natural resources. - Landownership will limit access to certain project benefits.	- Conduct gender- and youth-sensitive stakeholder consultations, ensuring participation from women, youth, pastoralists, and indigenous groups. - Hold separate focus group discussions with women to create safe spaces for open dialogue and needs identification, ensuring meeting times and childcare support facilitate women's participation. - Ensure all project information is disseminated in local languages and accessible locations, particularly targeting remote communities. - Ensure culturally appropriate communication methods, including the use of oral, visual, and local language materials suited to varying literacy levels. - Engage local community facilitators to lead inclusive and culturally appropriate consultations and training. - Establish mobile outreach mechanisms (e.g., mobile training units) to reach pastoralist communities in remote or migratory areas. - Engage pastoralist representatives and traditional leaders in project governance structures and decision-making processes. - Integrate training and support for women and youth in income-generating activities (IGAs), access to agricultural tools, and market access. - Document and adapt project activities based on feedback from ongoing participatory sessions and learning reviews. - Promote conflict-sensitive approaches, particularly where sedentary and nomadic livelihoods overlap, to ensure equitable access to shared natural resources.
Marginalized and vulnerable groups	- Exclusion or underrepresentation in community-level planning and decision-making due to cultural norms, literacy barriers, or mobility constraints.	- Conduct targeted, participatory consultations with marginalized groups. - Use inclusive facilitation methods, including separate focus groups for women and youth. - Engage local leaders and representatives of vulnerable groups in project planning bodies.

	- Structural inequalities (e.g., in land tenure, education, mobility, resource access and cell phones) may prevent vulnerable groups from fully benefiting from project interventions such as training, infrastructure, or income-generating activities. - Women and girls have limited time due to caregiving roles, long distances to water/firewood, and limited control over resources, which can hinder their participation in and benefit from project activities. - Semi-nomadic populations may be missed by fixed-location project activities due to seasonal movements, resulting in inequitable access to services and information. - Project communications may not be accessible to all if not tailored for local languages and varying literacy levels, especially among older women and rural indigenous communities. - Project activities result in temporary restriction of access to resources or traditional migratory pathways – inhibiting access to resources	- Design interventions specifically tailored to the needs and constraints of marginalized groups. - Monitor benefit distribution through disaggregated data (by gender, age, ethnicity, etc.). - Schedule activities at times that consider women's workloads. - Provide childcare during meetings and training. - Map seasonal migration routes and plan outreach accordingly. - Use mobile outreach teams and flexible scheduling. - Involve pastoralist leaders in design and monitoring. - Prioritize vulnerable communities in water infrastructure and livelihood support. - Provide targeted climate adaptation tools and training for at-risk groups. - Incorporate local knowledge in risk planning and EWS. - In addition to cell phone technology to disseminate information, provide early warning messages by local radio channels and traditional practices such as speakers and sirens or other culturally preferred communication. - Inclusive, participatory consultation with local communities, authorities, and outreach to semi-nomadic groups to ensure all activities affecting resource access are considered and results in a community approved implementation plan.
Human rights	- Namibia application of certain ratified conventions such as related to anti-union discrimination and low reporting may influence sectors like agriculture, construction, or early warning system operations reducing engagement if there are low worker awareness and fear of retaliation. - Although Angola has ratified all core ILO conventions, targeted mitigation measures are needed to strengthen implementation, particularly by enhancing legal protections, addressing child labor and discrimination, and improving enforcement in the informal economy.	- Angola and Namibia have both ratified all eight fundamental ILO conventions, demonstrating a formal commitment to upholding core labor standards but need the following mitigants to address shortfalls in their implementations in the following key areas: - Labor rights safeguards in contracts and procurement. - Integrate labor clauses requiring adherence to ILO standards in all sub-grantee and contractor agreements. - Require evidence of no child labor, non-discrimination, and freedom of association in supply chains and hired labor. - Include termination clauses for violations of core labor standards. - Worker awareness and empowerment: Project activities will include rights awareness for all project-affiliated workers, especially in informal or community-based settings. - An accessible, confidential, and multilingual grievance system for reporting labor violations, discrimination, or unsafe conditions will be developed which includes clear timelines and escalation procedures. It will be adapted for vulnerable groups (youth, women, indigenous peoples) and -Child labor prevention measures. Child labor risk assessment in project areas including monitoring will be established. -Gender and equity audits will be conducted early in project assessments. -Gender responsive employment practices, including equal pay and inclusive hiring. -monitoring and evaluation with labor-sensitive indicators.
Gender Equality and Women's empowerment	- Women often experience weaker land tenure rights and less access to agricultural inputs (e.g., tools, water, seeds), financial services, and extension support which may limit their ability to benefit from project investments in agriculture, water, or ecosystem restoration. - Women typically have limiting availability for trainings, decision-making forums, or paid labor opportunities due to unpaid care work (e.g., fetching water/firewood, childcare). - Social and cultural norms may prevent women from participating equally in community decision-making or project governance, especially in mixed-gender forums. - Lower literacy levels among women and girls, particularly in rural areas, may reduce their ability to understand or act on project information, including technical guidance, warnings, or rights.	- Allocate targeted resources (e.g., tools, land-use rights, credit access) specifically for women and women-led households. - Schedule meetings and training courses at times suitable for women's daily routines. - Provide on-site childcare during project activities. - Ensure quotas or targets for women's participation in all projects decision-making bodies. - Use women-only focus groups and separate consultation spaces when needed. - Build women's leadership capacity through training and mentorship. - Use local languages, oral communication, and visual materials to ensure accessibility. - Engage female community facilitators or peer educators to bridge information gaps - Conduct GBV risk assessments in project areas. - Ensure water points or infrastructure are in safe, well-trafficked areas. - Integrate gender sensitization and equity training into all community engagement activities. - Promote women's roles in non-traditional sectors (e.g., EWS, technical fields).

	- Long distances to collect water or firewood expose women and girls to physical danger and GBV, especially in remote or insecure areas. - Project activities could unintentionally exacerbate these risks if they increase exposure or tensions over resources.	
Core Labor Rights	- Informal or temporary workers (e.g., in construction, agriculture, or community infrastructure) may be underpaid or lack contracts, rest periods, or safety protections. - Gender, age, ethnicity, or disability-based discrimination may occur in the allocation of work or wages. - Involving minors in project-related labor, even informally or through household labor, would breach ILO conventions. - Labor through coercion or unpaid "volunteer" work without clear agreement or compensation could emerge under community-led projects. - Workers may have no accessible way to raise complaints or report abuse, particularly women, youth, or migrant laborers. - Lack of protective equipment, training, or safety oversight can put workers at physical risk, especially in construction or water infrastructure projects.	- The project commits to upholding all 8 ILO Core Labor Conventions. - Commitment to uphold ILO core Labor Standards will be included in procurement and contractor agreements. - Ensure all workers (formal and informal) are paid fairly and in line with regional practices and provided safe working conditions. - Child and forced labor will be explicitly prohibited in contracts and community agreements and pre-employment age verification, gender equity hiring practices will be enforced and monitored. - Establish and communicate a worker grievance mechanism accessible to all, especially vulnerable groups – provided in a culturally appropriate way and in the local language. - Conduct awareness sessions on labor rights during community mobilization and training. - Monitor compliance through field-based supervision and feedback loops. - A labor rights and safety compliance person will be assigned and a Labor Right Compliance Checklist (Annex 12).
Indigenous People	- Neither Namibia nor Angola has ratified ILO 169 or legalized FPIC protocol -Exclusion from decision making processes due to semi-nomadic lifestyle making the groups less accessible or with cultural barriers to project implementers. - Barriers to access traditional lands or resources - Cultural insensitivity or disruption to traditional practices - Lack of recognition of customary rights and governance structures - Limited access to grievance redress mechanisms	- Angola ratified ILO Convention No. 107 of 1957, which was later revised and replaced by Convention No. 169 in 1989; however, Angola has not adopted the updated convention. Namibia has not ratified either Convention No. 107 or No. 169. - The project was designed with UNDRIP as a guiding framework. - Ensure culturally appropriate consultations using local languages and trusted facilitators familiar with Indigenous customs and seasonal migration patterns - Use mobile outreach teams to reach communities during seasonal migrations or in remote locations - Coordinate with traditional leaders and elders who represent semi-nomadic groups to identify culturally and temporally appropriate ways to engage - Schedule repeated engagement rounds to ensure input from communities that may be absent during initial consultations due to seasonal movement -Respect cultural norms and schedules in project planning; include Indigenous knowledge in adaptation activities. - Avoid locating project infrastructure on or near traditional territories; co-develop land use or restoration plans. - Integrate Indigenous representatives into project steering committees or community-based monitoring groups to institutionalize ongoing participation - Apply Free, Prior, and Informed Consent (FPIC) processes not only at the outset but at key implementation stages - Provide flexible participation options (e.g., radio updates, oral feedback loops, traveling grievance officers) to accommodate mobility and low literacy Grievance redress channels will be provided in the local language and through trusted intermediaries. - Respect traditional governance systems and involve Indigenous customary decision-making processes in formal project governance

Involuntary Resettlement	- Site selection and water access development may impact landowners or the traditional use of lands.	- Conduct consultations with communities, traditional leaders, and local authorities to ensure transparency and consensus in site selection. - Commit to no involuntary resettlement as a guiding project principle. - In cases of potential displacement, implementers will engage in consultation and negotiation with affected individuals, in line with FPIC and do-no-harm principles. - If consensus cannot be reached, project activities associated with affected communities will be adjusted or ceased - Apply Free, Prior, and Informed Consent (FPIC) for all consultations and project decision-making. - Screen all activities for environmental and social risks and implement an Environmental and Social Management Plan (ESMP). - Establish and operationalize a Grievance Redress Mechanism (GRM) to address land conflicts or complaints. - In cases of potential displacement, conduct inclusive negotiation with affected individuals, and if consensus is not achieved, adjust or cease the related interventions. - Follow IFAD procedures to suspend project activities if FPIC and do-no-harm principles are violated.
Protection of natural habitats	- Potential habitat degradation, biodiversity loss, or unintended ecological consequences during project implementation, particularly under activities related to infrastructure development.	- Confirmation that the project area does not include critical natural habitats (legally protected, proposed, traditionally protected, or of high conservation value). - Implement EbA strategies, such as agroforestry and water conservation, to avoid habitat conversion or degradation. - Conduct environmental and social screening of all USPs to ensure risks to habitats are identified and mitigated. - Maintain ongoing consultations with government stakeholders, traditional authorities, and communities to safeguard areas of ecological importance. - Integrate safeguards and guidance from the Environmental and Social Management Plan (ESMP) to prevent ecological harm, updating it as USPs are decided and if new risks emerge. – All infrastructure construction or rehabilitation (earth dams, boreholes, wells, and retention ponds) will undergo topographical surveys and hydrogeological investigations to assess the water availability and sustainability of water harvesting and groundwater extraction activities. – Project safeguard mechanisms as well as compliance with national environmental impact assessment requirements will be upheld.
Biodiversity conservation	– Over-abstraction could reduce water availability for dependent ecosystems. – Changes in groundwater levels may impact species dependent on groundwater-fed habitats. – Encouragement of new agriculture production could lead to land-use changes, habitat loss, or pollution. – Potential increase in waste or local pollution if construction and growing practices is not regulated. – Introduction of non-native or genetically modified species may reduce agrobiodiversity. – Potential displacement of local varieties and loss of traditional agricultural biodiversity. – If reseeding uses non-native species, it may outcompete local flora. Mismanagement of rotational grazing could degrade soil or disturb wildlife habitats. – Hydrometric stations installation near riverbanks or wetlands may temporarily disturb aquatic and riparian species. – Risk of sedimentation or pollution during construction.	– Conduct site-specific environmental screenings before installation. – Avoid ecologically sensitive or protected areas during site selection. – Use low-impact construction practices to minimize soil and vegetation disruption. – Restore vegetation after construction, using native species. – Establish sustainable extraction limits based on hydrogeological assessments. – Monitor water tables regularly in coordination with local water authorities. – Train communities on sustainable water management. – Prioritize native or locally adapted crop and fodder species. – Avoid use of invasive species in reseeding or restoration. – Consult local ecological experts, community leaders, traditional leaders, and local communities to safeguard legally and traditionally protected habitats. – Monitor ecological outcomes of reseeding activities. – Prioritize nutrient-dense, drought-resilient crops that are locally adapted – Exclusion of any species listed as endangered by the International Union for Conservation of Nature (IUCN)
Climate change	The project is designed to operate in a climate-neutral manner while enhancing smallholder adaptive capacity. It should have no significant greenhouse gas emissions or activities that contribute to CC such as energy production, large-scale agriculture, or waste management. have minimal impact on CC. This adaptation project will encourage climate-smart agriculture, shade nets, drought-resistant crops, and water management.	– Ensure that the installation of weather stations is done sustainably, using low-carbon technologies, and located in a way that minimizes ecological disturbance. – Promote low-carbon and energy-efficient processing technologies, reduce waste, and prioritize climate-resilient market linkages. – Implement adaptive rangeland management practices, focusing on soil health, biodiversity conservation, and sustainable grazing practices that enhance carbon sequestration.

	If the project is poorly managed or excessive infrastructure developed it might disturb ecosystems or contribute to emissions. Poorly managed agro-processing could lead to increased greenhouse gas emissions from energy use and higher waste generation. Rangeland restoration mismanagement could lead to further land degradation and reduction in carbon sequestration	
Pollution prevention and resource efficiency	Resource Efficiency: – Water over-extraction (from groundwater or surface sources) may lead to long-term depletion of aquifers or reduced river flow. -Water contaminator from groundwater extraction. – Poor dam or reafforestation placement may interfere with natural watercourses or local ecosystems or impact local or transitory communities. -Livestock intensification could increase pressure on grazing land, water, and feed resources. -Pollution from Fertilizer and Pesticide Use -Dependence on Non-Renewable Energy Sources	-Increase capacity of stakeholder knowledge On resources conservation. -Implement controlled groundwater extraction based on hydrological models to ensure sustainable water use. -Regular monitoring of water quality and adherence to regulations - map both surface and underground water availability to develop hydrological models contributing towards natural resource monitoring network -Strategically locating micro-enterprises away from residential and commercial areas - Ensure dam design and construction adhere to best practices for environmental protection, including sedimentation control and water quality monitoring. -Use sustainable land management practices in reforestation and agriculture, incorporating crop rotation, agroforestry, and soil health monitoring. Implement erosion control measures around reforestation zones and infrastructure. - Promote the use of organic fertilizers and biocides. Minimize the use of chemical fertilizers and pesticides and implement Integrated Pest Management (IPM) practices to reduce environmental harm. - Use of renewable energy technologies such as solar energy for project operations, reducing the carbon footprint and reliance on fossil fuels. -Implement sustainable livestock production practices, such as rotational grazing and waste management systems to prevent overgrazing and land degradation.
Public Health	Water-borne or vector-borne diseases resulting from water harvesting and storage efforts. Increased dust levels Noise disturbances from construction of infrastructure Presence of community outsiders exposes women and children to increase safety risks. Worker safety	-Conduct awareness campaigns to prevent and control the spread of water-related diseases. -Implement targeted health programs addressing malaria and other mosquito borne diseases. -Water point committees promote safe water use practices, improve health. -Contract as many local community members as possible for infrastructure development and other project components -Reduce speeds to decrease dust levels -Regulate hours of work in consideration with cultural norms - Provide protective gear as needed and signage
Physical and Cultural Heritage	-Land use changes (fencing, dams, or agricultural expansion) disruption to transhumance patterns, blocking access to seasonal routes or sacred sites -New agricultural or disaster preparedness technologies may devalue or displace traditional practices -Disturbance of sacred sites, or culturally significant landscapes – including unmarked significant landscape, water sources, trees or hills during excavation or construction. -Loss of traditional knowledge and practices due to introduction of new agricultural technologies or land use systems. Marginalization of indigenous or local cultural identities if project planning does not include adequate participation or respect for heritage.	-Participatory mapping with target beneficiaries that identify culturally important routes, spiritual sites, grazing zones, and seasonal patterns. -Ensure infrastructure (e.g., water points, roads, EWS) is designed to support rather than constrain pastoral mobility and traditional practices. -Integrate traditional knowledge into climate and agricultural programming. -Ensure FPIC protocol is ongoing throughout project implementation
Soil and land conservation	-Soil erosion caused by infrastructure development, nurseries, or borehole restoration -Soil compacting from construction equipment	-Promote soil conservation techniques -Capacity building for construction crew to minimize impact -Targeted construction sites

392. The ESIA (Annex 11) provides an overview of the potential risks the project poses, in relation to the 15 Environmental and Social Principles. The project will furthermore map all the project activity areas and regularly report on all the ESMP and Gender Action Plan indicators, identifying those

indicators that are not meeting their targets and proposing the corrective measures to be taken by the PMUs. All USPs will be assessed and reviewed for potential E&S risk and mitigations measures will be identified and updated in the ESMP.

Consultation

393. The design of the proposed project was informed by broad-based stakeholder consultations, including close coordination with the Ministry of Environment in both Angola and Namibia. From the outset, the project adopted a participatory, gender- and youth-sensitive approach to ensure that diverse voices shaped its development. Field surveys and focus group discussions played a central role in identifying community priorities, and the resulting interventions were tailored to reflect the locally expressed needs, concerns, and adaptive capacities of the target populations.
394. Water scarcity emerged as one of the most pressing challenges during community consultations. Most households rely on traditional hand-dug wells, which often dry up or become inaccessible during the dry season (April–June). Small earth dams (chimpacas) are vital but frequently non-functional or insufficient. Women and girls bear the brunt of water and fuel collection, often walking over 30 km in 24 hours, facing significant safety risks. Women's groups emphasized the need for improved access to agricultural tools, market transport, and training in income-generating activities (IGAs) to address poverty and malnutrition.
395. To enhance climate resilience and water security in the KRB, the project will conduct a comprehensive water security assessment and ecosystem services valuation. It will also develop a gender-inclusive DRR plan grounded in EbA. Key investments include the installation of automatic weather and hydrometric stations to support the MH-EWS, borehole rehabilitation, and the introduction of labor-saving technologies for conservation agriculture. Additionally, the project will promote climate-resilient livestock, improve rangeland, and water infrastructure, and strengthen agricultural value chains through training and equipment. Learning and knowledge-sharing platforms will support adaptive management and scale-up of successful interventions.
396. Community engagement will follow a structured process, starting with an exploratory visit and followed by four phases: (1) scheduling follow-up meetings; (2) identifying focal points for selecting Farmer Field School (FFS) participants, Water User Associations, and women and youth groups; (3) formalizing partnership terms and agreeing on activities; and (4) conducting lessons-learned sessions to gather feedback and refine implementation.

Unidentified sub-projects

397. The exact location of certain project activities, such as the physical infrastructure (such as earth dams, ponds, rainwater harvesting systems, rehabilitated boreholes, communal gardens, and rangelands), have not yet been determined due to pending information that will result from previous project steps. These unidentified sub-projects, with unknown risk status, will each be assessed for social and environmental risks prior to implementation, as outlined in the ESMP. The project will undertake two key studies, the outcomes of which will determine the locations, quantities, and scale of the intended concrete adaptation activities:
398. **Assessments for Water Security, Ecosystem Goods and Services Valuation and Community Based Climate Vulnerability** will evaluate the availability, quality, and accessibility of water resources, particularly for semi-nomadic pastoralists and small holder farmers, and inform mapping and forecasting of water-related interventions. Community-based vulnerability study plays a vital role in mitigating climate and social risks by grounding project design in the realities of the people. Through participatory methods such as focus groups, seasonal calendars, and risk mapping, the study will identify location-specific hazards, such as droughts, floods, and water scarcity, as well as the social groups most vulnerable to these impacts. By highlighting local priorities, coping strategies, and institutional gaps, the assessment will ensure that adaptation measures are both context-specific and socially inclusive. The EGS will assess environmental degradation and opportunities for improved livelihoods and restoration across, Conservancies, Communal as well as Protected Areas, and, where feasible, private ranches.
399. Following the assessments, the project will implement a USP Risk Screening Identification Framework. This framework ensures the early identification, classification, and management of environmental and social risks associated with USPs.
400. The screening process begins with evaluating each proposed sub-project against a project-specific exclusion list. Sub-projects not excluded will then undergo environmental and social due diligence in accordance with the AF's ESP and Gender Policy. Identified risks will be assessed in terms of likelihood and magnitude, and appropriate mitigation measures will be formulated. These measures will be integrated into an updated Environmental and Social Management Plan (ESMP) and Gender Action Plan.
401. Subsequently, the project will monitor the implementation of mitigation measures and report outcomes through annual progress reports, which will include screening results, risk classifications, mitigation actions, and a comprehensive list of sub-projects.
402. Community consultations will run in parallel with this process and will be integral to the identification and selection of sub-projects. These consultations will be gender-sensitive and inclusive, ensuring meaningful participation of women and marginalized groups. A gender-responsive approach will guide the planning, design, and implementation of all activities to ensure that the specific needs and priorities of vulnerable groups are addressed. Furthermore, the project will provide targeted training to local stakeholders, with a strong emphasis on women's empowerment and leadership in managing water resources and restoring rangelands.
403. Project funds will be managed in accordance with IFAD's fiduciary, financial management, and oversight requirements, consistent with the Adaptation Fund's Operational Policies and Guidelines. IFAD, as the Multilateral Implementing Entity (MIE), will maintain overall responsibility for financial management, including authorization of disbursements, verification of expenditures, and consolidation of financial reporting. Designated project accounts will be opened at national level by the executing entities in Angola and Namibia, with disbursements transferred based on approved Annual Work Plans and Budgets (AWPBs) and in line with IFAD's financial management procedures. FAO, as a technical partner, may provide additional financial management support where required to ensure harmonized standards, capacity strengthening, and compliance across both countries. All procurement will follow IFAD's procurement guidelines, including international competitive bidding where appropriate, while also integrating national procurement systems to the extent that they meet IFAD's fiduciary standards. Procurement processes will ensure transparency, value for money, and adherence to environmental and social safeguards. Annual independent audits will be conducted by an external audit institution acceptable to IFAD

and the Adaptation Fund, in accordance with international auditing standards. Audit reports will be submitted to IFAD, the Adaptation Fund, and the respective national oversight bodies to ensure full transparency and fiduciary accountability.

404. **Institutional Roles and Safeguards Compliance:** A Municipal Environmental Management Committee will oversee the screening of Unidentified Sub-Projects (USPs) at the local level. If environmental and social risks can be effectively mitigated, the sub-projects will proceed with appropriate safety measures in place. If risks are deemed unacceptably high, the sub-project will be either restructured or excluded. The National Project Coordinators will ensure that all USPs comply with applicable safeguard policies and standards. Screening results and a complete list of approved sub-projects will be included in the project's annual progress reports submitted to the Adaptation Fund.

405. As an example of the potential risks anticipated in the infrastructure components of the USPs, the table below presents a risk assessment highlighting representative risks and corresponding mitigation measures for infrastructure development activities.

Table 19: Project Unidentified Sub-Projects (USPs)

Infrastructure/Physical interventions	Potential risk	Responsible for risk screening	Risk mitigation measures	Responsible for implementation of risk mitigation
Construction or rehabilitation of water infrastructure, such as earth sand dams, retention ponds, and boreholes, to improve water capture, retention, and distribution for agriculture, domestic needs, and livestock rangeland support	Disruption of downstream water availability, potentially affecting users reliant on continuous flow. Disturbance or degradation of critical ecosystems and habitats due to construction or altered hydrology. Exclusion of vulnerable groups from accessing or benefiting equitably from water infrastructure improvements.	Local municipal environmental management committee	-Provide conservation works upstream to reduce wear loss and enhance retention without harming downstream flow. - Stabilize loose soil, control excavation, preserve vegetation cover -Selective clearing in degraded zones; avoid ecologically sensitive areas. -Implement reforestation, and ecological restoration where vegetation is disturbed. -Preserve protected plant species and relocate any sensitive species. - Use environmentally friendly technologies and sustainable construction methods. -Raise awareness among local communities and other stakeholders on environmental protection campaigns. - Engage gender-differentiated groups and Indigenous Peoples through culturally appropriate FPIC	PMU
Afforestation	Reduced Grazing availability. Use of species that are not adapted or suitable to a site. Disruption of cultural and traditional land use practices Conflict over land and Resource Ownership	Local municipal environmental management committee	-Taking into account seasonal mobility, afforestation will be carefully planned to not disrupt grazing zones -Selection of tree species, prioritizing water efficient and native species. -Discourage cutting of mature trees by raising awareness -Ensure protection of buffer zones along rivers by raising awareness -Promote agroforestry through technical training -Implement practices that balance the needs of agriculture and forestry-Design afforestation with cultural sensitivity, recognizing and respecting traditions of semi-nomadic pastoralist and indigenous groups -Participative, inclusive planning and decision-making processes from the outset, applying FPIC principles to ensure communities' rights are respected -Engage local communities in forest management to improve conservation and sustainable practices	PMU
Fencing of rangelands	Blocking transhumance routes Possible conflicts on boundaries Impeding wildlife migration/fragmentation of habitat Limited access to resources Vulnerable users do not benefit from development	Local municipal environmental management committee	-Participatory, inclusive planning and design -Plant nitrogen fixing plants as fodder bushes -Design fences that allow wildlife to pass through, such as using smooth wire with gaps at required intervals --Design fences that minimize injuries such as flexible wire -Minimize environmental disruptions such as water flow -Engage local communities in erecting the fence as employment in alignment with the FPIC process,	PMU

406. **Grievance Mechanism:** The project's grievance redress mechanism (GRM) will utilize both existing formal and informal GRMs, supplemented or strengthened as necessary with project-specific arrangements tailored to the risks and impacts involved. At the local level, various committees like Water User Associations (WUAs) and community leaders (Sobas) will serve as the initial points of contact for receiving complaints and attempting informal resolutions. These committees and leaders will also play roles in co-managing the project and raising awareness about the availability of

grievance mechanisms. Issues that cannot be resolved locally, especially those involving secondary stakeholders or beyond local capacities, will be escalated to the PMU for further action, such as transmission to district or municipal authorities or contractors. If disagreements persist following PMU involvement, matters can be escalated to Local Authorities or even the court system as a final recourse. Throughout this process, timely decision-making, and effective communication of grievance resolutions to complainants will be crucial to foster community trust and positive perceptions of the project's interventions.

407. **Timely Decision-Making:** To ensure grievances are addressed promptly and efficiently, timeframes will be established for the GRM process:
    a) Initial Response: The project team will provide an initial response to a grievance within 30 days of receiving it.
    b) Resolution: A resolution will be provided within 60 days from the filing of the grievance. In cases where further investigation or action is needed, the complainant will be informed of the delay, and revised timelines will be communicated.
    c) Transparency: Any delays will be communicated clearly, and the reasons for the delay will be provided to the complainant, ensuring transparency and trust in the process.
408. **Effective Communication:**
    a. Clear and accessible communication channels will be established to ensure that the status of grievances is regularly shared with complainants and affected communities. These channels will include:
    b. Community Meetings: Regular community meetings will be organized to provide updates on the status of grievances.
    c. Social Media Platforms: Updates and important information related to the GRM will be communicated through social media platforms.
    d. Local Radio Broadcasts: Information will be disseminated via local radio, ensuring that even remote community members are informed.
    e. SMS Notifications and Notice Boards: SMS notifications will be sent to community members and noticeboards in public spaces will provide updates on the grievance status.

    These communication channels will be available to all stakeholders, ensuring inclusivity, adapted to those in rural areas and without internet access.
409. **Feedback Loops:** Once grievance has been resolved, a feedback loop will be implemented to ensure the complainant is informed of the outcome and any actions taken:
    f. Notification of Outcomes: The complainant will receive written feedback detailing the resolution and the actions taken to address their grievance.
    g. Follow-Up Surveys: A follow-up survey will be conducted to assess the effectiveness of the grievance process and gather feedback on how the process could be improved.
    h. Community-Wide Updates: Regular public meetings will be held to inform the wider community about the grievances resolved and the lessons learned from the process.
    i. These feedback mechanisms will provide continuous input from the affected communities and help improve the overall effectiveness of the GRM.
410. **GRM Evolution:** The GRM will be regularly reviewed and adapted to meet the changing needs of the communities throughout the project lifecycle. As the project progresses into different phases, the GRM will be adjusted based on community feedback, evolving project dynamics, and emerging risks. The following steps will be taken to ensure the GRM evolves effectively:
411. Bi-Annual Assessments: A dedicated team will conduct bi-annual assessments to evaluate the effectiveness of the GRM. These assessments will involve community members, stakeholders, and the project team. If necessary, the GRM process will be adjusted to improve accessibility for vulnerable groups, expand communication channels, or modify response timeframes based on the feedback received from communities.
412. **Continuous Stakeholder Engagement:** Communities will be continuously engaged to ensure that their concerns are adequately addressed and that the GRM remains responsive and effective. In addition to the GRM, stakeholders can utilize IFAD's complaints procedure via SECAPcomplaints@ifad.org for addressing concerns related to alleged non-compliance with IFAD's environmental and social policies, including the mandatory aspects of the SECAP (Special Environmental and Social Performance Enhancement Procedures). This procedure provides affected parties with a channel to voice their concerns and seek resolution through an impartial and independent process, ensuring complaints are handled fairly and promptly, contributing to accountability and transparency.
413. **Monitoring and reporting**: As described in the subsequent section, the project will have a comprehensive monitoring and reporting programme that will include quarterly reports, technical reports, annual project reports, the AF PPR tracking, annual IFAD supervision mission reports, a Mid-Term Review (MTR) and a final evaluation and impact assessments. The monitoring and reporting of the ESMP will be commensurate with the limited ESMP required for the project. The project will produce annual Project Performance Reports (PPR) to the AF and supervision missions report on financial data; procurement; risk assessment; Environmental and Social Policy compliance; Gender Policy compliance; rating; project indicators, lessons learned; and results tracker.

D. Monitoring, Evaluation and Reporting

414. A simple, user-friendly monitoring and evaluation system will be developed that will operate parallel to the existing M&E systems of the executing entities, to better facilitate reporting and implementation of the project. The system will explicitly incorporate the tracking and management of environmental and social risks, in line with the AF's Environmental and Social Policy (ESP), and ensure gender-responsive data collection, including sex-disaggregated indicators. Dedicated monitoring will be undertaken, including gender and environmental specialists with a special focus on Indigenous people participation and knowledge collection, will be responsible for collecting and analysing compliance data. Results will feed into quarterly reports and inform risk mitigation strategies and adaptive management throughout implementation.
415. The M&E system will be developed in consultation with the EE Ministries of the two countries. The Regional Project Coordinating Committee (RPCC) will provide oversight into the detailed M&E framework to be developed jointly by the implementing and executing entities. A Monitoring and Evaluation Manual, outlining data collection and reporting protocols including environmental and social risk monitoring and grievance redress tracking, will be

developed in the first year. The M&E framework will describe objectives, performance indicators, and methodologies for data collection. In addition to PMU-led monitoring, IFAD, as the IE, will provide supervisory oversight of all M&E functions in line with AF requirements. This includes quality assurance of the M&E framework, verification of monitoring data, compliance monitoring against the AF Environmental and Social and Gender Policies, financial oversight of M&E expenditures, and supervision of the mid-term and final evaluations. These IE supervision activities are financed under the IE fee, as detailed in the IE-Fee M&E Supervision table.

416. During the inception phase, relevant stakeholders will be engaged to review and validate the M&E framework. The main monitoring and evaluation processes will include:

i) Inception **and planning workshop:** Preliminary activities such as institutional setup, PMU operationalization, agreement signing, coordination planning, and the launch workshop. Key implementation tools and systems including the GRM, environmental and social safeguards tracking, and gender-responsive data collection mechanisms will be established.

ii) **Baseline surveys:** Conducted in year 1, to establish the baseline values of indicators including those related to gender, social inclusion, and environmental risks. Indicators which include percentage of female beneficiaries, youth participation, and access by vulnerable groups upon which the project performance will be measured. The surveys will also gather information that will guide implementation of the four project components.

iii) **Annual Work Planning:** Will incorporate adaptive management to address emerging environmental and social risks and lessons learned related to gender and vulnerable groups. Work plans will be reviewed annually during annual review and planning meetings to redefine activity implementation and targets based on performance.

iv) **Continuous monitoring and technical backstopping:** Technical backstopping will be conducted by project technical teams supported by M&E and safeguards officers throughout the project cycle to track progress of activities and delivery of outputs. Joint monitoring missions will be conducted by social and environmental specialists and project coordination committees at regional, national and river basin levels. The mission teams will comprise representatives from the implementing and executing entities, other project partners, host governments, and communities.

v) **Monitoring short-term outcome results:** Periodic monitoring will be conducted mid-and end-of-season to assess climate smart technologies uptakes, climate information and compliance with agreed-upon seasonal work plans and activities. In addition, this will include close monitoring of the business agreements between value chain actors in the upgraded business model, inclusive participation, and social risk mitigation effectiveness, tracking of training outcomes for women and vulnerable groups will be included. Participatory experiments through FS will determine the immediate outcome results. Monitoring will be undertaken by local extension officials and meteorological officers.

vi) **Mid-term review and final project evaluations:** to be conducted to critically assess effectiveness, relevance, efficiency, sustainability, and/or impacts**.** In addition, assess project performance, including environmental and social risk management, gender equality, and effectiveness of the GRM**.** Findings and recommendations of the mid-term review shall inform the remaining period of project implementation.

417. **Reporting schedule:** The project will deliver the following reports:

i) Inception phase report: detailing what has been put in place (in terms of institutional arrangements, staff recruitment, assignment/deployment, and other arrangements); safeguards readiness, overall direction of the project, annual work plans, problems/constraints encountered, and adjustments needed in specific cases.

ii) Periodic Progress Reports: The progress reports will be submitted to the donor either on bi-annual or annual basis, as will be agreed upon. All reports will be prepared based on the reporting formats which will be developed during the inception phase. In general, it is expected that the bi-annual/annual report will include the following:

- planned vs. achieved in terms of implementing planned activities.
- main constraints encountered, solutions sought and recommendations for the next mid-term activities.
- Highlight social/environmental risks, describe mitigation actions, and track gender and youth participation against targets. Will follow AF templates and Core Indicators.
- Reference should be made against achieving the expected output in each of the bi-annual reports.
- Fundamental changes which may affect project performance should be detailed. Adaptation Fund monitoring and reporting guidelines, schedules and templates will be adhered to (e.g., Project Performance Report (PPR), results tracking and reporting on Core Indicators).

iii) Special Technical Reports: IFAD in collaboration with FAO will ensure that special reports such as technical reports, publications, press releases and updates, policy briefs relevant to the project are communicated to the Adaptation Fund and the Regional Project Steering Committee, as and when they are issued. The special reports will also document best practices in safeguards and gender inclusion, lessons learned, and policy-relevant insights.

iv) Project Completion Report: towards the end of the project, will assess project outcomes, environmental and social compliance, gender impact, final budget execution, sustainability measures, and lessons learned. The main content of the project completion report shall include:

- Supervision, Evaluation and Learning:
- IFAD-led Supervision will occur annually, including gender, environment, and social inclusion experts.
- Mid-Term Review (MTR): Scheduled for Year 3. Will evaluate gender and environmental impact, social risk mitigation effectiveness, and adaptive learning.
- Final Evaluation and Impact Survey will be conducted 3 months before closure, with gender-sensitive and disaggregated impact analysis.
- Programme Completion Survey will include follow-up on social risk mitigation and empowerment indicators.

- Gender and Social Inclusion in the M&E will include targets for women (e.g., 50% of direct beneficiaries), youth (20%), and vulnerable groups. Indicators will track participation, access to resources, leadership roles, and GRM usage. Lessons on gender and CC will inform project adjustments.
- The GRM will be monitored quarterly, tracking the number, type, and resolution rate of complaints, including labor rights, exclusion, and environmental harm.
- Capacity Building will include M&E and implementation partners will be trained in ESP and Gender Policy application, risk tracking, and disaggregated data analysis.

418. The table on the next page shows the budget for M&E activities. A detailed, costed plan is provided to ensure effective implementation and reporting of all M&E activities, including those tracking environmental and social risks and gender outcomes. These costs are split across the implementation entity fee and the project execution cost, as they are incurred by the implementing entity and the lead executing entity.

A dedicated M&E budget of $435,000 is allocated across project components, including: environmental and social risk monitoring, gender-responsive data collection (including sex-disaggregated indicators), grievance redress tracking, and M&E capacity building. Environmental and social risk monitoring findings will be reviewed quarterly and inform adaptive management and corrective actions

Table 20: Monitoring, Evaluation and Reporting Budget

Activity	Responsible parties	Budget (USD)	Year 1				Year 2				Year 3				Year 4				Year 5				Notes
			Quarters				Quarters				Quarters				Quarters				Quarters				
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Inception workshop and report	IFAD, FAO, and Ministries of Environment	20,000																					Inception workshops in Angola and Namibia, with all key stakeholders
Baseline and end line data collection	FAO and Ministries of Environment (70% FAO and 30% Ministries of Environment)	50,000																					Baseline and end surveys in target sites with data collection based on FAO VC profiling and community assessment tools. Project indicators, will be disaggregated by sex and location.
Continuous technical backstopping and monitoring	Regional Project Coordinating Committee, National Project Managers, M&E specialists	120,000																					Design or M&E system and monitoring of inputs. Oversight and technical support, guided by IFAD Regional M&E officer including gender and ESP compliance monitoring.
Routine project implementation monitoring	PMU	85,000																					Regular monitoring of value chain and community investments including ESS adherence, with sex-disaggregated data collection.
IFAD Project Reporting	PMU	20,000																					
Quarterly joint monitoring missions	EEs, ME Officer, focal points	40,000																					Completed once per quarter, including field visits and review of ESP and gender commitments.
Annual Audit	Ministries of Environment (50%) IFAD (50%)	40,000																					This will be done annually at end of year 1 and year 2. Annual outcome assessments focusing on community-level results and inclusion indicators.
Mid Term Evaluation	IE through external M&E expert	20,000IFAD IE fee Table 21																					This will be done by a hired External M&E consultant to review implementation progress, risk management, and lessons learned. Assess gender, Indigenous participation and knowledge transfer and E&S performance. Part of IFAD IE fees
Final project evaluation	IE through external M&E expert	40,000																					This will be done by a hired External M&E consultant assessing impact, gender outcomes, and environmental compliance.

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Total M & E budget		4135,000		

Table 21. Implementing Entity Fee for M&E Supervision

M&E Activity	Responsibility	Timeframe	AF budget	IE fees
Evaluation costs under IE fees				
Supervision/development of Baseline Data Report (BDR)	IFAD, PMU	Start, of the project		15,000
Mid-Term Evaluation	IFAD, PMU	Mid-point of the project		70,000
Terminal Evaluation	IFAD, PMU	Completion of the project		80,000
Total				**165,000**

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~~IE Fee Function~~	~~Description~~	~~Amount (USD)~~
~~A. Monitoring, Evaluation and Results Supervision~~		-
~~M&E framework design and supervision~~	~~Oversight of Adaptation Fund–aligned results framework, indicators, baselines and targets~~	~~512,340~~
~~Mid-Term Review supervision~~	~~Technical oversight and quality assurance of the Mid-Term Review in line with Adaptation Fund M&E guidelines~~	~~318,750~~
~~Terminal Evaluation supervision~~	~~Oversight of the Terminal Evaluation and management response in accordance with Adaptation Fund Evaluation Policy~~	~~289,422~~
~~Results reporting and learning~~	~~Consolidated results reporting to the Adaptation Fund, learning and knowledge capture~~	~~421,000~~
~~**Subtotal A – M&E-related IE functions**~~	-	~~**1,870,512**~~
-	-	-
~~**B. Other Eligible Implementing Entity Corporate Oversight and Project Cycle Management Functions**~~	-	-
~~Fiduciary and financial oversight~~	~~Financial supervision, disbursement oversight, audit coordination, and fiduciary compliance with AF policies~~	~~231,804~~
~~Environmental and social safeguards supervision~~	~~Oversight of compliance with the Adaptation Fund Environmental and Social Policy (ESP)~~	~~158,920~~
~~Project cycle management and reporting~~	~~Project cycle oversight, Adaptation Fund reporting, compliance, and coordination~~	~~461,000~~
~~Senior management oversight~~	~~Corporate accountability and strategic oversight required under AF accreditation standards~~	~~124,000~~
~~**Subtotal B – Other IE management functions**~~	-	~~**887,724**~~
-	-	-
~~**Total Implementing Entity Fee (Subtotal A + Subtotal B)**~~	~~Calculated in accordance with Adaptation Fund IE fee policy (10% of AF grant)~~	~~**2,231,894**~~

x

IE-financed M&E supervision is distinct from project-financed execution and focuses exclusively on quality assurance, compliance, and oversight

Table 22: Project Results Framework

Results	Indicators	Baseline	Milestone	End of project targets	Means of verification	Responsible parties	Risks and assumptions
Increased adaptation capacity and resilience of semi-nomadic agro-pastoral to climate change impacts and variability in the KRB.	• Number of direct beneficiaries of CC adaptation measures (Disaggregated by sex)54,200 (Angola 36,692; Namibia 17,508 • Number of indirect beneficiaries of CC adaptation measures (disaggregated by sex)779,527 (50% women • % of targeted group involved in value added initiatives • EWS: 1) Risk Knowledge; 2) monitoring and warning services; and 3) dissemination and communication	Direct and Indirect Beneficiaries: 0 EWS: determined with baseline studies	By project mid-term 25% of direct beneficiaries receive cc adaptation measures (13,550 people – 50% women.) By project mid-term 25% of indirect beneficiaries receive cc adaptation measures (194,750 people – 50% women.) At least 20% of targeted groups with actively involved with value added initiatives identified through the project. At least 30% of targeted group introduced high nutrient, drought tolerant food varieties, labor saving technologies for conservation agriculture.	54,200 direct beneficiaries (Angola 36 692) Namibia (17508), 779,527 indirect beneficiaries (50% women) 24 automatic weather stations installed (6 in Namibia and 18 in Angola) 32 hydrometric and water quality monitoring stations Operationalized real-time Big Data Analytics platform. Operationalized KRB MH-EWS Rehabilitation of 20 earth or sand dams Construction of 20 new rainwater retention ponds 20,000 ha of rangeland rehabilitated. Operationalized multi-stakeholder coordination forum for climate adaptation and sustainable livelihoods in the KRB. Community-led knowledge hubs blending scientific hydrological data with Indigenous flood prediction methods established through 20+ village assemblies. Updated RAK – utilizing data from 12 new IoT based hydro meteorological sensors, and 5 community led flood pattern observer networks. 20 rooftop rainwater harvesting units installed on public buildings, 180 boreholes rehabilitated. Three case studies submitted to IFAD and FAO knowledge, SADC-GMI and Water Net focusing on EbA as part of DRR and integrating scientific and traditional	Project Implementation Reports Field Visits M&E Reports Surveys	FAO, relevant Ministries, PJTC, literacy partners, and nutrition agencies	Marginal dropout rates among targeted groups. Community buy-in for collective action and communal investment in projects. No community-level conflicts over key resources and use/rights Availability of productive resources e.g., land, illiteracy levels may restrict audience of some climate advisory products. No major macro-economic shocks (high inflation, currency devaluation)

				knowledge on CC adaptation			
Component 1: Co-design and implementation of a gender-responsive DRR Plan through Ecosystem-based Adaptation in the KRB (KRB: EbA-DRRP)							
Outcome 1.1 A gender-responsive DRR Plan focused on EbA co-designed and implemented by beneficiary communities and key stakeholders.							
Output	Indicators	Baseline	Milestones	Target	Means of Verification	Responsible parties	Assumptions
Output 1.1.1 Knowledge gaps identified and addressed through a Water Security Assessment, Ecosystem Goods and Services Valuation, and community-based climate vulnerability and needs assessments to support the development of the KRB: EbA-DRRP.	Number of gender-responsive participatory assessments completed – Water Security, EGS and community-based climate vulnerability including gender analysis of vulnerabilities, roles, and capacities to inform knowledge gaps for preparation of the KRB: EbA-DRRP Number of stakeholders engaged (disaggregated by gender and group) Key knowledge gaps identified and documented to inform DRR planning.	0	1 comprehensive Water Security Assessment conducted for each country by Year 1 -EGS valuation completed for 3 key ecosystems for each country by Year 2 -1 community-based climate vulnerability and needs assessments completed for each municipality by Year 1 Min, 150 stakeholders engaged by end of Year 1 Documentation of all gaps identified in above engagements.	1 Water Security Assessment 1 EGS for 3 key assessments completed for each country. 5 community-based climate vulnerability and needs assessments. Min. 300 stakeholders engaged. Gaps identified and published	Assessment reports; stakeholder engagement records; summary of key findings shared with DRR planning team	FAO, in close collaboration with Ministries of Environment, PJTC, Angola National Commission for Civil Protection (CNPC) and Namibia Directorate of Disaster Risk Management (DDRM)	All stakeholders are committed to and participate in the planning meetings. Buy-in from all stakeholders including the community. Effective facilitation ensures inclusive participation. institutions have the capacity, data, and commitment to conduct gender analysis, and women and marginalized groups can participate in the studies. Data access is possible across the transboundary basin. Findings are used in DRR Plan development
Output 1.1.2 A Basin-wide gender inclusive DRR Plan, with a focus on EbA, developed and validated. EbA	DRR Plan drafted and validated with stakeholder participation	0	Annual planning meetings, 2 per country by midterm	5 per country	DRR Plan	FAO, in close collaboration with Ministries of Environment, PJTC, Angola National Commission for Civil Protection (CNPC) and Namibia Directorate of Disaster Risk Management (DDRM)	Willingness of stakeholders to work together. Availability of all stakeholders including the community to attend meetings. Inclusive processes are maintained. Institutional commitment and capacity to ensure inclusive participation, and sociocultural norms allow women and marginalized gender groups to actively engage in DRR planning processes.

	Number of inclusive, multi-stakeholder DRR planning workshops held (disaggregated by gender and sector). % of participants from marginalized groups # EbA actions integrated into the plan	0	50 participants per meeting, on average, 50% women	50 participants per meeting, on average, 50% women	Workshop reports Attendance lists (disaggregated) Validation meeting records	FAO, in close collaboration with Ministries of Environment, PJTC, Angola National Commission for Civil Protection (CNPC) and Namibia Directorate of Disaster Risk Management (DDRM)	Inclusive, equal opportunity processes are maintained to participate meaningfully in DRR planning, regardless of age, gender, or sector. Validation from authorities is obtained. Stakeholders remain engaged throughout process.
Outcome 1.2 Strengthened stakeholder dialogue, inclusive participation, and co-planning for integrated DRR and eco-system-based adaptation across the KRB.							
Output	Indicators	Baseline	Milestones	Target	Means of Verification	Responsible parties	Assumptions
Output 1.2.1 A comprehensive report documenting stakeholder engagement processes with beneficiary communities (including gender and ethnic subgroups), civil society, private sector, and government actors.	# of community members and other stakeholders participating in multi-stakeholder dialogues (disaggregated by gender and social group) # of participatory events held % representation of women and ethnic minorities across consultations. # of reports produced and publicly shared	0	500 by midterm, 50% women	1,000 by end of project, 50% women	Progress reports Stakeholder engagement logs Event reports and sign-in sheets Publicly accessible final report (e.g., on implementing agency website)	PMU	Willing community members and buy-in from community leaders and other stakeholders. Community members and stakeholders, including women and marginalized groups, have equal access, opportunity, and a safe environment to participate meaningfully in multi-stakeholder dialogues. Sufficient culturally knowledgeable outreach and facilitation ensure diversity of input
Component 2: Strengthening technical infrastructure and institutional systems for a satellite-based MH-EWS for the KRB (KRB: MH-EWS)							
Outcome 2.1 Enhanced technical capacity and institutional readiness for climate risk monitoring and inclusive, locally led adaptation at the micro-climate level in the KRB							
Output	Indicators	Baseline	Milestones	Target	Means of Verification	Responsible parties	Assumptions
Output 2.1.1 Weather stations installed in key micro-climate zones of Kuenen River Basin, in	# of automatic weather stations installed and operational (disaggregated by country), ensuring	0	12 meteorological stations installed by midterm	24 meteorological stations installed in the basin and fully operational. Data is accessed and used by at least 3	Installation and operation reports Data-sharing	FAO in close collaboration with Angola National	Equipment is installed properly and maintained. Real-time access to data is ensured.

collaboration with national meteorological agencies.	gender-equitable placement % coverage of major micro-climate zones in KRB # of stakeholders accessing data (through platforms or reports)			stakeholder groups (e.g., local authorities, communities, planners)	agreements Records of access (downloads or usage logs) References for planning documents	Institute of Meteorology (INAMET) and Namibia Meteorological Service	Stakeholders trained to use the information Weather stations are installed in locations that consider and address the needs and safety of all genders, ensuring equitable access to weather information.
2.1.2 Hydrometric stations installed along the Kunene River, in partnership with the national hydrological agencies.	# of hydrometric stations installed (disaggregated by country), ensuring gender-equitable placement	0	16 hydrometric stations installed by midterm	32 hydrometric stations installed in the basin and fully operational. Data is accessed and used by at least 3 stakeholder groups (e.g., local authorities, communities, planners)	Installation and operation reports Data-sharing agreements Records of access (downloads or usage logs) References for planning documents	FAO in close collaboration with Angola National Institute of Meteorology (INAMET) and Namibia Meteorological Service	Hydrometric stations are placed considering the needs and safety of all genders to ensure equitable access and benefits
Outcome 2.2 Communities and institutions in the KRB effectively use timely and accurate multi-hazard early warning information to prepare for and respond to climate-related risks.							
Output	Indicators	Baseline	Milestones	Target	Means of Verification	Responsible parties	Assumptions
Output 2.2.1 Multi-level KRB: MH-EWS co-designed and validated by governments and local communities, integrating indigenous knowledge.	# of EWS data capturing and monitoring tools developed. # of stakeholder consultations conducted # of local knowledge systems incorporated # final MH-EWS framework approved and adopted # of community watchers trained in EWS data capturing and monitoring, disaggregated by gender.	Fragmented early warning approaches. No co-designed or strengthened system.	1 community tool 1 supervisor tool 10 EWS per country.	Both tools will be developed at inception phase. Min. 6 stakeholder consultation events across both countries. Integration of at least 3 distinct indigenous knowledge sources. Validated and documented MH-EWS system 20 community watchers trained for all manual weather and hydrometric stations	Consultation records MH-EWS co-design report Adoption letters or endorsements from authorities and communities Training reports	FAO in close collaboration with Angola National Institute of Meteorology (INAMET) and Namibia Meteorological Service	Training workshops conducted in local languages. EWS installed properly, operational, and properly maintained. Government alignment and community trust are sustained. Technical expertise is available for integration and system development. Real-time access to data is ensured. Stakeholders trained to use the information Women and marginalized groups have equal opportunity, support, and confidence to participate in EWS training and apply their skills

Output 2.2.2 Big Data Analytics tool developed for real-time EWS data capture, monitoring, and analysis, including a user-friendly dashboard/interface.	System design and specifications completed. Tool developed, tested, and validated. Dashboard/interface designed for end users (e.g., local officials, planners) # of stakeholders using the tool for decision-making Capacity-building sessions on tool use delivered	0	Year 1: Technical requirements gathered from stakeholders; system architecture approved. Year 2–3: Beta version tested with users; feedback integrated into final version. Year 2–3: Dashboard co-developed with users and integrated into national/local portals. Year 4 baseline: Tool piloted with 2 agencies. Year 3–5: Annual trainings for users; refresher workshops	System prototype specification document completed and validated. Operational system deployed with key features: live data capture, alerts, visualizations. Interactive user interface available in English and local languages By Year 5: At least 6 institutions (gov't, DRM, CSOs) use the tool in operations. At least 5 sessions held; 100+ people trained (50% women/youth)	Technical design document, stakeholder workshop reports Software test reports, user feedback, screenshots, user manuals Dashboard screenshots, user testing reports, training attendance Usage logs, interviews, stakeholder reports, case studies Training reports, pre/post assessments, gender-disaggregated lists Forum secretariat, NMHS, DRM bodies	PIUs, tech consultants, NMHS, DRM agencies Data engineers, software strengthened, PIUs. UX designer, NMHS, local gov't strengthened. Forum strengthens, NMHS, DRM bodies. Trainers, PIUs, gender officer	Sufficient bandwidth and digital infrastructure available Data sources remain consistent; security and privacy risks are managed. Local users have basic digital literacy and internet access. Institutional buy-in maintained; staff turnover does not hinder usage. Participants apply for training; localized support provided post-training
Output 2.2.3 KRB MH-EWS operationalized using a cross-border, multi-level, multi-sectoral and multi-disciplinary framework.	Institutional coordination framework for MH-EWS agreed upon. Cross-border protocols developed for hazard detection, alerts, and response. Technical infrastructure has been installed and integrated across borders. Forecasting and alerts disseminated to communities via multiple channels.	0	Year 1–2: Bilateral and multi-sectoral consultations held; MOU signed between key institutions. Year 2: SOPs drafted, tested, and refined through simulation. Year 2–3: Data systems, alert tools, hydromet stations linked. Year 3–5: SMS, radio, local facilitators engaged; inclusive	Formal institutional frameworks were signed and adopted in both countries. Final SOPs adopted by institutions; drills successfully completed. Real-time data is integrated into national/local systems. At least 200,000 people (50% women) reached with risk alerts and forecasts. 100+ local DRM officers, CSOs, and leaders	MOU documents, meeting minutes, coordination structure TORs Protocol manuals, evaluation of drills, feedback reports. Data platform screenshots, station logs,	PIUs, DRM authorities, NMHS, river basin agencies DRM agencies, NMHS, Red Cross, civil protection units NMHS, technical experts, IT team	political will for bilateral cooperation remains stable. Language barriers, technical gaps addressed in design. Procurement and installation delays are minimized. Telecom coverage exists, ICT tools accessible in rural areas. Trained personnel remain in place over project duration.

	Stakeholders trained to operate and use MH-EWS Number of communities engaged in testing and using the MH-EWS		formats used (e.g., for PWDs, illiterate) Year 3–5: At least 10 training sessions held. Year 3–5: At least 10 target communities involved in simulations	trained; 50% women and youth. 20 pilot communities actively using the system and giving feedback	system diagrams Dissemination records, radio logs, SMS logs, community feedback Attendance sheets, pre/posttests, photos, feedback Simulation reports, user feedback surveys, case studies	Comms team, NGOs, local radio, mobile operators PIUs, training consultants, local DRM focal points DRM focal points, CSOs, PIU	Communities trust the system and participate regularly
2.2.4 Data from MH-EWS translated into locally relevant and easily understandable weather alerts for local communities use and action.	Tailored forecast products developed in local languages and formats. Dissemination channels established for locally tailored forecasts Community training and awareness activities conducted. Community trust and understanding of forecasts increased. Forecast-based early action protocols co-developed. Gender and disability inclusion in forecast communication	0	Year 2: Co-design workshops held with communities (women, elders, PWDs, youth) Year 3: Local radio, SMS alerts, community boards, and facilitators engaged. Year 3–4: Outreach through village meetings and schools Year 4–5: Community validation exercises held. Year 4–5: Community meetings to define actions linked to forecast types. All years: Formats co-designed with vulnerable groups	3+ forecast formats developed (audio, visual, SMS, pictorial) in 4 local languages. 4+ channels used in all targeted communities, covering at least 200,000 people. 60+ awareness/training sessions completed in all target districts; 50% female participation. 80% of target population can correctly interpret forecasts and know action steps. 30+ communities have forecast-action protocols adopted. 100% forecast materials accessible to women, youth, PWDs (e.g., visual aids, audio)	Workshop reports, product samples, translation logs Broadcast logs, SMS system reports, facilitator reports. Attendance sheets, photos, feedback surveys, pre/post-tests KAP surveys, interviews, focus groups, simulation reports. Protocols, meeting minutes, action logs Product reviews, focus group validation, feedback	PIUs, NMHS, NGOs, 85strengthen. PIUs, local radio stations, mobile providers, CSOs CSOs, extension workers, DRM offices Local universities, social scientists, PIUs DRM officers, CSOs, traditional leaders Women's orgs, disability rights orgs, translators	Forecasts reflect diverse user needs and are technically feasible. Channels remain functional and affordable throughout project. Community members are willing to engage and attend. Forecasts are consistently accurate and relevant. Local leadership supports and institutionalizes actions. Sufficient feedback loops are built into design

Component 3: Inclusive, community-based adaptation actions are co-designed and implemented to strengthen climate-resilient livelihoods, natural resource management, and water security in the KRB.							
Outcome 3.1 Community prioritized climate change adaptation interventions implemented in collaboration with local and national authorities, based on early warning alerts and seasonal forecasts generated under Component 2 (MH-EWS).							
Output	Indicators	Baseline	Milestones	Target	Means of Verification	Responsible parties	Assumptions
Output 3.1.1 Rainwater retention infrastructure constructed or rehabilitated to improve water availability for domestic and agricultural use.	# of earth/sand dams rehabilitated (disaggregated by type and location) # of rainwater retention ponds established (disaggregated by type and location) % increase in water available for domestic and agricultural activities during dry periods # of community Water-EWS Action Committees trained and operational (disaggregated by gender composition) # of direct beneficiaries with improved water access for domestic/agricultural use from rainwater retention projects (disaggregated by sex, project, and country). % of women and marginalized groups reporting improved access to and use of rehabilitated earth/sand dams	0	10 by midterm 10 by midterm Baseline survey completed and priority sites identified (Month 3) Participatory design finalized and procurement completed (Month 6) 50% of targeted infrastructure constructed/rehabilitated (Month 12) All infrastructure completed and functional (Month 18) Community Water-EWS Action Committees established and trained (Month 24) Post-completion beneficiary survey and water monitoring conducted (Midterm) 10,000 direct beneficiaries by midterm, 50% women 10% by midterm	20 earth/sand dams rehabilitated. 20 rainwater retention structures constructed. 4,000 direct beneficiaries (at least 50% women) with improved water access. 30% increased water availability at beneficiary sites during dry periods At least 10 community Water-EWS Action Committees established and trained (minimum 40% female membership) 20,000 direct beneficiaries, 50% women 60% of women and marginalized groups reporting improved access to and use of rehabilitated earth/sand dams	Construction contractors, site inspection, and completion reports Pre- and post-water flow and storage measurements Training attendance sheets, minutes Photographic evidence Community feedback reports	FAO in close collaboration with Ministry of Agriculture and Fisheries (MINAGRIP) and the Ministry of Energy and Water (MINEA) of Angola, and the Ministry of Agriculture, Water and Land Reform (MAWLR) of Namibia FAO in close collaboration with Ministry of Agriculture and Fisheries (MINAGRIP) and the Ministry of Energy and Water (MINEA) of Angola, and the Ministry of Agriculture, Water and Land Reform (MAWLR	Target area has been identified. Community has agreed for the projects to be implemented. Construction proceeds without major delays, procurement is timely. Water resources (rainfall, runoff) meet expected volume needed for infrastructure to function. Rehabilitation of earth/sand dams is planned and implemented with community input, ensuring that women and marginalized groups can safely access and benefit from the improved water resources. Training is accessible and inclusive for women, marginalized groups, and Indigenous peoples

						) of Namibia	
Output 3.1.2 Groundwater access improved through small scale infrastructure to support home gardening, and household water supply	# existing boreholes rehabilitated and equipped with handpumps/solar pumps (disaggregated by country/site) # of households with improved access to groundwater for home gardens, and household use (disaggregated by sex, and country). # of functional local water point committees established/trained with gender parity	0 0 0	30 by midterm All local waterpoint committees formed/trained (Month 18) Gender-disaggregated monitoring baseline and post-intervention surveys completed by midterm. 3,000 by midterm, 50% women	180 existing boreholes rehabilitated and equipped with handpumps/solar pumps (disaggregated by country/site) Minimum 1,500 households with sustained, improved groundwater access 100% of targeted communities have water point committees, with 50% women's participation. 6,000, 50% women	Rehabilitation contracts, site inspection certificates, completion reports. Committee meeting sign in sheets and meeting minutes Training attendance sheets Photos Progress reports	FAO in close collaboration with Ministry of Agriculture and Fisheries (MINAGRIP) and the Ministry of Energy and Water (MINEA) of Angola, and the Ministry of Agriculture, Water and Land Reform (MAWLR) of Namibia	Community members willing to participate in committee formation/training. Local government and partners remain engaged and provide necessary support. Hydrological conditions allow for successful borehole rehabilitation
Output 3.1.3 High nutrient drought-tolerant crop varieties promoted through FFSs, demonstrations, and extension services.	# of drought-tolerant crop varieties introduced and demonstrated # of FFSs demonstrations established # of farmers trained (disaggregated by gender and country) % of target community members farming with drought-tolerant breeds and crop varieties, disaggregated by gender.	0	Crop variety trials launched by Month 6; demonstrations by Month 12 FFS curriculum developed by Month 6; roll-out in seasons starting Month 9 First group trained by month 12, review sessions seasonally. 40% targeted community using high nutrient drought tolerant crops by midterm. (Minimum 40% women)	At least 4 drought-tolerant varieties (2 per country) introduced and tested in FFS. 20 FFSs and demo plots established (minimum 40% women participants) At least 600 farmers trained (50% women, 30% youth) 80% of the targeted community using drought tolerant crops	FFS curriculum, demonstration site records. School attendance sheets, training reports, photos, disaggregated records Training records, evaluations, and follow-up surveys Community surveys		Target area identified. Community agrees to propose the projects to be implemented. Women and men have equal access to drought-tolerant breeds and crop varieties, along with the resources and knowledge needed to adopt them. Farmers apply learned practices and farm schools are active with follow up

Output 3.1.4 Rangeland restored through reseeding, rotational grazing, and soil improvement techniques to support drought-resistant fodder and biodiversity.	Hectarage of rangelands restored by project. # of community members (disaggregated by gender/country) trained in rangeland restoration and management # of beneficiaries of rangeland restoration, disaggregated by gender and country # of rotational grazing plans developed and implemented in partnership with pastoralist groups # of community nurseries established	0	Site selection by Month 6; restoration begins by Month 12 10,000ha by midterm Training curriculum finalized by Month 9; training sessions from Month 10 onwards. 4000 people (20% women) Mapping of grazing zones by Month 9, plans by Month 12	20,000ha restored 800 individuals trained (minimum 40% women, 30% youth) 6000 people 10 community-based grazing plans implemented (5 per country) Produce 20 community nurseries for drought-tolerant fodder crops, adjacent to the 20-water retention ponds.	Restoration reports Photography, Field surveys Training attendance lists, disaggregated reports, pre/post-training assessments Participatory grazing maps Community agreements	FAO in close collaboration with Ministries of Environment in Angola and Namibia	Target area has been identified. Community interest and engagement in the projects Benefits from restored rangelands are accessible to all community members, with no gender-based barriers to access or use. Pastoralists agree to coordinated grazing strategies and compliance is monitored
Outcome 3.2: Improved collaboration and coordination among development partners and stakeholders within the KRB.							
Output	Indicators	Baseline	Milestones	Target	Means of Verification	Responsible Parties	Assumptions
Output 3.2.1: An inclusive multi-stakeholder climate adaptation coordination forum established and operationalized to enhance alignment, knowledge sharing, and inclusive decision-making in the KRB	Forum established and launched. Quarterly forum meetings were held. Inclusive participation in meetings (% representation of women, youth, marginalized) # of joint planning or knowledge-sharing outputs (e.g., action plans, training events) Forum integrated into ongoing governance mechanisms (e.g., linked to local/national adaptation planning platforms	0	Year 1: Forum launched through inclusive kickoff workshop; terms of reference developed; stakeholder map completed. Years 2–5: At least 4 meetings per year held, rotating between countries/locales. Year 2 baseline: 30% women/youth participation; increase each year. Year 2: First shared action plan. Year 3–4: Joint field visits, capacity workshops Year 5: Forum has documented lessons, established linkages with national authorities.	Forum launched, ToRs agreed upon, stakeholder list validated. 20 forum meetings held by Year 5 By Year 5: ≥50% participation by women/youth; 30% from marginalized groups By Year 5: 5 joint knowledge-sharing outputs (e.g., 1 plan/year, 2 workshops, 2 newsletters/year) 1 signed MoU or formal integration pathway documented	Launch workshop report, signed ToRs, stakeholder map. Meeting minutes, participant lists, photos, shared action plans Attendance sheets disaggregated by gender/age/group. Workshop reports, newsletters, field visit reports Final evaluation report, partnership documents, minutes with	PIUs, local authorities, CSOs PIUs Forum implementation team, Gender, and Indigenous Peoples specialist PIUs, local partners, training consultants Project Steering Committee, national	Stakeholders remain engaged beyond launch; political support continues. Travel and communication barriers do not prevent participation. Social norms do not restrict participation; targeted outreach is successful. Coordination across institutions is feasible; budget allocations remain steady. National institutions value and adopt forum recommendations

					national partners	adaptation focal points	
Component 4: Strengthening awareness, knowledge, and capacity to adapt to climate change and variability and knowledge sharing							
Outcome 4.1 Targeted populations in the KRB demonstrate increased awareness, understanding, and ownership of climate change adaptation and disaster risk reduction processes, resulting in more inclusive participation and leadership in locally led adaptation planning and implementation							
Output	Indicators	Baseline	Milestones	Target	Means of Verification	Responsible Parties	Assumptions
Output 4.1.1 Awareness campaigns and knowledge sharing initiatives launches to promote gender-responsive, locally led climate change adaptation measures.	# of knowledge products developed # of awareness creation campaigns held on climate change adaptation with gender-inclusive content and outreach Number of individuals reached through campaigns (disaggregated by gender, age, location) Number of knowledge-sharing events (e.g., community workshops, youth events, school campaigns) conducted	0	Campaign strategy completed by Month 6; launches from Month 9 Curriculum co-developed by Month 6; rollout from Month 9 2 by midterm 1 per year p/country	At least 10 campaigns conducted (5 per country) with national and local reach. At least 54,200 people reached directly and indirectly (50% women) 20 knowledge-sharing events conducted (at least 40% youth and women participants) 10	Media logs, radio transcripts, campaign materials Campaign reports, surveys. Event attendance sheets	FAO in close collaboration with Ministries of Environment in Angola and Namibia	Awareness material is translated into local languages. There are trained community members disseminating information. Researchers and practitioners have the capacity and commitment to integrate diverse gender perspectives in locally led adaptation knowledge products. Campaigns are designed and implemented to effectively reach and engage women, men, and marginalized gender groups. Population has access to communication platforms. Communities have confidence in messaging sources.

Output 4.1.2 Kunene River Awareness Kit online portal updated and reactivated, incorporating new data and knowledge generated by the project.	Portal reactivated and accessible to users and made multilingual and mobile-optimized. Real-time hydroclimatic data and indigenous knowledge integrated. # of community data hubs established and operational # of local users trained through digital literacy workshops disaggregated by gender, ethnicity, and country Number of regional and international knowledge-sharing mechanisms established	0	Platform design update plan completed by Month 6 Community hub equipment installation by mid-term Training design finalized by mid-term 10% of beneficiaries (50% women) KRA Kit translated in all major local languages	Fully operational, multilingual, mobile-optimized RAK portal Real-time data from 12 IoT sensors + 5 community observer networks streaming to portal. 8 rural community data hubs functional with offline RAK access and upload capacity 15 digital literacy workshops reaching 500+ users (50% women, Himba/Zemba communities)1 tri-lingual metadata protocol signed with Niger Basin Authority; 3 regional institutions engaged (SADC, Ministries)	Functional platform online Usage demonstration Field verification Hub reports, photos, equipment Training attendance sheets, disaggregated data Signed MOU, shared data sets, and meeting minutes	FAO in close collaboration with Ministries of Environment in Angola and Namibia, IT strengthen, PJTC, local observers, local government, SADC, Sectoral Ministries	Community member willingness and interest to participate. Women and marginalized groups have equal opportunity, support, and motivation to participate in KRA Kit training
Output 4.1.3 Case studies from the project developed and submitted to knowledge platforms such as IFAD, FAO, SADC-GMI and WaterNet for wider dissemination.	Case studies on the learnings from the Kunene Basin project, on EbA in DRR, MH-EWS and integration of scientific and traditional knowledge for climate change adaptation. Incorporation of gender perspectives and experiences.	0	2 case studies by midterm	5 case studies	Case studio documents, audio recordings, or videos Progress reports	FAO in close collaboration with Ministries of Environment in Angola and Namibia	Willingness of respondents to participate in the study. Sufficient culturally knowledgeable outreach and facilitation ensure diversity of input and collection of indigenous knowledge. Project stakeholders are willing and able to document and share gender-differentiated experiences and insights in case studies
Outcome 4.2 Strengthened institutional capacity at local and regional levels to manage gender-responsive, locally led adaptation interventions effectively.							
Output	Indicators	Baseline	Milestones	Target	Means of Verification	Responsible parties	Assumptions
Output 4.2.1 Capacity-building programs for partner institutions in the KRB, focused on addressing water scarcity, climate change and stakeholder	Number of training courses developed to build local and institutional capacity of governing bodies, water authorities, and local communities incorporating gender considerations and inclusive content.	0	Depending on training needs 250 by midterm 10 training sessions by midterm	All identified training conducted. 500 20	Progress reports	FAO in close collaboration with Ministries of Environment in Angola	Training conducted in local languages Community members identified and willing to be trained. Projects identified and agreed upon with communities and other stakeholders.

conflicts developed	Number of stakeholders and community members trained disaggregated by gender. Number of stakeholder training sessions delivered, with content and facilitation inclusive of gender considerations,					and Namibia	Training developers have the capacity, commitment, and resources to integrate gender considerations into course content, and institutions are open to inclusive learning. Training sessions are designed and delivered in ways that effectively engage and address the needs of all gender groups. Training conducted in local languages. Community members identified and willing to be trained. Projects identified and agreed upon with communities and other stakeholders. Training developers have the capacity, commitment, and resources to integrate gender considerations into course content, and institutions are open to inclusive learning. Training sessions are designed and delivered in ways that effectively engage and address the needs of all gender groups

Table 23: Progress Against Adaptation Fund Indicator: "Number of Beneficiaries"

Adaptation Fund Core Impact Indicator "Number of Beneficiaries"				
Date of Report	June 2025			
Project Title	Building Inclusive Resilience to Climate Change for Semi-Nomadic Agro-Pastoral Communities in the Transboundary Kunene River Basin			
Country	Angola and Namibia			
Implementing Agency	IFAD			
Project Duration	5 years			
	Baseline	Target for project approval	Adjusted target first year of implementation	Actual at completion[37]
Direct beneficiaries supported by the project	0	Angola: 36,692 Namibia: 17,508		
Female direct beneficiaries	0	Angola:18,346 Namibia: 8,754		
Youth direct beneficiaries	0	Angola: 7,338 Namibia: 3,502		
Indirect beneficiaries supported by the project	0	Angola: 779,527 Namibia: 53,752		
Female indirect beneficiaries	0	Angola: 389,764 Namibia: 26,876		

[37] At project completion, the proponent could report on % targeted population reached or successfully supported (the absolute numbers could then be deduced from that figure)

Youth indirect beneficiaries	0	Angola: 155,905 Namibia: 10,750		
Beneficiaries with increased adaptive capacity	0	Target population 37 940 70% 0f target population		

Table 24: Progress Against Adaptation Fund Indicator: Early Warning Systems

Adaptation Fund Core Impact Indicator "Early Warning Systems"				
	Baseline	**Target for project approval**	**Adjusted target first year of implementation**	**Actual at completion**
Adopted MH-EWS (Category targeted – 1, 2, 3, 4, and absolute number) (1) risk knowledge, (2) monitoring and warning service, (3) dissemination and communication, (4) response capability. (report for each project component)	Most semi-nomadic and smallholder farmers do not have access or utilize early warning system (EWS) – leading to increased d crop and livestock losses due to climate variability and change.	- Beneficiaries with access to and using the Multi-Hazard EWS Angola (29 354 Namibia 14006) -(4) 80% of target population can correctly interpret forecast and know action steps (666,623) -(3) 30+ communities have forecast-action protocols adopted (Angola 623 622, Namibia 43 001) -(3) 100% forecast materials accessible to women, youth, PWDs (e.g., visual aids, audio) -(1) Min. 6 stakeholder consultation events in both countries -(4)20 community watchers trained -(1)(3)(4) 60+ awareness/ training sessions completed, 50% female participation -(2)4+ channels used in all targeted communities, covering at least 200,000 people (160 00 Angola 40 000 Namibia) -(1-4) 20 pilot communities actively using the system and giving feedback -(2-3)3+ forecast formats developed (audio, visual, SMS, pictorial) in 4 local languages -(1)(4)100+ local DRM officers, CSOs, and leaders trained; 50% women and youth -(1-4) At least 200,000 people (50% women) reached with risk alerts and forecasts		
Drought resilience improvement	Semi-nomadic pastoralists, small hold farmers lack technical and organizational preparedness or adaptive capacity for floods, drought, extreme temperatures.	-80% of target population can correctly interpret forecast and know action steps (666,623) (Angola 623 622, Namibia 43 001) -60+ awareness/training sessions completed in all target districts; 50% female participation		
Drought adaptation actions undertaken		-30+ communities have forecast-action protocols adopted -3+ forecast formats developed (audio, visual, SMS, pictorial) in 4 local languages -4+ channels used in all targeted communities, covering at least 200,000 people disaggregated by sex		
Knowledge, Dissemination and communication	Limited knowledge of adaptive measures	-Min. 6 stakeholder consultation events in both countries. - Integration of at least 3 distinct indigenous knowledge sources -20 community watchers trained for all manual weather and hydrometric stations. - At least 6 institutions (gov't, DRM, CSOs) using the tool in operations - At least 5 sessions held; 100+ people trained (50% women/youth) -60+ awareness/training sessions completed in all target districts; 50% female participation		
Hazard (select from the list on page 2) (report for each project component)	-Floods -Droughts -Extreme temperature	-Floods -Droughts -Extreme temperature		

Geographical coverage (km2) (report for each project component)	KRB: 106,500 km²	-KRB: 106,500 km²		
Number of municipalities (number) (report for each project component)	0	Component 2 Angola: 3 municipalities Namibia: 2 municipalities		

Table 25: Progress Against Adaptation Fund Indicator: Assets Produced, Developed, Improved, or Strengthened"

Adaptation Fund Core Impact Indicator "Assets Produced, Developed, Improved, or Strengthened"				
	Baseline	**Target at project approval**	**Adjusted target first year of implement ation**	**Actual at completion**
Sector: Component 3: Inclusive, community-based adaptation actions are co-designed and implemented to strengthen climate-resilient livelihoods, natural resource management, and water security in the KRB.				
Targeted Asset Physical asset *(produced/improved/strengthened)* Changes in Asset *(Quantitative or qualitative depending on the asset)*	During the initial assessment physical assets will be assessed for improvement, strengthening or producing			
Beneficiaries with access to climate-resilient assets		Target 54200 (Angola 26 692 Namibia 17 508 65% reference 35230 (Angola 23 850 and Namibia 11 380)		
i) *Innovative water harvesting and storage infrastructure produced*		-Produce 20 rainwater retention structures -Improved water access from domestic/agricultural retention projects for 20,000 direct beneficiaries (50% women) -Produce 20 rooftop rainwater harvesting units installed on public buildings based on climate informed technical assessment -30% increased water availability for agricultural and domestic use during dry periods		
ii) Mini-irrigation and delivery system produced				
iii) Water wells improved		- Strengthen 180 existing boreholes for gardens and domestic use – based on technical and environmental assessment - Minimum 1,500 households with sustained, improved groundwater access		
iv) Groundwater sources improved		-4,000 direct beneficiaries (at least 50% women) with improved water access.		
v) Agrisilvopastoral system improved		-20,000ha restored rangeland through reseeding, rotational grazing, and soil improvement. -800 individuals trained in rangeland restoration practices (minimum 40% women, 30% youth) -10 community-based rotational grazing plans implemented (5 per country) - Produce 20 community-nurseries for drought-tolerant fodder crops, and Moringa tree propagation adjacent to the 20 water retention ponds		

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vi) Climate smart agricultural infrastructure		-20 earth/sand dams rehabilitated. -60% of women and marginalized groups reporting improved access to rehabilitated earth/sand dams -Minimum 4 drought-tolerant varieties (2 per country) introduced and tested in FFS -20 FFSs and demo plots established (minimum 40% women participants) - At least 600 farmers trained (50% women, 30% youth) -80% targeted community using drought tolerant crops		

Table ~~6~~26: Progress Against Adaptation Fund Indicator: Natural Assets Protected or Rehabilitated

Adaptation Fund Core Impact Indicator "Natural Assets Protected or Rehabilitated"				
	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion38
Natural Asset or Ecosystem : Rangeland				
Change in state. Ha or km Protected/rehabilitated, or Effectiveness of protection/rehabilitation - Scale (1-5)	0	20,000 ha restored degraded rangeland through reseeding, rotational grazing, and soil improvement.		
Total number of natural assets or ecosystems protected/rehabilitated		Angola 12 000~~23850~~ Namibia 8 000~~16510~~		

419. The project's M&E framework will integrate gender-responsive indicators to ensure equitable outcomes. These will include metrics such as the proportion of women in decision-making roles and the number of adaptation measures specifically addressing gender-related vulnerabilities. All project data will be disaggregated by gender to assess differentiated impacts on women and marginalized groups. Regular gender audits will be conducted to monitor progress toward gender equity, with corrective measures implemented as needed. As a concrete target, the project will strive to ensure that at least 40% of leadership positions in community-based Water-EWS Action Committees are held by women, reinforcing their active role in climate resilience and resource governance.

F. Alignment with Adaptation Fund Results Framework

Table 27: Project Alignment with the Results Framework of the Adaptation Fund

Project Objective(s)	**Project Objective Indicator(s)**	**~~AFFund~~ Outcome**	**~~AFFund~~ Outcome Indicator**	**Grant Amount (USD)**
~~Overall goal: The goal of the project is to enhance the climate resilience and adaptive capacity of vulnerable communities, particularly semi-nomadic agro-pastoralists, and smallholder farmers, across the KRB in Angola and Namibia~~	~~Number of beneficiaries (36692 Angola 17508 Nambia direct and indirect), disaggregated by gender and age.~~	~~Increased adaptive capacity of communities to respond to the impacts of climate change~~	~~AF Impact Level Results Core Indicator: Number of beneficiaries (direct and indirect)~~	~~*$11,454,456*~~
Key Objective 1: Vulnerable communities and institutions in the KRB have improved capacity to anticipate, prepare for, and respond to climate-related hazards through inclusive, ecosystem-based disaster risk reduction approach and adapted agriculture and water practices.	~~DRR Plan co-designed and implemented by beneficiary communities and all stakeholders differentiated by gender groups and gender subgroups~~• Number of gender-responsive participatory assessments completed – Water Security, EGS and community-based climate vulnerability including gender analysis of vulnerabilities, roles, and capacities to inform knowledge gaps for preparation of the KRB: EbA-DRRP \n• Number of stakeholders engaged (disaggregated by gender and group) \n•	**AF Outcome** 1: Reduced exposure at national level to climate-related hazards and threats ~~AF Outcome 3: Strengthened awareness and ownership of adaptation and~~	**AF Outcome Indicator 1.** Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis.	~~*$1,000,000*~~*2 106 048*

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[38] At project completion, the proponent could report on % targeted population reached or successfully supported (the absolute numbers could then be deduced from that figure)

	Number of inclusive, multi-stakeholder DRR planning workshops held (disaggregated by gender and sector); % of participants from marginalized groups; # EbA actions integrated into the plan \n• # of community members and other stakeholders participating in multi-stakeholder dialogues (disaggregated by gender and social group); # of participatory events held; % representation of women and ethnic minorities across consultations; # of reports produced and publicly shared .	climate risk reduction processes at local level		
Key Objective 2: A fully operational, transboundary MH-EWS actively used by governments and local communities or informed, climate-resilient decisions. Supported by strong cross-border institutional coordination, real-time data generation and sharing, adaptive infrastructure and strengthened local and institutional capacities to interpret, communicate, and act on the information.A fully operational, transboundary, community-accessible Multi-Hazard Early Warning System (MH-EWS) established and actively used by governments and local communities to make informed, climate-resilient decisions. Supported by enhanced cross-border institutional coordination, real-time data generation and sharing, adaptive infrastructure, and strengthened local and institutional capacities to interpret, communicate, and act on early warning information.	Number of beneficiaries covered by MH-EWS, disaggregated by gender. Angola 29354 Namibia 14006.• 24 automatic weather stations installed (6 in Namibia and 18 in Angola) \n• 32 hydrometric and water quality monitoring stations \n• Operationalized real-time Big Data Analytics platform \n• Operationalized KRB MH-EWS \n• At least 200,000 people (50% women) reached with risk alerts and forecasts *(Angola 160,000; Namibia 40,000 — adjust if your design allocates differently)* \n• 20 pilot communities actively using the system and giving feedback \n• 80% of target population can correctly interpret forecasts and know action steps *(Total 666,623 = 80% of 833,279 indirect; Angola 623,622; Namibia 43,001)* \n• 30+ communities have forecast-action protocols adopted \n• 100% forecast materials accessible to women, youth, PWDs (e.g., visual aids, audio) \n• Min. 6 stakeholder consultation events across both countries \n• 20 community watchers trained \n• 60+ awareness/training sessions completed in all target districts; 50% female participation \n• 4+ channels used in all targeted communities \n• 3+ forecast formats developed (audio, visual, SMS, pictorial) in 4 local languages \n• 100+ local DRM officers, CSOs, and leaders trained; 50% women and youth	**AF Outcome 1:** Reduced exposure to climate-related hazards and threats.AF **AF Outcome 2:** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	**AF Outcome Indicator** **1**. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis. Indicator **AF Outcome Indicator** **2.2: No. people with reduced risk to extreme weather events.2.1** Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	*$2,830,000* *$2,636.000* *$990,000*

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Key Objective 3 Target communities implement inclusive, gender-responsive adaptation actions that enhance water security, food production, and ecosystem integrity supported by cross-border collaboration and regional knowledge sharing to strengthen climate resilience across the KRB.	Rehabilitation of 20 earth/sand dams; construction of 20 rainwater retention ponds; 180 boreholes rehabilitated; 20,000 ha of rangeland rehabilitated; minimum 4 drought-tolerant varieties introduced; 20 FFS/demo plots established; at least 600 farmers trained (50% women, 30% youth); 80% of targeted community using drought tolerant crops. Percentage of beneficiaries benefiting from identified sub-projects, disaggregated by gender.	AF ~~AF~~ **Outcome 2:** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses **AF Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors~~Outcome 2. Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses. Outcome 4. Increased adaptive capacity within relevant development and natural resource sectors~~	**AF Outcome Indicator 2.1.** Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased ~~2.1. No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks~~ ~~2.2. Number of people with reduced risk to extreme weather events.~~ **Outcome 4.2.** Physical infrastructure improved to withstand climate change and variability-induced stress.	~~$6,639,546~~$420 000 $12 900 000 ~~$~~
Key Objective 4: Increased knowledge and awareness of climate risks and adaptation options are strengthened, and institutions and communities are better equipped to manage gender-responsive adaptation efforts.	~~Increased awareness, knowledge, and action on climate change adaptation, disaggregated by gender and inclusive of diverse gender perspective. (Angola 26530 Namibia 11410)~~• At least 10 campaigns conducted (5 per country) with national and local reach \n• At least 54,200 people reached directly and indirectly (50% women) \n• 20 knowledge-sharing events conducted (at least 40% youth and women participants) \n• Fully operational, multilingual, mobile-optimized RAK portal \n• Real-time data from 12 new IoT based hydro meteorological sensors, and 5 community led flood pattern observer networks *(as reflected in your Table 22*	**AF Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	**AF Outcome Indicator 3.1.** Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	*~~$985,000~~1,035,000*

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	targets) \n• 8 rural community data hubs functional with offline RAK access and upload capacity \n• 15 digital literacy workshops reaching 500+ users (50% women, Himba/Zemba communities) \n• Three case studies submitted to IFAD and FAO knowledge, SADC-GMI and Water Net focusing on EbA as part of DRR and integrating scientific and traditional knowledge on CC adaptation *(and your component target "5 case studies" should be kept consistent across the document — choose one)* \n• All identified training conducted; 500 trained; 20 sessions *(Output 4.2.1 targets)*			
Total outcome level grant amount				~~*$22,909,002*~~ *20,087,048*
Project Outcome(s)	Project Outcome Indicator(s)	AF~~Fund~~ Output	AF~~Fund~~ Output Indicator	
Component 1. Co-design and implementation of a gender-responsive Disaster Risk Reduction Plan through EbA in the KRB				
Outcome 1.1 A gender-responsive DRR Plan focused on EbA co-designed and implemented by beneficiary communities and key stakeholders.~~Improved availability and effectiveness of DRR Plan co-designed and implemented by beneficiary communities and stakeholders.~~ ~~Outcome 1.2 Strengthened stakeholder dialogue, inclusive participation, and co-planning for integrated DRR and eco-system-based adaptation across the KRB~~	- Assessments, Ecosystem Goods and Services Valuation, and community-based climate vulnerability -Number of beneficiaries and other stakeholders participating in disaster risk reduction planning and implementation, disaggregated by gender. -Number of studies conducted to fill knowledge gaps for the preparation of the KRB: EbA-DRRP, incorporating gender analysis and perspective. -Number of stakeholder engagements/dialogues held by the project, with participation disaggregated by gender and inclusive of marginalized groups. -Number of stakeholders participating in joint planning and stakeholder engagements/dialogues (disaggregated by gender and sector).	**AF Output 1.1:** Risk and vulnerability assessments conducted and updated ~~Risk and vulnerability assessments conducted and updated at a national level~~	AF Indicator 1.1. No. ~~and type~~ of projects that conduct and update risk and vulnerability assessments (by sector and scale).	~~*$1,000,000*~~ ~~*$1,506,048*~~ ~~*$600 000*~~ ~~*$600 000*~~
Outcome 1.2 Strengthened stakeholder dialogue, inclusive participation, and co-planning for integrated DRR and eco-system-based adaptation across the KRB				
Component 2. Strengthening technical infrastructure and institutional systems for a satellite-based MH-EWS for the KRB				
Outcome 2.1 Enhanced technical capacity and institutional readiness for climate risk monitoring and inclusive, locally led adaptation at the micro-climate level in the KRB. ~~Outcome 2.2 Communities and institutions in the KRB effectively use timely and accurate multi-hazard early warning information to prepare for and respond to climate-related risks.~~	-Number of automatic weather stations installed (disaggregated by country). -Number of hydrometric stations installed (disaggregated by country). -Percentage of households using tailored seasonal climate forecasts to plan their activities or enterprises. -Number of stakeholder institutions trained in the usage of the MH-EWS. -Number of community members trained in early action using EWS data (disaggregated by sex and country).	**AF Output 1.1:** Risk and vulnerability assessments conducted and updated at a national level **AF Output 2.1**: Strengthened	**AF Output Indicator 1.2.** No. of early warning systems (by scale) and no. of beneficiaries covered~~Development of early warning systems Output indicator~~ ~~2~~**~~AF Output Indicator 2~~**~~.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events.~~	~~*$22,636,000*~~

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Outcome 2.2 Communities and institutions in the KRB effectively use timely and accurate multi-hazard early warning information to prepare for and respond to climate-related risks.	-Number of EWS data capturing and monitoring tools developed.	capacity of national and Sub-national~~regional~~ centres and networks to respond rapidly to extreme weather events. ~~**AF Output 2.2:** Increased readiness and capacity of national and sub-national entities to directly access and program adaptation finance Targeted population groups covered by adequate risk reduction systems~~	**AF Output Indicator** 2.1.2. No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale) ~~Capacity of staff to respond to, and mitigate impacts of, climate-related events (by gender)from targeted institutions increased~~ ~~**AF Output Indicator** 2.2.1. No. of people benefitting from the direct access and enhanced direct access modalityPercentage of population covered by adequate risk-reduction systems~~	~~$990,000,830,000~~
Component 3. Inclusive community-based adaptation actions are co-designed and implemented to strengthen climate-resilient livelihoods, natural resource management, and water security in the KRB.				
Outcome 3.1 Community prioritized climate change adaptation interventions implemented in collaboration with local and national authorities, based on early warning alerts and seasonal forecasts generated under Component 2 (MH-EWS). Outcome 3.2 Improved collaboration and coordination among development partners and stakeholders within the KRB.KRB	-Number of existing earth dams rehabilitated. -Number of rainwater retention ponds established. -Number of community members benefiting from water retention projects (disaggregated by sex, project, and country). -Number of existing boreholes rehabilitated. -Number of community members trained in the use of value addition technologies disaggregated by gender and including efforts to ensure participation of women and marginalized groups. -Number of community members benefiting from value addition initiatives, disaggregated by gender and inclusive of marginalized group. -Percentage of target community members farming with drought-tolerant breeds and crop varieties, disaggregated by gender. -Hectarage of rangelands restored by project, with equitable access and benefits for women, men, and marginalized groups dependent on the rangelands.	**AF Output 2.1** Strengthened capacity of national and ~~regional~~ sub-national centres and networks to respond rapidly to extreme weather events ~~**AF Output 2.2:** Increased readiness and capacity of national and sub-national entities to directly access and program adaptation financeTargeted population groups covered by adequate risk reduction systems: **AF Output 6**: Targeted~~	**AF Output Indicator 2.1.1.** No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender) ~~No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender) extreme weather events. **AF Output Indicator 2.2.1.** No. of people benefitting from the direct access and enhanced direct access modalityPercentage of population covered by adequate risk reduction systems**AF Output Indicator 4.1.1.** No. and type of development sector services modified to respond to new conditions resulting from climate variability and change (by sector and~~	~~$6,639,546~~ $420 000 $12 900 000

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		individual and community livelihood strategies strengthened in relation to climate change impacts, including variability Strengthened institutional capacity to reduce risks associated with climate-induced socio-economic and environmental losses. **AF Output 4**: : Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	scale)No. and type of health or social infrastructure developed or modified to respond to new conditions resulting from climate variability and change (by type) **AF Output Indicator 4.1.2.** No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scaleby asset types)	
Component 4. Strengthen awareness, knowledge and capacity adapt to CC and variability in the Kunene River ecosystem				
Outcome 4.1 Targeted populations in the KRB demonstrate increased awareness, understanding, and ownership of climate change adaptation and disaster risk reduction processes, resulting in more inclusive participation and leadership in locally led adaptation planning and implementation.	-Number of community members reached during awareness creation campaigns disaggregated by gender -Number of community members trained in gender-responsive climate change adaptation measures disaggregated by gender -Number of knowledge products developed on locally led gender responsive adaptation. -Number of awareness creation campaigns held on climate change adaptation with content and outreach tailored to effectively engage women, men, and marginalized gender groups. -Case studies on the learnings from the Kunene Basin project, on EbA in DRR,	**AF Output 3.1:** Targeted population groups participating in adaptation and risk reduction awareness activities.	**AF Output Indicator 3.1.** No. of news outlets in the local press and media that have covered the topic1 No. and type of risk reduction actions or strategies introduced at local level	$985,000$835,000

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	MH-EWS and integration of scientific and traditional knowledge for climate (incorporating gender-differentiated experiences and perspectives).			
Outcome 4.2 Strengthened institutional capacity at local and regional levels to manage gender-responsive, locally led adaptation interventions effectively.	-Number of gender-responsive adaptation plans developed. -Number of gender-responsive adaptation initiatives funded. -Number of training courses developed to build local and institutional capacity of governing bodies, water authorities, and local communities. -Number of stakeholders and community members trained disaggregated by gender.	**AF Output 3.2:** Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	~~**AF Output Indicator 3.2.1** No. of technical committees/associations formed to ensure transfer of knowledge~~ **AF Output indicator 3.2.2** No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders.	$200,000
Total output level grant amount				20,087,048

Monitoring, evaluation, and learning functions are explicitly structured to support adaptation beyond the project's direct beneficiaries. Findings from monitoring activities, evaluations, and participatory learning processes including those related to environmental and social risk management and gender outcomes will be synthesised into knowledge products and shared through national and regional platforms. This ensures that adaptation lessons inform broader institutional learning, policy dialogue, and future climate resilience investments.

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G. Project Budget

Table 28: Detailed project budget

Activity	Year 1	Year 2	Year 3	Year 4	Year 5	Total Amount	Notes	FAO	GoN	GoA	PJTC
Component 1: Co-design with beneficiary communities and stakeholders, and implementation of a Plan for Disaster Risk Reduction through Ecosystem-based Adaptation in the Kunene River Basin (KRB: EbA-DRRP)											
1.1.1.1 Undertake a Water Security Assessment of the Kunene River Basin	600 000	0	0	0	0	600 000	Water Security Assessment (consultancy) at $200,000 lump sum (FAO and PJTC)	450 000			150 000
1.1.1.2 Undertake ecosystems goods and services quantification and valuation	350 000	0	0	0	0	350 000	Ecosystem Goods and Services Study at $150,000 lump sum	187 500	-	-	162 500
1.1.2.1 Develop a basin-wide gender-inclusive Disaster Risk Reduction Plan focused on EbA	400 000	156 048	0	0	0	556 048	DRR plan at 400,000 lump sums	417 036			139 012
1.2.1.1 Facilitate engagement and co-planning of the KRB by its stakeholders	40 000	40 000	40 000	40 000	40 000	200 000	1 KRB stakeholder workshop per year, $10,000/workshop x 5 years. 2 in first year	150 000			50 000
1.2.1.2 Facilitate development of a Free, Prior and Informed Consent (FPIC) Plan	300 000	0	0	0	0	300 000	Lump sum	300 000			
1.2.1.3 Facilitate dialogue between beneficiary gender and ethnic subgroups through Scenario Planning	20 000	20 000	20 000	20 000	20 000	100 000	1 community-level dialogue building meeting per year (5 meetings X $10,000/meeting) for two countries	100 000			
Total Component 1	**1 630 000**	**236 048**	**80 000**	**80 000**	**80 000**	**2 106 048**		1 604 536	0	0	501 512
Component 2: Implementation of a satellite-based Multi-Hazard Early Warning System for the Kunene River Basin (KRB: MH-EWS)											
2.1.1.1 Install 24 automatic weather stations (20 in Angola and 4 in Namibia) across the Kunene River Basin, in collaboration with the national meteorological agencies	176 000	538 000	538 000	428 000	60 000	1 740 000	Siting of 24 weather stations at $3,000 per station; Procurement, installation and fencing of 24 automatic weather stations at $52,000/station; O&M costs at $3,000 per station		580 000	1 160 000	

2.1.2.1 Install 32 hydrometric stations (23 in Angola, 6 in Namibia) along the Kunene River, in collaboration with the national hydrological agencies	224 000	308 000	252 000	112 000	0	896 000	Siting of 32 hydrometric stations at $3000 per station, installation and fencing at $22,000 per station, O&M costs $3,000 per station		224 000	672 000	
2.2.1.1 Design multi-hazard EWS in consultation with beneficiary communities	40 000	40 000	0	0	0	80 000	2 technical level KRB: MH-EWS workshops X $10,000/workshop; 2 community level KRB: MH-EWS workshops X $10,000/workshop	80 000			
2.2.2.1 Identify and select providers of suitable data platform and user interface for MH-EWS	0	230 000	80 000	80 000	80 000	470 000	Procurement of software and licensing fees for Big Data Analytics platform and user interface for EWS data = $40,000/year X 4 years (from Year 2 onwards); Procurement of servers, computers, and display units for forecasting centres = $75,000, in Year 2	470 000			
2.2.3.1 Operationalise a multi-hazard early warning system for the Kunene River Basin	0	60 000	60 000	60 000	60 000	240 000	Fees payable to mobile telecommunications companies for meteorological and hydrological data transmission and dissemination of forecasts and warnings = $ 30,000 per year, from Year 2	240 000			
2.2.4.1 Support meteorological agencies to simplify, translate and disseminate seasonal, weekly, and daily weather alerts in local languages spoken in the KRB	40 000	40 000	40 000	40 000	40 000	200 000	Annual training on simplification and interpretation of weather information, for meteorologists and broadcasters, at $20,000 per training course	200 000			
~~Subtotal~~ Total **for Component 2**	**480 000**	**1 216 000**	**970 000**	**720 000**	**240 000**	**3 626 000**		**990 000**	**804 000**	**1 832 000**	**0**
Component 3: Inclusive community-based adaptation actions are co-designed and implemented											
3.1.1.1 Rehabilitate existing 20 earth / sand dams (10 per country)	400 000	400 000	400 000	400 000	400 000	2 000 000	Rehabilitate and expand 20 earth dams at $50,000/dam		1 000 000	1 000 000	
3.1.1.2 Construct 20 new rainwater retention ponds	240 000	240 000	240 000	240 000	240 000	1 200 000	Excavate 20 retention ponds at $30,000/pond		600 000	600 000	
3.1.1.3 Install rooftop rainwater harvesting systems on public	200 000	200 000	200 000	200 000	200 000	1 000 000	Install 20 rooftop rainwater harvesting systems at $10,000 each		500 000	500 000	

buildings for community use											
3.1.2.1 Rehabilitate 180 existing boreholes for vegetable gardens and domestic use (30 per country)	900 000	900 000	900 000	900 000	900 000	4 500 000	Impact assessment for borehole rehabilitation at $15,000; rehabilitation of 180 boreholes at $24,000 each, O&M costs $500 per borehole		2 250 000	2 250 000	
3.1.3.1 Promote drought-tolerant food crop varieties	0	90 000	90 000	120 000	120 000	420 000	Seeds $52,500; Tools/equipment: $31,500, Training: $31,500, Demonstrations plots: $31,500, Nursery production? 21,000; Extension support $21,000. Support and Monitoring $21,000		210 000	210 000	
3.1.3.2 Provide training and labour-saving devices for conservation agriculture	20 000	120 000	120 000	120 000	0	380 000	Training workshops for women on conservation agriculture and labour-saving agricultural technologies, 2 workshops per country at $5,000/workshop; Procure and distribute labour saving technologies (jab planters, manual seeders, and rippers) for conservation agriculture by female-headed households at $180,000	380 000			
3.1.4.1 Promote drought-tolerant food crop varieties	600 000	600 000	400 000	400 000	400 000	2 400 000	Establish 20 Farmer Field Schools (10 in each country) for drought-tolerant crop production, set-up costs at $30,000/FFS, and $20,000 per FFS per year for training and inputs from year 3	2 400 000			

3.1.5.1 Create nurseries for drought-resistant fodder crops, adjacent to the water retention ponds	80 000	80 000	80 000	80 000	80 000	400 000	Purchase and distribute seed for drought resistant non-invasive fodder at $150,000; Provide leadership training for women in community rangeland management committees: 5 training workshops at $5,000/workshop		200 000	200 000	
3.1.5.2 Identify and secure 20,000 hectares of land for rangeland restoration (10,000 ha per country)	20 000	250 000	250 000	10 000	10 000	540 000	Land surveying and mapping for rangeland restoration, four 5km*5km plots at $10,000; Fencing of selected areas (80km of fencing at $3,000 per km) to allow rangeland to recover and planted fodder crops to grow to maturity, transplanting of forage crops from nurseries at $5,000 per year from Year 2		270 000	270 000	
3.1.5.3 Establish multipurpose tree plantations to be owned and managed by women's groups (1,000 ha per country)	40 000	100 000	100 000	100 000	100 000	440 000	Hold dialogue workshops on securing land rights for women at $10,000 x 2 workshops; tree nurseries for women's groups established adjacent to retention ponds: 10 nurseries at $5,000/nursery, secure 1,000 hectares of communal land for plantations at $150 per hectare	440 000			
3.2.1.1 Convene quarterly development partners meetings in the project area	8 000	8 000	8 000	8 000	8 000	40 000	Quarterly development partners meetings $1000/meeting X 5 years	40 000			
~~Subtotal~~ Total **for Component 3**	**2 508 000**	**2 988 000**	**2 788 000**	**2 578 000**	**2 458 000**	**13 320 000**	**0**	**3 260 000**	**5 030 000**	**5 030 000**	
Component 4: Raise awareness and improve knowledge on climate change adaptation in the Kunene River ecosystem											
4.1.1.1 Raise awareness and build capacity on locally led gender-responsive adaptation	40 000	40 000	40 000	40 000	40 000	200 000	Training of community development facilitators at $5,000/year X 5 years; Annual awareness campaigns, 5 campaigns at $15,000/campaign	200 000			

4.1.1.2 Provision of nutrition, literacy, and GALS training, to enhance community adaptive capacity	72 000	72 000	72 000	72 000	72 000	360 000	Nutrition education at $12,000/year X 5 years; Literacy classes targeting women and gender subgroups = $12,000/year X 5 years; Community Gender Action Learning System (GALS) approach training = $12,000/year X 5 years	360 000			
4.1.2.1 Reactivating and updating the online Kunene River Assessment Toolkit	25 000	25 000	25 000	25 000	25 000	125 000	Lump sum for annual web portal licensing and updating of the data - joint activity between the two countries with each country to contribute an equal amount		62 500	62 500	
4.1.3.1 Develop case studies on EbA DRR planning, MH-EWS, integration of scientific and indigenous knowledge in climate change adaptation, and locally led gender-responsive adaptation; and use them in awareness campaigns	30 000	30 000	30 000	30 000	30 000	150 000	Development and dissemination of case studies in different media formats (print, audio, video), lump sum of $15,000 per year	150 000			
4.2.1.1 Institutional capacity building for effective management of climate change adaptation initiatives	40 000	40 000	40 000	40 000	40 000	200 000	20 Tailored training workshops to build institutional capacity (1 workshop per half-year in each country, including cost of training material development) at $10,000 per workshop	200 000			
~~Subtotal for~~Total **Component 4**	**207 000**	**207 000**	**207 000**	**207 000**	**207 000**	**1 035 000**		**910 000**	**62 500**	**62 500**	
Project activity costs	**4 825 000**	**4 647 048**	**4 045 000**	**3 585 000**	**2 985 000**	**20 087 048**		**6 839 536**	**5 896 500**	**6 924 500**	**426 512**
Execution costs	**669 568**	**390 582**	**390 582**	**390 581**	**390 581**	**2 231 894**					
Total Project costs	**5 494 568**	**5 037 630**	**4 435 582**	**3 975 581**	**3 375 581**	**22 318 942**					
Operational and Financial Management	**89 276**	**89 276**	**89 276**	**89 276**	**89 275**	**446 379**	General financial oversight, support audits and quality control, manage, monitor and track AF funding including allocating and monitoring expenditure based on agreed work plans; financial management compliance with AF requirements; financial reporting compliance with AF standards;				

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							procurement support and compliance with Government procurement rules.				
Project Development and implementation support	209 799	209 799	209 797	209 797	209 798	1 048 990	Technical support in project implementation; methodologies, identification of experts; troubleshooting and support implementation missions as necessary; portfolio management, reporting; outreach and knowledge sharing; Independent Environmental and Social Audits; and implementation support services.				
Technical support and supervision	147 305	147 305	147 305	147 305	147 305	736 525	Supervision missions and implementation support, risk management, programming; guidance in establishing performance measurement processes; technical support on methodologies, TOR validation, identification of experts, results validation, and quality assurance; troubleshooting, and support evaluation missions as necessary; support on technical issues in programme implementation; Project completion and evaluation oversight: Baseline Data Report, Mid-Tem Evaluation (MTE) and Final Evaluation[39]				
Total IE Fees	**446 380**	**446 380**	**446 378**	**446 378**	**446 378**	**2 231 894**					
Total Project costs	**5 940,948**	**5 484,010**	**4 881 960**	**4 421 959**	**3 821 959**	**24 550 836**					

Executing Entities do not charge a management fee; their costs are budgeted as implementation and execution expenditures under the relevant project components, in line with Adaptation Fund policies.

[39] Information on how the IE fee will be utilized in the project evaluations is provided in table 21

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Table 29: Project Execution Budget (all figures in USD)

Institution	Accounts Description	Description of activity	No	Unit	Qty/ Yr1	Qty/ Yr2	Qty/ Yr3	Qty/ Yr4	Qty/ Yr5	Total Qty	Cost/Unit	Total Costs	FAO	GoN	GoA	PJTC
Government of Angola	Government Seconded PMU/NIT staff	Government seconded PMU/NIT staff for coordination	1	Month	12	12	12	12	12	6048	1 2801,600	76,800	0	0	76,800	0
Government of Namibia	Government Seconded PMU/NIT staff	Government seconded PMU/NIT staff for coordination	1	Month	12	12	12	12	12	6048	1 2801,600	76,800	0	76,800	0	0
PJTC	Regional Focal Point	Regional coordination support	1	Month	12	12	12	12	12	6048	1 2801,600	76,800	0	0	0	76,800
FAO	Staff-Regional	Senior Programme Manager / oversight	1	Month	3	3	3	3	3	1512	12 00015,000	180,000	180,000	0	0	0
FAO	Staff-Regional	Regional Coordination / M&E Technical Focal Point	1	Month	12	12	12	12	12	6048	6 4008,000	384,000	384,000	0	0	0
FAO	Staff-Regional	Gender & Indigenous Peoples Specialist	1	Month	8	8	8	8	8	4032	4 0005,000	160,000	160,000	0	0	0
FAO	Staff-National	National Project Officers (coordination)	2	Month	24	24	24	24	24	12096	2 9603,700	355,200	355,200	0	0	0
FAO	Staff	Project administration support	1	Month	12	12	12	12	12	6048	1 6002,000	96,000	96,000	0		0
FAO	Driver	Project supervision travel	1	Month	12	12	12	12	12	6042	8401,200	50,400	50,400	0	0	0
Governments/ FAO/PJTC	Travel	Management and supervision travel	1	Lumpsum	1	1	1	1	1	5	24,000	120,000	36,000	36,000	36,000	12,000
Governments/ FAO/PJTC	Operating expenses	Internet airtime stationery	1	Lumpsum	1	1	1	1	1	5	12,000	60,000	18,000	18,000	18,000	6,000
Governments/ PJTC/FAO	Audit	Annual audit costs	1	Lumpsum	1	1	1	1	1	5	20,000	100,000	0	50,000	50,000	0
FAO	Financial systems	Accounting software (Year 1)	1	Lumpsum	1	0	0	0	0	1	25,894	25,894	0	12,947	12,947	0
FAO	Reporting	AF reporting costs	1	Lumpsum	1	1	1	1	1	5	15,000	75,000	75,000	0	0	0
FAO	Operating	Rent and security	1	Lumpsum	1	1	1	1	1	5	15,000	75,000	75,000	0	0	0
FAO	Inception	Project inception	1	Lumpsum	1	0	0	0	0	1	50,000	50,000	50,000	0	0	0
FAO	M&E	Project-level M&E	1	Lumpsum	1	1	1	1	1	5	30,000	150,000	150,000	0	0	0
FAO	Evaluation	Mid-term and terminal evaluation	1	Lumpsum	0	0	1	1	1	3	40,000	120,000	120,000	0	0	0
	Total execution costs											2,231,894	1,749,600	193,747	193,747	94,800

Note: Project execution costs are calculated exclusively on the Adaptation Fund grant amount and are capped at 10% in accordance with Adaptation Fund policy. Costs related to implementation of project activities are reflected under the relevant component budgets.

H. Disbursement Schedule

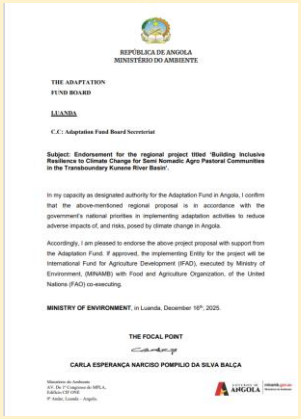
Table 30: Project Disbursement schedule (all figures in USD)

	Upon signature of Agreement	One Year after Project Start a)	Year 2b)	Year 3	Year 4 c)	Total
Scheduled Date	**Nov 2026**	**May 2028**	**May 2029**	**May 2030**	**May 2031**	**Total**
Project Funds	5 494 568	5 037 630	4 435 582	3 975 581	3 375 581	22 318 942
Implementing Entity Fees	446 380	446 380	446 378	446 378	446 378	2 231 894
Total	5 940 948	5 484 010	4 881 960	4 421 959	3 821 959	24 550 836

PART IV: ANNEXES

Annex 1. Country Endorsements and Implementing Entity Certification

Record of endorsement on behalf of the governments

Namibia: Mr Teofilus Nghitila Executive Director Ministry of Environment, Forestry and Tourism, Namibia	Date:11/07/2025  REPUBLIC OF NAMIBIA MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM To: The Adaptation Fund Board c/o Adaptation Fund Board Secretariat Email: Secretariat@Adaptation-Fund.org Fax: 202 522 3240/5 **Subject: Endorsement for the regional project titled 'Building Inclusive Resilience to Climate Change for Semi Nomadic Agro Pastoral Communities in the Transboundary Kunene River Basin'** In my capacity as designated authority for the Adaptation Fund in Namibia, I confirm that the above-mentioned regional proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Namibia. Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the Implementing Entity for the project will be the International Fund for Agricultural Development (IFAD), and it will be executed by the Ministry of Environment, Forestry and Tourism, with the Food and Agriculture Organization of the United Nations (FAO) serving as a co-executing partner. Sincerely, Executive Director "Stop the poaching of our rhinos"
Angola: Mrs Carla Esperança Narciso Pompilio da Silva Balça Senior Climate Change Specialist Ministry of Environment, Angola	Date 12/16/2025  REPÚBLICA DE ANGOLA MINISTÉRIO DO AMBIENTE THE ADAPTATION FUND BOARD LUANDA C.C: Adaptation Fund Board Secretariat **Subject: Endorsement for the regional project titled 'Building Inclusive Resilience to Climate Change for Semi Nomadic Agro Pastoral Communities in the Transboundary Kunene River Basin'.** In my capacity as designated authority for the Adaptation Fund in Angola, I confirm that the above-mentioned regional proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Angola. Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the Implementing Entity for the project will be International Fund for Agriculture Development (IFAD), executed by Ministry of Environment, (MINAMB) with Food and Agriculture Organization, of the United Nations (FAO) co-executing. **MINISTRY OF ENVIRONMENT**, in Luanda, December 16th, 2025. THE FOCAL POINT CARLA ESPERANÇA NARCISO POMPILIO DA SILVA BALÇA

Implementing Entity Certification

REPÚBLICA DE ANGOLA
MINISTÉRIO DO AMBIENTE

THE ABAPTATION
FUND BOARD

LUANDA

C.C: Adaptation Fund Board Secretariat

Subject: Endorsement for the regional project titled 'Building Inclusive Resilience to Climate Change for Semi Nomadic Agro Pastoral Communities in the Transboundary Kunene River Basin'.

In my capacity as designated authority for the Adaptation Fund in Angola, I confirm that the above-mentioned regional proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Angola.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the implementing Entity for the project will be International Fund for Agriculture Development (IFAD), executed by Ministry of Environment, (MINAMB) with Food and Agriculture Organization, of the United Nations (FAO) co-executing.

MINISTRY OF ENVIRONMENT, in Luanda, December 16th, 2025.

THE FOCAL POINT

CARLA ESPERANÇA NARCISO POMPILIO DA SILVA BALÇA

Ministério do Ambiente
Av. Dr. António de Agostinho Neto
Edifício CIF-ONE
4º Andar, Luanda - Angola

REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

Tel: [illegible]
Fax: [illegible]

Email: [illegible]
Enquiries: [illegible]

Cnr Robert Mugabe &
Dr Kenneth Kaunda Street
Private Bag 13306
Windhoek
Namibia

05 November 2025

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for the regional project titled 'Building Inclusive Resilience to Climate Change for Semi Nomadic Agro Pastoral Communities in the Transboundary Kunene River Basin'

In my capacity as designated authority for the Adaptation Fund in Namibia, I confirm that the above-mentioned regional proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Namibia.

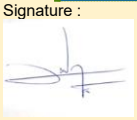
Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the Implementing Entity for the project will be the International Fund for Agricultural Development (IFAD), and it will be executed by the Ministry of Environment, Forestry and Tourism, with the Food and Agriculture Organization of the United Nations (FAO) serving as a co-executing partner.

Sincerely,

17 NOV 2025
REPUBLIC OF NAMIBIA

Sikongo Haihambo
Executive Director

"Stop the poaching of our rhinos"

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans Angola and Namibia and subject to the approval by the Adaptation Fund Board, commit to implementing the project in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project.	
Implementing Entity Co-Ordinator: Mr. Pierre Yves Guedez, Lead, Multilateral Climate and Environmental Funds ECG Division, IFAD	Email : p.guedez@ifad.org Signature : 
Director Juan Carlos Mendoza Casadiegos Director Environment, Climate, Gender, and Social Inclusion Division **Date: (20.01.2025)**	email: ecgmailbox@ifad.org
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Field Code Changed

Field Code Changed

5. Annex 2: Climate Risk Analysis

Overview

The KRB, a vital transboundary water resource straddling the border between Angola and Namibia, stands at the forefront of climate change vulnerability in southwestern Africa. This expansive watershed, covering approximately 106,500 km², plays a crucial role in the socio-economic fabric of both nations, supporting diverse ecosystems, agricultural practices, and energy production. The basin spans multiple climatic zones, from the humid highlands of Angola to the arid regions of northern Namibia, creating complex interdependencies more frequently affected by adverse impacts of climate change, particularly the devastating droughts that are lasting for longer periods.
The transboundary nature of the Kunene Basin adds an additional layer of complexity to the climate change equation with the potential for both conflict and cooperation between Angola and Namibia in the face of shared climate risks.
The KRB covers approximately 106,500 km², characterized by distinct geographical zones, each with its own climatic regime, ecological characteristics, and socio-economic dynamics in a unique geographical configuration that both determines its hydrological profile and influences the lives and livelihoods of the communities that depend on its waters and forms a natural border between Angola and Namibia, draining into the Atlantic Ocean.
The upper reaches of the Kunene Basin are located in the Angolan highlands, characterized by a humid subtropical climate with elevations ranging from 1,700 to 2,300 meters above sea level, are markedly different from the rest of the basin, receiving the highest rainfall in the entire with annual precipitation that averages between 1,000 to 1,500 mm, with some areas receiving up to 1,800 mm in particularly wet years (Mendelsohn et al., 2013) thus forms a natural water tower for the entire watershed. This abundant rainfall is largely attributed to the orographic effect of the highlands, which force moisture-laden air from the Atlantic to rise, cool, and precipitate.

The upper basin's generous rainfall regime supports a diverse array of ecosystems, including montane forests, grasslands, and wetlands that harbor rich biodiversity while regulating the basin's hydrology. The dense vegetation and soil structures in this region act as natural sponges, absorbing rainfall and releasing it gradually, thereby moderating flow regimes downstream.

Agriculturally, the upper basin has a combination of fertile soils, abundant rainfall, and moderate temperatures, creating ideal conditions for a variety of crops, including maize, beans, and vegetables. Smallholder farming dominates the agricultural landscape, with many communities relying on rain-fed agriculture for their livelihoods. Challenges in the upper basin include deforestation, driven by agricultural expansion and demand for fuel wood, which threatens the region's ecological balance that when coupled with climate change projections indicating potential shifts in rainfall patterns, poses significant risks to the long-term hydrological stability of the entire Kunene system.

As the Kunene River descends from the Angolan highlands, it enters a transitional zone that marks the middle basin straddling the border between Angola and Namibia, characterized by a semi-arid climate, dominated by savanna ecosystems, interspersed with patches of dry forests and shrublands. Annual rainfall in this zone ranges from 600 to 800 mm, showcasing a clear precipitation gradient as one move southward (CRIDF, 2020). This transitional climate supports a unique blend of flora and fauna adapted to semi-arid conditions.

One of the most notable features of the middle basin is the Ruacana Falls, with a drop of 120 meters, providing the basis for the Ruacana Hydroelectric Power Station with an installed capacity of 347 MW as the key pillar of Namibia's energy infrastructure, (NamPower, 2022).

The middle basin also marks the beginning of more intensive water management and utilization. Several smalls to medium-sized dams and irrigation schemes are in this zone, supporting agricultural activities on both sides of the border. These infrastructures, while crucial for local economies, also introduce complexities in terms of water allocation and management between Angola and Namibia.

From an ecological perspective, the middle basin serves as a vital corridor for various species, facilitating movement between the more humid upper basin and the arid lower reaches. This ecological connectivity is increasingly threatened by habitat fragmentation due to human activities and climate-induced shifts in vegetation patterns.

The semi-arid conditions of the middle basin make it particularly sensitive to climate variability. Even slight changes in temperature and precipitation can have significant impacts on water availability, ecosystem health, and human activities. As such, this transitional zone may serve as an early indicator of broader climate change impacts in the Kunene Basin.

The lower reaches flow through Namibia's Kunene region, an arid landscape extending from the Namibian border to the river's mouth at the Atlantic Ocean. Annual rainfall in this region is both low and erratic, averaging less than 300 mm per year, with some areas receiving as little as 50 mm in dry years. This scarcity of rainfall is compounded by high evaporation rates, often exceeding 2,000 mm annually, creating a significant water deficit. (Namibia Statistics Agency, 2021).

The landscape of the lower basin is dominated by arid savanna and desert ecosystems. Vegetation is sparse and adapted to water scarcity, with species such as Mopane trees (*Colophospermum mopane)* and various drought-resistant grasses and shrubs dominating the flora. Despite its aridity, this region supports a unique array of desert-adapted wildlife, including species like the desert elephant and black rhino, making it an area of high conservation value.

Human settlements in the lower basin are sparse and primarily concentrated along the river course. The indigenous Himba people, known for their resilience and traditional pastoralist lifestyle, have inhabited this harsh environment with their livelihoods, centered around livestock herding, intrinsically tied to the river and highly vulnerable to climate fluctuations.

The Kunene River in this lower zone provides the only permanent source of surface water for both human needs and wildlife in an otherwise parched region. The river's flow in this lower section is highly dependent on upstream dynamics and management decisions, making it particularly susceptible to both climate change impacts and human interventions in the upper and middle basin.

Water management in the lower basin focuses primarily on small-scale irrigation schemes and water supply for domestic and livestock use. The harsh conditions limit large-scale agricultural activities, but small areas of cultivation exist along the riverbanks. Additionally, the potential for further hydropower development in this section of the river has been explored, though environmental concerns and the need to maintain adequate flow for downstream ecosystems have tempered these ambitions.

The lower basin also encompasses the Kunene River mouth to the Atlantic Ocean, an estuarine environment which while small in extent plays a crucial ecological role, supporting unique brackish water ecosystems and serving as an important habitat for migratory birds. The health of this estuarine system is linked to upstream water quantity and quality, making it a sensitive indicator of overall basin health.

The aridity of the lower basin magnifies its vulnerability to climate change. Even small reductions in river flow or increases in temperature could have profound impacts on both ecosystems and human communities in this zone. As such, understanding and addressing the specific vulnerabilities of the lower basin is crucial for any comprehensive climate change adaptation strategy for the Kunene system.

Each of these geographical zones – upper, middle, and lower basin – has its distinct characteristics, that function as part of an interconnected system with complex interactions that determine the health and resilience of the entire Kunene Basin:

Hydrological Connectivity: The abundant rainfall in the upper basin is the primary source of water for the entire system. Changes in precipitation patterns or land use in the Angolan highlands can have far-reaching consequences downstream.

Sediment Transport: The river's flow carries sediments from the upper basin, which play a crucial role in nutrient cycling and maintaining the geomorphology of the middle and lower basin.
Ecological Gradients: The basin's diverse ecosystems, from montane forests to desert landscapes, form a continuous ecological gradient that supports unique biodiversity and enables species migration in response to climatic shifts.
Socio-economic Links: Human activities, including agriculture, energy production, and water consumption, create a web of socio-economic interdependencies across the basin. Management decisions in one zone can significantly impact livelihoods and development opportunities in others.
Climate Change Cascade: Climate impacts in one zone can trigger a cascade of effects throughout the basin. For instance, reduced rainfall in the upper basin could exacerbate water scarcity issues in the already arid lower basin.
Understanding these interdependencies is crucial for effective basin management and adaptation of climate change, which underscores the need for a basin-wide approach to addressing the challenges posed by climate change, rather than focusing on individual zones in isolation.

2. Climate Change Projections for the Kunene Basin

2.1 Temperature Changes

The Kunene Basin, like much of Southern Africa, is projected to experience significant warming over the coming decades. The magnitude of this warming, however, is not uniform across the basin and varies depending on the climate scenario considered.
According to the IPCC Sixth Assessment Report (2021), under a medium emissions scenario (SSP2-4.5), the mean annual temperature in the Kunene Basin region is projected to increase by 1.5°C to 3°C. This range accounts for variations across different parts of the basin, with higher increases expected in the interior (middle and lower basin) compared to coastal areas near the river mouth.
More specifically:
Upper Basin (Angola): Projections indicate a temperature increase of 1.5°C to 2.5°C. The slightly lower increase compared to other parts of the basin is attributed to the moderating effect of higher elevations and greater cloud cover in this region.
Middle Basin (Angola-Namibia border): This transitional zone is expected to see temperature rises of 2°C to 2.8°C. The semi-arid nature of this region makes it particularly susceptible to temperature increases.
Lower Basin (Namibia): The most significant warming is projected for the arid lower basin, with temperature increases of 2.5°C to 3°C. This substantial warming in an already hot and dry region could have severe implications for ecosystems and human activities.
These projections represent mean annual temperatures. Seasonal variations are expected to be more pronounced, with summer temperatures likely to increase more than winter temperatures. The number of hot days (days with maximum temperature above 35°C) in the lower basin is projected to increase by 20-30 days per year (World Bank Climate Change Knowledge Portal, 2021).
Furthermore, temperature extremes are expected to become more frequent and intense. Heat waves, defined as periods of abnormally high temperatures lasting several days, are projected to occur 2-3 times more frequently compared to the historical average (1981-2010) across the entire basin (CORDEX Africa Simulations, 2022).
The rate of warming is not linear, and there is potential for accelerated warming beyond 2063 if global emissions are not significantly reduced. Some models project that under a high emissions scenario (SSP5-8.5), temperatures in the Kunene Basin could increase by up to 4°C to 5°C by the end of the century (2100), highlighting the long-term risks if mitigation efforts are insufficient (IPCC, 2021).
These temperature increases have far-reaching implications for the Kunene Basin:
Increased Evapotranspiration: Higher temperatures will lead to increased evaporation from water bodies and greater transpiration from plants. This could exacerbate water scarcity, particularly in the middle and lower basin.
Shifts in Vegetation Patterns: Warmer temperatures may cause shifts in plant species distribution, potentially altering ecosystem compositions and agricultural suitability across the basin.
Heat Stress on Agriculture: Crop yields, particularly for staples like maize, may decrease due to heat stress. Livestock in the middle and lower basin will face increased heat-related challenges.
Human Health Impacts: More frequent and intense heat waves pose significant health risks, especially for vulnerable populations in urban areas and those engaged in outdoor labor.
Energy Demand: Rising temperatures are likely to increase energy demand for cooling, particularly in urban areas, straining existing power infrastructure.

2.2 Precipitation Changes

Projections for precipitation changes in the Kunene Basin are characterized by greater uncertainty compared to temperature projections. This uncertainty stems from the complex interactions between large-scale climate systems, local topography, and land-use changes. Nevertheless, most climate models indicate a general trend towards drier conditions across the basin, with significant spatial and temporal variability.
According to the IPCC Sixth Assessment Report (2021) and regional climate studies, the Kunene Basin is projected to experience the following precipitation changes:

Overall Trend: Models project a decrease in annual precipitation of 5-10% across the basin, compared to the 1981-2010 baseline period. However, this average mask significant variability across different parts of the basin and between seasons.
Upper Basin (Angola): Projections for the upper basin show the highest variability, with some models suggesting a slight increase in precipitation (up to 5%) while others project decreases of up to 10%. This uncertainty is partly due to the complex topography of the Angolan highlands and their interaction with large-scale climate systems like the Intertropical Convergence Zone (ITCZ).
Middle Basin (Angola-Namibia border): This transitional zone is likely to see a more consistent decrease in annual precipitation, with projections ranging from 5% to 15% reduction. The semi-arid nature of this region makes it particularly vulnerable to rainfall reductions.
Lower Basin (Namibia): The most pronounced decreases are projected for the already arid lower basin, with models suggesting 10% to 20% reduction in the meagre annual rainfall with severe implications for an area already characterized by water scarcity.
Seasonal Changes: The distribution of rainfall throughout the year is also expected to change, potentially more dramatically than annual totals:
Wet Season (October to April): Models project a delayed onset and earlier cessation of the wet season, effectively shortening its duration. The core of the wet season (December to February) may see more intense but less frequent rainfall events.
Dry Season (May to September): The dry season is expected to become more prolonged and intense, with some models projecting up to a 30% decrease in the already limited dry season precipitation in the middle and lower basin (CORDEX Africa Simulations, 2022).
Extreme Precipitation Events: Despite the overall drying trend, the intensity of extreme precipitation events is projected to increase:
Heavy Rainfall: The frequency of heavy rainfall events (defined as daily precipitation exceeding the 95th percentile of the historical distribution) is projected to increase by 10-20% across the basin, with the upper basin seeing the largest increase (World Bank Climate Change Knowledge Portal, 2021).
Dry Spells: The duration of dry spells, particularly in the middle and lower basin, is projected to increase., the average maximum length of dry spells could increase by 5-10 days annually (Angola Third National Communication to the UNFCCC, 2023).
Interannual Variability: Climate change is expected to amplify the interannual variability of precipitation in the Kunene Basin. This means that the difference between wet years and dry years is likely to become more pronounced, challenging water resource management and agricultural planning.
El Niño Southern Oscillation (ENSO) Impact: The influence of ENSO events on regional precipitation patterns is expected to intensify. Strong El Niño events, which typically bring drier conditions to Southern Africa, may lead to more severe and prolonged droughts in the Kunene Basin (SADC Climate Services Centre, 2022).
The projected changes in precipitation patterns have far-reaching implications for the Kunene Basin:
Water Resource Management: Reduced and more variable precipitation will challenge existing water management strategies, potentially leading to conflicts over water allocation between different sectors and between upstream and downstream users.
Agricultural Productivity: Changes in rainfall patterns, particularly the shortening of the growing season and increased frequency of dry spells, will significantly impact rain-fed agriculture, which is prevalent in the upper and middle basin.
Ecosystem Health: Altered precipitation regimes may lead to shifts in vegetation types and biodiversity patterns across the basin, potentially threatening endemic species and ecosystem services.
Flood and Drought Risk: While overall precipitation is projected to decrease, the increased intensity of extreme rainfall events coupled with prolonged dry periods may exacerbate both flood and drought risks.
Hydropower Generation: Changes in precipitation patterns, particularly in the upper basin, will directly impact river flow regimes, potentially affecting hydropower generation at facilities like the Ruacana Power Station.
Groundwater Recharge: Reduced precipitation, coupled with increased evaporation rates, may negatively impact groundwater recharge, particularly in the middle and lower basin where groundwater is a critical resource for many communities.
Soil Erosion: More intense rainfall events, especially following prolonged dry periods, may increase soil erosion rates, affecting agricultural productivity and sedimentation in water bodies.

2.3 Extreme Events

Climate change is expected to not only shift average conditions but also significantly alter the frequency, intensity, and duration of extreme weather events in the Kunene Basin. These changes in extremes often have more immediate and severe impacts on ecosystems and human societies than gradual shifts in average conditions.
Droughts: The Kunene Basin, particularly its middle and lower reaches, is projected to face an increased risk of severe and prolonged droughts:
Frequency: the frequency of meteorological droughts (periods of abnormally low rainfall) is projected to increase by 20-30% compared to the historical average (1981-2010) (World Bank Climate Change Knowledge Portal, 2021).
Duration: The average duration of drought events is expected to increase. Models suggest that drought periods could last 10-20% longer than historical averages (SADC Climate Services Centre, 2022).
Severity: The combination of higher temperatures, increased evapotranspiration, and more variable rainfall is likely to result in more severe agricultural and hydrological droughts. The Palmer Drought Severity Index (PDSI) for the lower basin is projected to decrease by 1-2 points on average, indicating substantially drier conditions (CRIDF, 2020).

Spatial Extent: While the entire basin will be affected, the middle and lower basin are projected to experience the most severe increases in drought risk., areas of the lower basin that historically experienced severe drought conditions once every 10 years may face such conditions once every 5-7 years (Namibia Second National Communication to the UNFCCC, 2022).
Floods: Despite the overall drying trend, the risk of flooding is also projected to increase due to more intense extreme rainfall events: Flash Floods: The frequency of flash floods, particularly in the upper and middle basin, is projected to increase by 15-25% due to more intense rainfall events (Angola Third National Communication to the UNFCCC, 2023).
River Flooding: While average river flows are expected to decrease, the risk of extreme flooding events may paradoxically increase. This is due to the projected increase in very heavy rainfall , coupled with potential land use changes (e.g., deforestation) that could reduce the landscape's capacity to absorb excess water.
Coastal Flooding: At the Kunene River mouth, the risk of coastal flooding is expected to increase due to the combination of more intense storm surges and sea-level rise 1-in-100-year coastal flood level is projected to increase by 0.3-0.5 meters (IPCC, 2021).
Heat Waves: As mentioned in the temperature section, heat waves are projected to become more frequent, intense, and longer-lasting: Frequency: the number of heat wave days (defined as days where maximum temperature exceeds the 90th percentile of the historical distribution for at least 3 consecutive days) is projected to increase by 30-50 days per year across the basin (CORDEX Africa Simulations, 2022).
Intensity: The maximum temperature during heat waves is projected to increase by 2-3°C above historical levels, with the most severe increases in the lower basin.
Duration: The average duration of heat wave events is expected to increase by 2-4 days compared to historical averages (World Bank Climate Change Knowledge Portal, 2021).
Dust Storms: In the arid lower basin, the combination of prolonged dry spells and land degradation is projected to increase the frequency and intensity of dust storms, the number of days with conditions favorable for dust storm formation is projected to increase by 15-25% compared to historical averages (Namibia National Climate Change Strategy and Action Plan, 2020).
Implications of Changes in Extreme Events: The projected changes in extreme events have significant implications for the Kunene Basin: Disaster Risk Management: Increased frequency and intensity of extreme events will strain existing disaster response and management systems, necessitating enhanced early warning systems and preparedness measures.
Infrastructure Resilience: Both flood and drought extremes will challenge the resilience of water management infrastructure, including dams, irrigation systems, and urban water supply networks.
Agricultural Volatility: More frequent and severe droughts, interspersed with flooding events, will increase the volatility of agricultural production, threatening food security and rural livelihoods.
Ecosystem Stress: Extreme events can cause rapid and sometimes irreversible changes to ecosystems, potentially leading to biodiversity loss and altered ecosystem services.
Human Health: Heat waves and flood events pose direct health risks, while droughts can indirectly affect health through impacts on food security and water quality.
Economic Impacts: The increased frequency of extreme events is likely to result in higher economic losses, both from direct damage and from the need for increased investment in resilience and adaptation measures.
Migration Pressures: Severe and recurring extreme events, particularly in the more vulnerable middle and lower basin, may contribute to increased rural-to-urban migration or cross-border movements.
Transboundary Cooperation: Managing the impacts of extreme events, particularly floods and droughts, will require enhanced cooperation between Angola and Namibia in areas such as early warning systems, disaster response, and water allocation during crisis periods. These projections underscore the urgent need for robust climate change adaptation strategies in the Kunene Basin. While the exact magnitude and timing of these changes remain subject to some uncertainty, the overall trends point clearly towards a future characterized by greater climatic stress and variability.

Sector-Specific Vulnerabilities

The projected climate changes in the KRB will have far-reaching impacts across various sectors. This section provides an in-depth analysis of how climate change is expected to affect key sectors within the basin, considering the unique characteristics of each geographical zone and the interdependencies between sectors.

2.4 Water Resources

The water resources of the KRB are central to its ecological health, economic productivity, and social well-being. Climate change poses significant threats to this vital resource, with cascading effects across all sectors.

a) Reduced River Flow:

The combination of increased temperatures and altered precipitation patterns is projected to significantly impact river flow regimes: Projections indicate a potential decrease in annual river flow by 20-30% by 2050, with this trend likely to continue or worsen (CRIDF, 2020). This reduction will be most pronounced in the middle and lower basin, exacerbating existing water scarcity issues in northern

Namibia. Seasonal flow patterns are expected to change dramatically. The WEAP (Water Evaluation and Planning) model simulations for the Kunene Basin suggest that: Wet season (October to April) flows may decrease by 15-25%

Dry season (May to September) flows could see reductions of up to 40-50% in extreme years (Angola National Adaptation Project of Action, 2021) Low flow periods are projected to become more prolonged and severe. The number of days per year when river flow falls below critical ecological thresholds could increase by 30-45%, particularly affecting the middle and lower reaches of the river (World Bank Climate Change Knowledge Portal, 2021).

These changes in flow regimes will have significant implications for water availability, ecosystem health, and economic activities dependent on the river, such as agriculture and hydropower generation.

b) Increased Variability:

Climate change is expected to amplify the natural variability of the Kunene River's flow:

Interannual variability in river flow is projected to increase by 25-35% compared to historical averages (1981-2010) (Angola Third National Communication to the UNFCCC, 2023). This increased variability will complicate water resource planning and management.

The frequency of extreme high flow events may increase despite the overall drying trend. Hydrological modelling suggests that the magnitude of the 1-in-50-year flood event could increase by 10-15% compared to historical levels (SADC Climate Services Centre, 2022).

This heightened variability poses challenges for water infrastructure design and operation. Existing dams and flood control structures may not be adequately sized to handle the projected range of flow conditions.

c) Groundwater Recharge:

Changes in precipitation patterns and increased evaporation rates are expected to impact groundwater resources:

In the upper basin, where rainfall is projected to decrease less dramatically, groundwater recharge rates may decrease by 10-20% (Angola National Adaptation Project of Action, 2021).

The middle and lower basins face more severe threats to groundwater resources. Models project potential reductions in recharge rates of 25-40% in these arid and semi-arid regions (Namibia National Climate Change Strategy and Action Plan, 2020).

Decreased groundwater recharge, combined with potentially increased extraction to compensate for surface water shortages, could lead to significant declines in water table levels. In some areas of the lower basin, water table declines of 0.5-1 meter per year are possible under severe climate scenarios (CRIDF, 2020).

The quality of groundwater may also be affected, with increased concentrations of dissolved solids due to reduced dilution and potentially increased seawater intrusion near the coast.

d) Water Quality:

Climate change is expected to have complex effects on water quality in the Kunene Basin:

Reduced river flows, particularly during dry seasons, will lead to higher concentrations of pollutants and nutrients, potentially increasing the risk of eutrophication in slower-moving sections of the river and in reservoirs.

More intense rainfall events could increase erosion, and sediment loads in the river, affecting water treatment processes and the lifespan of reservoirs. Sedimentation rates in major reservoirs could increase by 15-25% (Angola Third National Communication to the UNFCCC, 2023).

Higher water temperatures will likely reduce dissolved oxygen levels and alter aquatic ecosystems. Models suggest that average water temperatures in the Kunene River could increase by 1.5-2.5°C, potentially exceeding thermal tolerances for some native fish species (SADC Climate Services Centre, 2022).

In the lower basin, increased evaporation and reduced flows may lead to higher salinity levels, particularly in the estuarine areas near the river mouth.

e) Transboundary Water Management:

The transboundary nature of the Kunene River adds an additional layer of complexity to water resource management under climate change:

Reduced water availability may strain existing water-sharing agreements between Angola and Namibia. The 1969 agreement on water use in the Kunene River, which forms the basis for current transboundary water management, may need to be revised to account for climate change impacts (UNECE, 2021).

Changes in flow regimes will affect the operation of shared infrastructure, particularly the Ruhakana hydroelectric scheme. The scheme's firm's energy output could decrease by 15-25% due to reduced and more variable river flows (NamPower, 2022).

Increased variability in water availability may necessitate more frequent and complex negotiations between the two countries regarding water allocation, especially during drought periods.

There may be increased pressure for new water storage infrastructure to buffer against increased variability, which would require careful bilateral planning and agreement.

f) Ecosystem Impacts:

Changes in water resources will have profound effects on aquatic and riparian ecosystems:

Reduced dry seasonal flows may lead to the fragmentation of river habitats, threatening fish populations and other aquatic species. Some models project that, up to 30-40% of the river's length could experience critically low flows during peak dry seasons, potentially leading to localized extinctions of less mobile aquatic species (CRIDF, 2020).

Changes in flow regimes and water quality will likely alter the composition of aquatic communities. Cold-water species may be particularly vulnerable to warming river temperatures.

Wetland ecosystems, particularly in the lower basin and at the river mouth, face threats from reduced water availability and potential saline intrusion. The area of functional wetlands in the lower Kunene could decrease by 20-30% under severe climate scenarios (Ramsar Convention Secretariat, 2021).

g) Adaptation Challenges and Opportunities:

Adapting water resource management to these projected changes will require a multi-faceted approach:

Enhanced monitoring systems: Improving hydrological and meteorological monitoring networks throughout the basin will be crucial for adaptive management. Investments in real-time monitoring and forecasting systems could improve water management efficiency by 10-15% (World Bank, 2021).

Infrastructure upgrades: Existing water infrastructure may need to be retrofitted or redesigned to handle increased variability. New infrastructure, such as additional storage capacity or water transfer schemes, may be necessary but will require careful environmental and social impact assessments.

Demand management: Implementing water conservation measures and improving water use efficiency across all sectors will be essential. Studies suggest that aggressive demand management could reduce water consumption by 20-30% in urban areas and 15-25% in the agricultural sector (CRIDF, 2020).

EbA: Protecting and restoring natural ecosystems, particularly in the upper basin, can help regulate water flows and improve water quality. Reforestation and wetland restoration projects could enhance water retention and reduce erosion.

Transboundary cooperation: Strengthening mechanisms for joint water management between Angola and Namibia will be crucial. This may include developing shared early warning systems for floods and droughts and establishing flexible water allocation mechanisms that can adapt to changing conditions.

Alternative water sources: Exploring and developing alternative water sources, such as water reuse systems and, where feasible, desalination technologies, could help buffer against increased water scarcity, particularly in the lower basin.

Addressing these challenges will require integrated approaches that consider the interconnections between water resources and other sectors, as well as the transboundary nature of the basin.

2.5 Agriculture and Food Security

Agriculture is a cornerstone of livelihoods and food security in the KRB, with its importance varying across the basin's diverse geographical zones. Climate change poses significant threats to agricultural productivity and food security, with cascading effects on local economies and social structures.

a) Crop Yields:

Climate change is projected to have substantial impacts on crop yields throughout the Kunene Basin:

Overall Trend: Models project potential yield reductions of 5-15% for major crops like maize and sorghum by 2050, with this trend likely to continue or worsen. The severity of impacts varies across the basin and between crop types (FAO, 2021).

Upper Basin: In the more humid upper basin of Angola, some crops may initially benefit from warmer temperatures and potential increases in rainfall. However,

Maize yields could decrease by 5-10% due to heat stress during critical growth stages.

Cassava, a staple crop in the region, may see yield reductions of 3-7% due to changes in rainfall patterns and increased pest pressure (Angola Third National Communication to the UNFCCC, 2023).

Middle Basin: The transitional zone faces more significant challenges:

Sorghum and millet, important drought-resistant crops, may experience yield reductions of 10-20% due to increased heat stress and more erratic rainfall.

Legume crops like beans could see yield decreases of 15-25% due to heat stress during flowering stages (SADC Climate Services Centre, 2022).

Lower Basin: The marginal agricultural conditions in the lower basin are expected to deteriorate further:

Yields of drought-resistant crops like pearl millet could decrease by 20-30% under severe climate scenarios.

The viability of rain-fed agriculture may be threatened in many areas, potentially necessitating a shift towards more resilient pastoral systems or irrigated agriculture where feasible (Government of Namibia, 2022).

Crop Quality: Beyond yield reductions, climate change may also affect crop quality. Higher CO2 levels could reduce the protein content of some cereal crops by 5-10%, potentially exacerbating nutritional challenges in the region (IPCC, 2021).

b) Livestock:

Livestock production, particularly important in the middle and lower basin, faces multiple climate-related challenges:

Heat Stress: Increased temperatures and more frequent heat waves will impact animal health and productivity:

Milk production in dairy cattle could decrease by 10-20% during severe heat waves.

Growth rates in beef cattle may reduce by 5-15% due to increased metabolic stress from higher temperatures (Namibia National Climate Change Strategy and Action Plan, 2020).
Forage Availability: Changes in precipitation patterns and increased aridity will affect pasture and forage availability:
In the middle basin, pasture productivity could decrease by 10-25% due to reduced rainfall and increased evapotranspiration.
The lower basin may see reductions in rangeland carrying capacity of 20-40% under severe climate scenarios, potentially forcing significant changes in pastoral practices (CRIDF, 2020).
Water Scarcity: Reduced water availability will impact livestock production, particularly in the drier parts of the basin. The distance that pastoral communities need to travel to water sources during dry seasons could increase by 30-50% in some areas of the lower basin. Increased competition for water resources between livestock, crops, and other uses may lead to conflicts and forced migration of pastoral communities (IOM, 2023).
Disease and Pest Outbreaks: Changing climate conditions may alter the distribution and intensity of livestock diseases and pests:
The range of vector-borne diseases like Rift Valley Fever could expand northward into previously unaffected parts of the basin.
Tick-borne diseases may become more prevalent in the upper basin as temperatures increase, potentially affecting up to 30% more livestock (FAO, 2021).
c) Pest and Disease Outbreaks:
Changing climate conditions are expected to alter the dynamics of agricultural pests and diseases:
Pest Range Expansion: Warmer temperatures may allow certain pests to expand their ranges:
The Fall Armyworm, a significant threat to maize production, could expand its range into higher elevation areas of the upper basin, potentially affecting 20-30% more cropland (CABI, 2022).
Desert Locust outbreaks, historically rare in the Kunene Basin, may become more frequent in the lower basin due to changes in wind patterns and breeding conditions.
Disease Pressure: Changes in temperature and humidity will affect the prevalence and severity of crop diseases:
Fungal diseases like maize rust could become more severe in the upper basin, potentially reducing yields by an additional 5-10%.
In contrast, some bacterial diseases may become less prevalent in the drier conditions projected for the middle and lower basin (Angola Third National Communication to the UNFCCC, 2023).
Pest-Predator Dynamics: Climate change may disrupt natural pest control by affecting the lifecycles and distributions of beneficial insects and other predators:
Models suggest that the synchronization between certain crop pests and their natural predators could be disrupted in up to 40% of the basin's agricultural areas, potentially leading to more severe pest outbreaks (SADC Climate Services Centre, 2022).
d) Agricultural Water Demand:
Climate change will significantly impact agricultural water demand and irrigation requirements:
Increased Evapotranspiration: Higher temperatures will increase crop water requirements:
Crop water demand could increase by 15-25% in the upper basin and 25-40% in the middle and lower basin, assuming no change in cropping patterns (CRIDF, 2020).
Irrigation Expansion: To maintain agricultural productivity, there may be pressure to expand irrigation:
Models suggest that to maintain current production levels, irrigated areas in the basin may need to increase by 30-50%, placing significant strain on water resources (FAO, 2021).
Irrigation Efficiency: Improving irrigation efficiency will be crucial:
Implementing advanced irrigation technologies and practices could reduce agricultural water consumption by 20-30% while maintaining or even increasing yields (World Bank, 2021).
e) Soil Degradation:
Climate change is likely to exacerbate soil degradation processes in the Kunene Basin:
Erosion: More intense rainfall events, coupled with longer dry periods, will increase soil erosion risks:
, soil erosion rates could increase by 25-40% in steep agricultural areas of the upper basin.
In the middle and lower basin, wind erosion during prolonged dry periods could lead to topsoil losses of 5-10 mm per year in exposed areas (UNCCD, 2022).
Soil Organic Matter: Higher temperatures will accelerate the decomposition of soil organic matter:
Models project that soil organic carbon content could decrease by 10-20% across much of the basin, reducing soil fertility and water-holding capacity (IPCC, 2021).
Salinization: In irrigated areas, particularly in the lower basin, increased evaporation and reduced water quality may lead to soil salinization: up to 15-25% of currently irrigated land in the lower basin could be at high risk of salinization, potentially rendering it unsuitable for agriculture (Namibia Second National Communication to the UNFCCC, 2022).
f) Socio-economic Impacts:
The projected changes in agricultural productivity will have far-reaching socio-economic implications:

Food Security: Reduced and more variable agricultural production will threaten food security, as the number of people in the basin facing moderate to severe food insecurity could increase by 20-40% compared to current levels, with the most severe impacts in the lower basin (WFP, 2023).
Rural Livelihoods: Agricultural challenges will impact rural livelihoods and potentially drive migration. Models suggest that climate change could reduce agricultural incomes by 15-30% in the most affected parts of the basin, potentially forcing diversification into non-agricultural activities or migration to urban areas (IOM, 2023).
Gender Impacts: Climate change impacts on agriculture may disproportionately affect women, who often play a crucial role in smallholder farming. Increased water scarcity may force women and girls to spend 25-50% more time on water collection, reducing time available for education and other economic activities (UN Women, 2022).
Market Volatility: More variable agricultural production is likely to increase food price volatility. Year-to-year variations in staple food prices could increase by 30-50% compared to historical levels, challenging food access for vulnerable populations (FAO, 2021).
g) Adaptation Strategies:
Adapting agriculture in the Kunene Basin to climate change will require a multi-faceted approach:
Crop Diversification: Promoting drought-resistant and heat-tolerant crop varieties:
Widespread adoption of improved varieties could offset 40-60% of projected yield losses (CGIAR, 2022).
Conservation Agriculture: Implementing practices like minimal tillage, crop rotation, and mulching:
These practices could increase soil water retention by 20-30% and improve yields by 10-20% under drought conditions (FAO, 2021).
Water Management: Improving irrigation efficiency and implementing water harvesting techniques:
Precision irrigation technologies could reduce agricultural water use by 30-40% while maintaining or improving yields (World Bank, 2021).
Climate-Smart Livestock Systems: Promoting heat-tolerant breeds and improving rangeland management:
Implementing improved grazing systems could increase rangeland productivity by 15-25% even under climate stress (ILRI, 2022).
Early Warning Systems: Developing and improving climate information services for farmers:
Effective early warning systems for extreme events and seasonal forecasts could reduce climate-related agricultural losses by 20-30% (WMO, 2023).
Insurance and Financial Tools: Expanding access to weather index insurance and other risk management tools:
up to 50-60% of farmers in the basin could be covered by some form of agricultural insurance, significantly improving resilience to climate shocks (World Bank, 2021).
Research and Extension: Strengthening agricultural research and extension services to support adaptation:
Investing in climate-resilient agricultural research and effective extension services could improve overall agricultural productivity by 15-25% (CGIAR, 2022).
The agricultural sector in the Kunene Basin faces significant challenges due to climate change, with impacts varying across the basin's diverse geographical zones. Addressing these challenges will require integrated approaches that consider the interconnections between agriculture, water resources, and other sectors. In the next section, we will explore the implications of climate change for the energy sector in the Kunene Basin.

2.6 Energy

The energy sector in the KRB, particularly hydropower generation, plays a crucial role in the region's economic development and is highly vulnerable to climate change impacts. The basin's energy landscape is characterized by the significant Ruacana Hydroelectric Scheme on the Angola-Namibia border, as well as smaller-scale energy production and distribution systems throughout the basin.
a) Hydropower Generation:
The Ruacana Hydroelectric Power Station, with its installed capacity of 347 MW, is the cornerstone of energy production in the basin and a critical component of Namibia's electricity supply. Climate change is projected to significantly impact its operations:
Reduced River Flow: As discussed in the water resources section, climate projections indicate a potential decrease in annual river flow by 20-30% by 2050, with this trend likely to continue or worsen. This reduction will directly impact hydropower generation. The average annual electricity generation at Ruacana could decrease by 15-25% compared to historical averages (NamPower, 2022).
The firm energy output (the minimum power that can be guaranteed year-round) could decrease by 30-40% under severe climate scenarios, significantly impacting the reliability of power supply (IRENA, 2022).
Increased Flow Variability: Greater inter-annual and seasonal variability in river flow will challenge hydropower operations.
The coefficient of variation for annual hydropower production could increase by 40-60%, making energy planning and grid management more complex (SADC Climate Services Centre, 2022).
Extreme low flow periods could become more frequent and prolonged, potentially leading to complete shutdowns of the power plant for several weeks during severe droughts.
Sedimentation: Increased erosion in the upper basin due to more intense rainfall events could accelerate reservoir sedimentation. The active storage capacity of the Ruacana reservoir could decrease by 10-15% due to sedimentation, further impacting power generation capacity (Angola Third National Communication to the UNFCCC, 2023).
Infrastructure Stress: More frequent and intense extreme weather events may stress hydropower infrastructure:

The frequency of spilling events (when water must be released without generating power) could increase by 20-30%, potentially causing increased wear on dam structures (NamPower, 2022).
Higher temperatures may affect the efficiency of power generation and transmission equipment, potentially reducing overall system efficiency by 2-4% during extreme heat events (IRENA, 2022).
b) Other Renewable Energy Sources:
While hydropower dominates the current energy mix, climate change may create both challenges and opportunities for other renewable energy sources in the basin:
Solar Energy: The basin, particularly its middle and lower reaches, has significant solar potential: average solar irradiation in the lower basin could increase by 3-5% due to reduced cloud cover, potentially enhancing solar power generation potential (IRENA, 2022).
However, higher temperatures may reduce the efficiency of photovoltaic panels by 5-8% during extreme heat events (World Bank Climate Change Knowledge Portal, 2021).
Wind Energy: Climate change may alter wind patterns in the basin. Models suggest that average wind speeds in the coastal areas of the lower basin could increase by 5-10%, potentially improving wind power generation potential (SADC Climate Services Centre, 2022).
However, more frequent, and intense dust storms in the arid regions could increase maintenance requirements for wind turbines.
Biomass Energy: Changes in vegetation patterns and agricultural productivity will affect biomass energy potential:
In the upper basin, faster vegetation growth due to higher temperatures and potential increases in rainfall could increase biomass energy potential by 10-15%.
However, in the more arid middle and lower basin, reduced vegetation productivity could decrease biomass energy potential by 20-30% (UNEP, 2020).
c) Energy Demand:
Climate change is expected to significantly alter energy demand patterns across the basin:
Cooling Demand: Rising temperatures will increase demand for cooling:
cooling degree days (a measure of cooling demand) could increase by 30-50% across the basin, with the most significant increases in urban areas (World Bank, 2021).
Peak electricity demand during summer months could increase by 15-25%, straining grid capacity and potentially leading to more frequent blackouts.
Heating Demand: While less significant in this region, winter heating demand may decrease:
Heating degree days could decrease by 20-30%, potentially offsetting some of the increased cooling demand on an annual basis (IPCC, 2021).
Agricultural Energy Use: Changes in agricultural practices in response to climate change may affect energy demand:
Increased irrigation needs could raise energy demand for water pumping by 20-30% (FAO, 2021).
The potential shift towards more climate-controlled agriculture (e.g., greenhouses) in some areas could further increase agricultural energy demand.
d) Energy Infrastructure:
Climate change poses various risks to energy infrastructure across the basin:
Transmission and Distribution: Higher temperatures and more frequent extreme weather events will stress electricity grids:
Thermal expansion of power lines during heat waves could reduce transmission capacity by 5-10% during peak demand periods (IRENA, 2022).
More frequent and intense storms could increase the frequency of power outages by 15-25% in vulnerable areas (World Bank, 2021).
Fuel Transport: For areas relying on imported fossil fuels, climate change may disrupt supply chains:
Sea-level rise and increased storm intensity could affect coastal fuel import facilities, potentially disrupting supply for 5-10 days per year (IPCC, 2021).
Energy Storage: The need for energy storage is likely to increase to manage greater variability in both supply and demand: the required energy storage capacity to maintain grid stability could increase by 40-60% compared to current levels (IRENA, 2022).
e) Socio-economic Implications:
The impacts of climate change on the energy sector will have far-reaching socio-economic implications:
Energy Security: Reduced hydropower reliability and increased demand could threaten energy security:
The number of days with potential power shortages could increase by 30-50% without significant adaptations to the energy system (NamPower, 2022).
Economic Impacts: Energy sector challenges could affect economic productivity:
Climate-related disruptions to power supply could reduce GDP growth by 0.5-1% annually in the most affected regions (World Bank, 2021).
Energy Poverty: Climate impacts may exacerbate energy poverty, particularly in rural areas:
The proportion of household income spent on energy could increase by 15-25% for vulnerable populations due to increased cooling needs and potential energy price increases (UN Energy, 2023).
Gender Impacts: Energy sector challenges may disproportionately affect women and girls:

Increased unreliability of modern energy services could force women and girls to spend 10-20% more time on traditional biomass collection, impacting time available for education and economic activities (UN Women, 2022).

f) Adaptation Strategies:

Adapting the energy sector to climate change will require a multi-faceted approach:

Diversification: Reducing dependence on hydropower by developing a more diverse energy mix: the share of solar and wind power in the basin's energy mix could increase to 30-40%, improving resilience to hydrological variability (IRENA, 2022).

Improved Hydropower Management: Implementing advanced forecasting and management systems:

Use of seasonal climate forecasts and real-time monitoring could improve hydropower generation efficiency by 10-15% under variable flow conditions (WMO, 2023).

Grid Modernization: Upgrading transmission and distribution infrastructure:

Implementing smart grid technologies could reduce climate-related power outages by 30-40% and improve overall grid efficiency by 10-15% (World Bank, 2021).

Demand Management: Implementing energy efficiency measures and demand response programs:

Large-scale implementation of energy-efficient technologies and building designs could reduce overall energy demand by 20-30% compared to business-as-usual scenarios (UNEP, 2020).

Regional Integration: Strengthening regional power pools to enhance energy security:

Improved interconnections with the Southern African Power Pool could reduce the basin's vulnerability to local climate impacts by allowing a 30-40% increase in power trading capacity (SADC, 2022).

Decentralized Solutions: Promoting mini-grids and off-grid solutions for remote areas - up to 25-35% of rural households in the basin could be served by climate-resilient decentralized energy systems (IRENA, 2022).

Research and Innovation: Investing in climate-resilient energy technologies:

Developments in areas such as high-temperature resistant solar panels, advanced energy storage systems, and climate-proof transmission technologies could significantly enhance the resilience of the energy sector (World Bank, 2021).

2.7 Biodiversity and Ecosystems

The KRB hosts a diverse array of ecosystems, ranging from subtropical forests in the upper basin to arid savannas in the lower reaches. This ecological diversity supports a rich tapestry of plant and animal life, many of which are endemic to the region. Climate change poses significant threats to these ecosystems and the biodiversity they harbor.

a) Habitat Shifts:

Climate change is expected to drive significant shifts in habitat distributions across the basin:

Vegetation Zones: Projections suggest potential northward, and upslope shifts of vegetation zones:

The boundary between subtropical dry forest and savanna ecosystems could shift northward by 50-100 km in the middle basin (UNEP, 2020).

Montane forests in the upper basin may shift upslope by 150-300 meters in elevation, potentially reducing their total area by 20-30% (Angola Third National Communication to the UNFCCC, 2023).

Species Range Shifts: Many plant and animal species will need to migrate to track suitable climatic conditions:

, up to 30-40% of plant species in the basin may need to shift their ranges by more than 100 km to remain in suitable climatic conditions (IPCC, 2021).

Some animal species, particularly those with limited mobility or specific habitat requirements, may struggle to keep pace with these rapid changes. Models suggest that 15-25% of endemic reptile and amphibian species in the basin could lose more than half of their current suitable habitat (IUCN, 2022).

Ecosystem Fragmentation: Climate-driven habitat shifts, combined with human land-use changes, may lead to increased ecosystem fragmentation:

The average size of contiguous habitat patches for key ecosystems could decrease by 20-35%, challenging species that require large, uninterrupted habitats (CBD, 2021).

b) Desertification:

Increased aridity in the lower basin may accelerate desertification processes:

Expanding Arid Zones: Climate projections suggest that arid and semi-arid zones could expand significantly: the area classified as arid or hyper-arid in the lower basin could increase by 15-25%, encroaching on current semi-arid savanna ecosystems (UNCCD, 2022).

This expansion could lead to the loss of 20-30% of perennial grass cover in affected areas, impacting both wildlife and livestock.

Soil Degradation: Increased aridity, combined with potential overgrazing and unsustainable land use, could accelerate soil degradation:

Soil organic carbon content in affected areas could decrease by 25-40%, reducing soil fertility and water-holding capacity (FAO, 2021).

Wind erosion rates in newly decertified areas could increase by 30-50%, potentially creating feedback loops that further accelerate desertification (UNEP, 2020).

c) Wetland Degradation:

Wetland ecosystems, particularly in the lower basin and at the Kunene River mouth, face significant threats:

Reduced Inundation: Decreased River flow and increased evaporation may reduce wetland extent and inundation periods:

The area of seasonally inundated wetlands in the lower basin could decrease by 30-50% under severe climate scenarios (Ramsar Convention Secretariat, 2021).
The hydroperiod (duration of inundation) for remaining wetlands could shorten by 20-40%, impacting species adapted to specific inundation regimes.
Salinity Changes: In coastal wetlands near the Kunene River mouth, sea-level rise and reduced freshwater inflow may alter salinity regimes:
Saltwater intrusion could extend 5-10 km further upstream, potentially converting some freshwater wetlands to brackish systems (IPCC, 2021).
These changes could lead to shifts in vegetation communities, with salt-tolerant species replacing current freshwater-adapted plants in affected areas.
Biodiversity Impacts: Wetland degradation will have significant impacts on biodiversity:
Population sizes of wetland-dependent bird species could decline by 25-40% due to habitat loss and altered migration patterns (Bird Life International, 2022).
Fish species diversity in affected wetlands could decrease by 20-30%, with impacts on species with specific breeding habitat requirements (IUCN, 2022).
d) Freshwater Ecosystems:
River and stream ecosystems throughout the basin face multiple climate-related threats:
Flow Regime Changes: Altered precipitation patterns and increased evaporation will impact river flow regimes. The number of zero-flow days in ephemeral streams of the middle and lower basin could increase by 30-50%, threatening aquatic species that rely on persistent pools during dry seasons (CRIDF, 2020).
Peak flow magnitudes could increase by 10-20% in some areas due to more intense rainfall events, potentially altering channel morphology and riparian habitats.
Water Temperature: Increasing air temperatures will lead to warmer water temperatures:
Average water temperatures in the Kunene River could increase by 1.5-2.5°C, potentially exceeding thermal tolerances for some native fish species (SADC Climate Services Centre, 2022).
Warmer waters may also reduce dissolved oxygen levels, particularly during low-flow periods, potentially creating "dead zones" in slower-moving river sections and reservoirs.
Invasive Species: Changed environmental conditions may favor the spread of invasive aquatic species:
The suitable habitat range for aggressive invasive plants like water hyacinth (Eichhornia crassipes) could expand by 20-30%, particularly in warmer, slow-moving water bodies (CABI, 2022).
Some invasive fish species, often more tolerant of warmer and more variable conditions, could outcompete native species in up to 30-40% of the basin's aquatic habitats.
e) Terrestrial Wildlife:
Climate change will have diverse impacts on terrestrial wildlife across the basin:
Large Mammals: Changes in vegetation and water availability will affect large mammal populations:
The carrying capacity for large herbivores like elephants in the middle basin could decrease by 20-35% due to reduced vegetation productivity and water scarcity (IUCN, 2022).
Migration patterns of species like zebra and wildebeest may shift, with dry-season movements potentially covering 30-50% greater distances to reach water and suitable grazing areas.
Small Mammals and Reptiles: These groups may face challenges in adapting to rapidly changing conditions:
Up to 25-35% of small mammal and reptile species in the basin could face high extinction risk due to habitat loss and inability to migrate quickly enough to track suitable climate conditions (IPCC, 2021).
However, some adaptable species may benefit. For example, the range of certain arid-adapted rodent species could expand by 15-25% in the lower basin.
Birds: Changing climatic conditions will affect both resident and migratory bird populations:
Timing of migration for long-distance migrants that use the basin as a stopover or wintering ground could shift by 1-3 weeks, potentially creating mismatches with food availability (birdlife International, 2022).
Some arid-adapted bird species may expand their ranges northward, while forest-dependent species in the upper basin could see range contractions of 20-30%.
f) Plant Communities:
Planting communities across the basin will respond to changing climatic conditions in complex ways:
Species Composition: Changing temperature and precipitation patterns will alter plant community compositions:
In the upper basin, the proportion of drought-tolerant plant species in forest understories could increase by 20-30% (Angola Third National Communication to the UNFCCC, 2023).
In the middle and lower basin, the cover of C4 grasses (adapted to hot, dry conditions) could increase by 15-25% relative to C3 grasses.
Phenology: Plant life cycle events may shift in response to changing climatic cues:

The onset of spring leaf-out in deciduous species could advance by 1-3 weeks, potentially creating mismatches with pollinator activity (IPCC, 2021).
Flowering times for many plant species could shift by 5-15 days, which may impact seed production and ecosystem interactions.
Productivity: Changes in temperature, precipitation, and CO2 levels will affect plant productivity:
Net primary productivity in the upper basin could initially increase by 5-10% due to CO2 fertilization and longer growing seasons but may decline later as temperature and water stress increase.
In the arid lower basin, vegetation productivity could decrease by 15-25% due to increased water stress, despite potential CO2 fertilization effects (UNCCD, 2022).
g) Ecosystem Services:
The changes in biodiversity and ecosystem function will have significant impacts on the ecosystem services provided by the Kunene Basin:
Water Regulation: Changes in vegetation cover and soil properties will affect water regulation services:
The water retention capacity of upper basin forests could decrease by 10-20% due to changes in vegetation structure and increased soil erosion, potentially exacerbating downstream flood risks (UNEP, 2020).
Carbon Sequestration: Changes in vegetation productivity and soil processes will affect carbon storage. The carbon sequestration potential of the basin could decrease by 15-25%, with the greatest reductions in the more arid regions (IPCC, 2021).
Pollination Services: Shifts in plant and pollinator phenology may disrupt pollination services: Crop pollination services provided by wild pollinators could decrease by 10-20% due to mismatches between crop flowering times and pollinator activity periods (FAO, 2021).
Cultural Services: Ecosystem changes will affect cultural and recreational services: The attractiveness of the region for nature-based tourism could decrease in some areas due to reduced wildlife populations and changes in landscape aesthetics, potentially reducing tourism revenues by 15-25% (World Bank, 2021).
h) Adaptation Strategies:
Adapting to these biodiversity and ecosystem changes will require a multi-faceted approach:
Protected Area Network: Expanding and connecting protected areas to facilitate species migrations: Increasing the protected area coverage by 20-30% and establishing ecological corridors could help maintain 60-70% of current biodiversity levels (IUCN, 2022).
EbA: Implementing nature-based solutions to enhance resilience: Large-scale reforestation and wetland restoration projects could improve water regulation, reduce erosion, and enhance biodiversity in 15-25% of the basin area (UNEP, 2020).
Species Conservation: Developing species-specific conservation strategies for the most vulnerable taxa: Implementing targeted conservation measures for 50-60 key vulnerable species could reduce their extinction risk by 30-40% (IUCN, 2022).
Invasive Species Management: Strengthening measures to prevent and control invasive species: Implementing comprehensive invasive species management plans could reduce the impact of invasives on native biodiversity by 40-50% (CABI, 2022).
Community-Based Conservation: Engaging local communities in conservation efforts: Expanding community-managed conservation areas to cover 15-20% of the basin could improve biodiversity outcomes while supporting local livelihoods (CBD, 2021).
Research and Monitoring: Enhancing biodiversity monitoring and research to inform adaptive management: Establishing a basin-wide biodiversity monitoring network could improve early detection of climate change impacts and enhance the effectiveness of conservation interventions by 30-40% (IPBES, 2023).

2.8 Human Health

Climate change poses various direct and indirect risks to human health in the KRB. The impacts will be felt across different geographical zones and socio-economic groups, with vulnerable populations likely to be disproportionately affected.
a) Water-borne Diseases:
Increased water scarcity and flooding events may elevate the risk of water-borne diseases:
Diarrheal Diseases: Changes in precipitation patterns and temperature may increase the incidence of diarrheal diseases: the incidence of diarrheal diseases could increase by 15-25% in the basin, particularly in areas with poor sanitation infrastructure (WHO, 2021). During flood events, the risk of diarrheal disease outbreaks could increase by 30-50% due to contamination of water sources and overwhelmed sanitation systems.
Cholera: Warmer temperatures and altered water conditions may Favor the spread of cholera: The geographic range suitable for Vibrio cholerae, the bacterium causing cholera, could expand by 10-20% in the basin, particularly in warmer water bodies with reduced flow (Lancet Countdown, 2022). The annual risk of cholera outbreaks in vulnerable communities could increase by 20-30%.
Schistosomiasis: Changes in water availability and temperature may affect the distribution of schistosomiasis. The area at high risk for schistosomiasis transmission could increase by 15-25%, particularly in the middle basin where new irrigation schemes may create suitable habitats for snail intermediate hosts (WHO, 2021).
b) Vector-borne Diseases:
Changing climate conditions will affect the distribution and transmission dynamics of vector-borne diseases:

Malaria: Changes in temperature and precipitation will impact malaria transmission: the malaria transmission season could extend by 2-4 weeks in the upper and middle basin due to warmer temperatures (WHO, 2021). However, some currently endemic areas in the lower basin may become too hot and dry for malaria transmission, potentially reducing transmission risk by 10-20% in these areas.
Dengue and Chikungunya: Warming temperatures may increase the risk of arboviral diseases: The climatic suitability for Aedes aegypti mosquitoes, vectors of dengue and chikungunya, could increase by 20-30% in urban areas of the basin (Lancet Countdown, 2022). The annual risk of dengue outbreaks in major urban centers of the basin could increase by 25-40%.
Rift Valley Fever: Changing rainfall patterns may affect the dynamics of Rift Valley Fever outbreaks: The frequency of climatic conditions suitable for Rift Valley Fever outbreaks could increase by 15-25%, particularly in the middle basin (FAO, 2021).
c) Heat-related Illnesses:
Rising temperatures, particularly in urban areas, may increase heat-related morbidity and mortality:
Heat Stress: Increased frequency and intensity of heat waves will elevate the risk of heat-related illnesses: the number of days per year with high heat stress risk (wet-bulb temperature >28°C) could increase by 30-50 days in urban areas of the lower basin (IPCC, 2021). Annual heat-related mortality could increase by 20-35%, with the elderly and those with pre-existing health conditions at highest risk (Lancet Countdown, 2022).
Urban Heat Island Effect: Urban areas will face amplified heat risks due to the urban heat island effect, average summer temperatures in major urban centers of the basin could be 2-3°C higher than surrounding rural areas, exacerbating heat-related health risks (World Bank, 2021).
Occupational Health: Outdoor workers will face increased heat-related occupational health risks. The number of working hours lost due to extreme heat could increase by 25-40% in sectors like agriculture and construction (ILO, 2023).
d) Food Insecurity and Malnutrition:
Climate impacts on agriculture may exacerbate food insecurity and malnutrition:
Crop Yield Reductions: As discussed in the agriculture section, climate change is projected to reduce yields of staple crops: climate-induced crop yield reductions could increase the number of people at risk of undernourishment in the basin by 15-25%, with children under five at particular risk (WFP, 2023).
Nutritional Quality: Climate change may affect the nutritional content of crops: Elevated CO2 levels could reduce the protein content of staple grains by 5-10%, potentially increasing the risk of protein deficiency in vulnerable populations (IPCC, 2021).
Food Price Volatility: More variable agricultural production is likely to increase food price volatility: climate-induced food price spikes could temporarily increase the number of people unable to afford a healthy diet by 20-30% during bad years (FAO, 2021).
e) Mental Health:
The psychological impacts of climate change, while often overlooked, can be significant:
Eco-anxiety: Increasing awareness of climate change impacts may lead to increased eco-anxiety: the prevalence of climate change-related anxiety disorders could increase by 15-25%, particularly among younger generations (Lancet Countdown, 2022).
Disaster-related Mental Health Issues: More frequent extreme weather events may increase the incidence of post-traumatic stress disorder (PTSD) and depression: The risk of developing PTSD following a major climate-related disaster could be 20-30% higher due to the increased frequency and intensity of such events (WHO, 2021).
f) Air Quality-related Health Issues:
Changes in climate may affect air quality, with implications for respiratory and cardiovascular health:
Dust Storms: Increased aridity in the lower basin may lead to more frequent dust storms: the number of days with dangerous levels of particulate matter (PM10) due to dust storms could increase by 20-30% in the lower basin (UNEP, 2021). This could lead to a 10-15% increase in hospital admissions for respiratory issues during dust storm events.
Ground-level Ozone: Warmer temperatures may increase the formation of ground-level ozone: the number of days exceeding safe ozone levels could increase by 15-25% in urban areas, potentially leading to a 5-10% increase in asthma exacerbations (WHO, 2021).
g) Health System Impacts:
Climate change will place additional stress on health systems in the basin:
Infrastructure Damage: More frequent extreme weather events may damage health infrastructure: up to 10-15% of health facilities in flood-prone areas of the basin could be at high risk of periodic service disruptions due to flooding (World Bank, 2021).
Supply Chain Disruptions: Climate-related disruptions to transportation infrastructure may affect medical supply chains: The risk of climate-induced disruptions to essential medicine supply chains could increase by 20-30%, potentially affecting treatment for chronic diseases (WHO, 2021).
Health Workforce: Climate change may affect the health workforce through direct and indirect impacts: climate-related migration could reduce the number of healthcare workers in the most affected rural areas by 10-15% (IOM, 2023).
h) Vulnerable Populations:
Certain populations will be particularly vulnerable to the health impacts of climate change:
Children: Children are especially susceptible to climate-related health risks: climate change could be responsible for a 15-25% increase in childhood malnutrition and a 10-20% increase in pediatric infectious disease burden in the basin (UNICEF, 2022).

Elderly: Older adults are more vulnerable to heat stress and climate-sensitive diseases: The mortality risk for people over 65 during heat waves could be 30-50% higher compared to younger adults (Lancet Countdown, 2022).
Pregnant Women: Climate change poses specific risks to maternal health: climate-related factors could contribute to a 10-15% increase in adverse pregnancy outcomes, including preterm births and low birth weight (WHO, 2021).
People with Pre-existing Conditions: Those with chronic diseases may face exacerbated health risks: Climate change could be responsible for a 15-25% increase in hospitalizations for people with cardiovascular and respiratory diseases (Lancet Countdown, 2022).
i) Adaptation Strategies:
Adapting to this health challenges will require a multi-sectoral approach:
Health System Strengthening: Enhancing the resilience and capacity of health systems by investing in climate-resilient health infrastructure and early warning systems could reduce climate-related mortality by 30-40% (WHO, 2021).
Vector Control Programs: Implementing comprehensive vector control strategies, scaling up integrated vector management programs could reduce the risk of vector-borne disease outbreaks by 40-50% (Lancet Countdown, 2022).
Water and Sanitation Improvements: Enhancing access to safe water and improved sanitation, achieving universal access to safe water and sanitation in the basin could reduce the incidence of water-borne diseases by 50-60%, even under climate change scenarios (UNICEF, 2022).
Heat Action Plans: Developing and implementing heat action plans in urban areas, Comprehensive heat action plans, including early warning systems and cooling centers, could reduce heat-related mortality by 30-40% during extreme heat events (World Bank, 2021).
Food Security Measures: Implementing programs to enhance food security and nutrition, scaling up climate-smart agriculture and nutrition programs could reduce climate-induced malnutrition by 30-40% (FAO, 2021).
Mental Health Support: Increasing access to mental health services and support, by integrating climate change considerations into mental health services and expanding community support programs could reduce the burden of climate-related mental health issues by 20-30% (WHO, 2021).
Research and Surveillance: Enhancing health research and disease surveillance capabilities through establishing a comprehensive climate-health surveillance system could improve early detection and response to climate-sensitive health risks by 40-50% (Lancet Countdown, 2022).

3. Transboundary Implications and Interdependencies

The transboundary nature of the KRB creates complex interdependencies between Angola and Namibia with potential for both conflict and cooperation.
a) Water Allocation:
Reduced river flow may strain existing water-sharing agreements between Angola and Namibia:
Current Agreements: The 1969 agreement on water use in the Kunene River forms the basis for current transboundary water management. However, this agreement did not explicitly consider climate change impacts. The assumptions underlying this agreement could be invalidated by climate change, with annual river flow potentially 20-30% lower than historical averages (UNECE, 2021).
Allocation Pressures: Reduced water availability will likely increase competition for water resources. During severe drought years, which could occur 2-3 times more frequently, the volume of water available for allocation could be 40-50% below the long-term average (CRIDF, 2020). This could lead to tensions, particularly if one country perceives that it is bearing a disproportionate burden of water shortages.
Seasonal Variability: Increased seasonal variability in river flow will complicate water allocation. Dry season flows could be 30-40% lower than historical averages, potentially necessitating more dynamic and flexible allocation mechanisms (Angola Third National Communication to the UNFCCC, 2023).
Groundwater Management: As surface water becomes scarcer, pressure on transboundary aquifers may increase reliance on groundwater resources in the lower basin could increase by 30-50%, potentially leading to unsustainable extraction rates and cross-border impacts (SADC Groundwater Management Institute, 2022).
b) Hydropower Generation:
Changes in upstream water management in Angola could significantly impact Namibia's hydropower generation at Ruacana Falls:
Flow Regulation: Upstream dam operations in Angola will have direct impacts on power generation in Namibia: changes in upstream reservoir management could affect up to 40-50% of the annual power generation potential at Ruacana, depending on how climate change impacts are managed (NamPower, 2022).
Sediment Management: Increased erosion in the upper basin could accelerate sedimentation in reservoirs. Sedimentation rates in major reservoirs could increase by 20-30%, potentially reducing their storage capacity and lifespan (SADC, 2022). This could necessitate coordinated sediment management strategies between the two countries.
New Infrastructure: Potential development of new hydropower projects in Angola could further alter flow regimes. If Angola develops its full hydropower potential in the basin, it could affect up to 60-70% of the natural flow regime reaching Namibia (IRENA, 2022).
c*) Environmental Flows:*
Maintaining adequate environmental flows for ecosystem health may become challenging under climate change scenarios:

Ecosystem Requirements: Climate change will alter the flow requirements for maintaining ecosystem health: the minimum environmental flow requirements to sustain key ecosystems could increase by 10-20% due to higher temperatures and increased evaporation, even as overall water availability decreases (CBD, 2021).
Competing Demands: Balancing environmental flows with human water needs will become more challenging. During severe drought years, which could occur 2-3 times more frequently, meeting both human water demands, and environmental flow requirements could be impossible without significant demand management (UNEP, 2020).
Transboundary Cooperation: Ensuring environmental flows will require close cooperation between Angola and Namibia. Up to 70-80% of the river's environmental flow requirements may depend on coordinated management actions between the two countries (Ramsar Convention Secretariat, 2021).
d) Migration:
Climate-induced changes in resource availability may influence human migration patterns within and between the two countries:
Rural-to-Urban Migration: Climate stress on rural livelihoods may accelerate urbanization. Climate factors could contribute to a 20-30% increase in rural-to-urban migration rates in the basin, potentially straining urban infrastructure in both countries (IOM, 2023).
Cross-Border Movements: Severe climate impacts may drive cross-border migration. In extreme scenarios up to 5-10% of the population in the most climate-vulnerable areas of the basin may consider cross-border migration as an adaptation strategy (World Bank, 2021).
Pastoral Movements: Changing patterns of water and pasture availability may alter traditional pastoral migration routes. The timing and extent of seasonal pastoral movements could shift by 2-4 weeks and extend 50-100 km further, potentially increasing the frequency of cross-border movements (FAO, 2021).
e) Agricultural Interdependencies:
Climate impacts on agriculture will have cross-border implications:
Trade Patterns: Changes in agricultural productivity may alter food trade patterns between the countries. Climate-induced shifts in crop suitability could change the agricultural comparative advantage between different parts of the basin, potentially altering cross-border trade volumes by 20-30% (SADC, 2022).
Pest and Disease Management: The spread of agricultural pests and diseases will require coordinated responses. The risk of transboundary pest and disease outbreaks could increase by 30-40%, necessitating joint surveillance and control efforts (CABI, 2022).
f) Disaster Risk Management:
Climate change will increase the need for coordinated disaster response:
Flood Management: More intense rainfall events will require coordinated flood management. The frequency of flood events requiring coordinated binational response could increase by 40-60% (UNDRR, 2023). This will necessitate joint early warning systems and coordinated reservoir operations during extreme events.
Drought Response: Severe droughts will require coordinated management across the basin. The frequency of multi-year droughts affecting both countries simultaneously could increase by 30-50%, necessitating joint drought management plans (WMO, 2023).
g) Ecosystem and Biodiversity Conservation:
Protecting ecosystems and biodiversity in the face of climate change will require transboundary cooperation:
Migratory Species: Changes in climate will affect migratory species that cross national borders. The timing of key wildlife migrations in the basin could shift by 2-4 weeks, requiring coordinated management of protected areas and corridors across borders (IUCN, 2022).
Invasive Species: Climate change may facilitate the spread of invasive species across borders. The rate of spread of key invasive species across the basin could increase by 20-30%, necessitating joint monitoring and control efforts (CABI, 2022).
h) Health Systems and Disease Control:
Climate-sensitive health risks will require coordinated responses:
Disease Surveillance: Changing patterns of disease transmission will necessitate joint surveillance efforts. Up to 40-50% of emerging disease risks in the basin may have cross-border implications, requiring integrated surveillance systems (WHO, 2021).
Health System Capacity: Climate pressures on health systems may require resource sharing. During extreme climate events, which could be 2-3 times more frequent, up to 20-30% of health system capacity may need to be shared or coordinated between the two countries to manage peak demands (Lancet Countdown, 2022).
i) Economic Interdependencies:
Climate change will affect economic relationships between the two countries:
Energy Trade: Changes in hydropower generation potential may alter energy trade dynamics. Climate-induced changes in energy production patterns could alter cross-border electricity trade volumes by 30-40% (SADC, 2022).
Tourism: Climate impacts on ecosystems and wildlife may affect transboundary tourism. Changes in wildlife distributions and landscape aesthetics could shift up to 20-30% of tourism value between different parts of the basin, affecting both countries' tourism economies (World Bank, 2021).
j) Adaptation Strategies:
Addressing these transboundary challenges will require enhanced cooperation between Angola and Namibia:

Joint Climate Change Adaptation Strategy: Developing a basin-wide adaptation strategy. A comprehensive joint adaptation strategy could improve the effectiveness of climate resilience measures by 30-40% compared to uncoordinated national approaches (UNEP, 2020).

Strengthened Institutional Mechanisms: Enhancing the capacity of transboundary institutions. Strengthening the Permanent Joint Technical Commission (PJTC) for the KRB could improve the speed and effectiveness of joint decision-making by 40-50% (SADC, 2022).

Integrated Monitoring Systems: Developing shared monitoring and early warning systems. A fully integrated transboundary monitoring system could improve the lead time for flood warnings by 50-70% and drought forecasts by 3-6 months (WMO, 2023).

Flexible Water Sharing Agreements: Developing more adaptive water allocation mechanisms. Implementing flexible, scenario-based water sharing agreements could reduce the risk of water-related conflicts by 60-70% under variable climate conditions (UNECE, 2021).

Joint Infrastructure Planning: Coordinating the development of climate-resilient infrastructure. Collaborative planning of water and energy infrastructure could improve overall system efficiency by 20-30% and reduce climate-related risks by 40-50% (World Bank, 2021).

EbA: Implementing transboundary EbA projects. Large-scale, coordinated ecosystem restoration efforts could enhance water regulation, reduce erosion, and improve biodiversity outcomes across 20-30% of the basin area (UNEP, 2021).

Capacity Building and Knowledge Sharing: Enhancing shared capacity for climate resilience. Establishing a joint climate change research and training center could improve the technical capacity for climate adaptation in both countries by 50-60% (UNDP, 2023).

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Annex 3: HIMBA Background

Indigenous Peoples in the Project Area

The Himba people, a semi-nomadic pastoralist ethnic group, have long inhabited the semi-arid Kunene region of Namibia and Angola, where their pastoral lifestyle and strong cultural identity have thrived until recent years. Despite enduring various external influences over time, their core cultural values have remained resilient. According to Bollig (2020), the Himba people's social-ecological system has undergone significant transformations approximately every thirty to forty years since the early 1900s, profoundly altering their environmental framework. These changes—material, social, political, and cultural in nature—were influenced by historical events such as colonialism and government initiatives such as fixed boundaries in the 1920s, vaccination projects in the 1930s, borehole drilling in the 1960s and 1970s, and community-based natural resource management projects in the 1990s and early 2000s. The region also faced challenges such as disease outbreaks and severe droughts affecting both humans and livestock.

Despite these pressures, the Himba demonstrated remarkable adaptive capabilities. Nevertheless, the significant alterations to their current environmental setup are undeniable. Bollig (2020) cautions against overlooking the profound human impact on shaping the Kunene region and the landscape of Himba communities. This influence, however, was not one-sided, as both nature and human actions have contributed to the aridity of the landscape where the Himba pastoralists now reside. Bollig (2020) underscores that the resilience of the environment, though significantly diminished, remains crucial to the survival of the Himba people as a distinct ethnic group. He suggests that revolutionary changes have occurred in Kunene over the past 25 years, opening the once-isolated region to global and national exchanges of ideas, resources, and infrastructure, thereby introducing new opportunities for land use and economic activities such as tourism and mining.

The Himba people's culture revolves around their livestock, which not only sustains their livelihood but also connects them to their ancestors through rituals of sacrifice. However, the current state of the natural environment cannot support their traditional pastoral lifestyle. They face challenges in adapting their pastoral way of life amidst various external pressures such as environmental degradation (Inman, 2024) Climate change is a significant environmental factor affecting Himba, leading to prolonged droughts and scarcity of resources. Inman et al. (2020) examined how Himba pastoralists were coping with these challenges and found that severe droughts had devastated their livelihoods, plunging many into poverty without adequate safety nets during environmental crises. The Himba increasingly turned to cultivating food rather than raising livestock due to drought, marking a shift in land use.

Despite its integral role in their cultural identity, pastoralism has become increasingly unsustainable. Respondents in the study identified drought as a primary threat endangering their cultural practices. Many cultural elements, including attire, ancestral rites, cosmetics, food traditions, and rituals, rely heavily on livestock, particularly cattle. However, drought-induced livestock losses have severely impacted their ability to produce traditional clothing from animal skins, perform rituals involving livestock sacrifice, create cosmetics from animal fat, and obtain meat and milk. Consequently, they are compelled to explore alternative livelihoods such as urban migration in search of employment, resorting to begging, and relying extensively on government drought relief and pensions. Drought thus poses a formidable challenge to their cultural practices and land use patterns.

The chart below is a compilation of Himba people's perception of their natural environment, from a study conducted by Inman (2024).

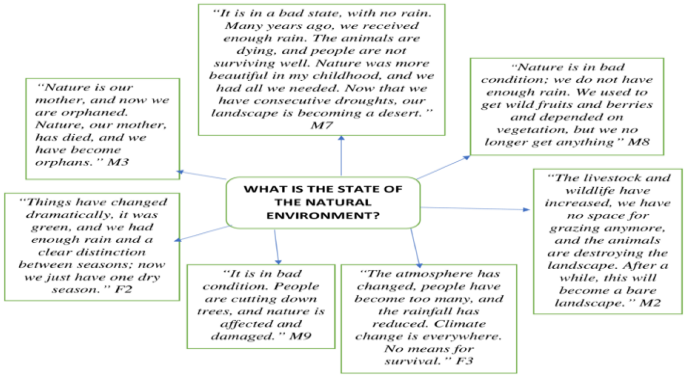

Figure 1. Himba people's opinions on the state of their natural environment (Inman, 2024).

According to Torrence and Grattan (2003), catastrophes can precipitate cultural change, with more vulnerable groups experiencing greater disasters and thus facing increased potential for cultural transformation. As the Himba confront these challenges, they must adapt to their traditional practices while preserving their cultural identity and livelihoods. Activities rooted in cultural norms may not always confer adaptive advantages and can evolve in response to new ecological pressures. This is evident here, as drought has compelled Himba to seek alternative livelihoods that may diverge from their customary practices.

Bollig (2020) observed significant shifts in agricultural practices among the Himba, such as the introduction of gardens to supplement their diet in response to recurring droughts. This represents a notable change in land use. Similar adjustments have been observed among the Maasai pastoralists, who, in the late nineteenth century, faced severe droughts, famines, and diseases leading many to adopt alternative survival strategies like agriculture or hunting and gathering, thereby altering their land use patterns.

These shifts indicate that traditional Himba land use practices are being challenged and sometimes supplanted by more convenient modern alternatives. Previously, livestock grazed freely, but now government regulations restrict grazing in certain areas to preserve the land, prompting some communities to implement grazing rotations. However, implementing these rotations is challenging due to the considerable numbers of livestock owned by families, as noted by respondents (Inman, 2024). Drought has significantly altered their land use practices, necessitating Himba pastoralists to reconsider and adjust their traditional lifestyles. In the past, plentiful cattle provided meat and milk, but their loss due to drought has forced people to turn to crop farming. The establishment of allocated and protected lands aims to promote sustainable land management, compelling the Himba to adapt to these new realities.

As the Himba people navigate the cultural shifts brought about by numerous external pressures, they face the challenge of preserving their traditional practices while adapting to new realities. This requires careful consideration of integrating modern technologies and innovations without compromising their cultural essence. They must also prepare for potential erosion of their cultural identity as they encounter modern lifestyles and evolving economic conditions (Inman, 2024). Adapting to pressing realities such as climate change is crucial for their survival, further complicating this delicate balance. In cases where their adaptive capacity is insufficient, external assistance may be necessary, employing participatory bottom-up approaches to tackle these challenges. Empowering the Himba community to navigate and thrive amidst environmental challenges promotes sustainable development that benefits both their communities and ecological systems.

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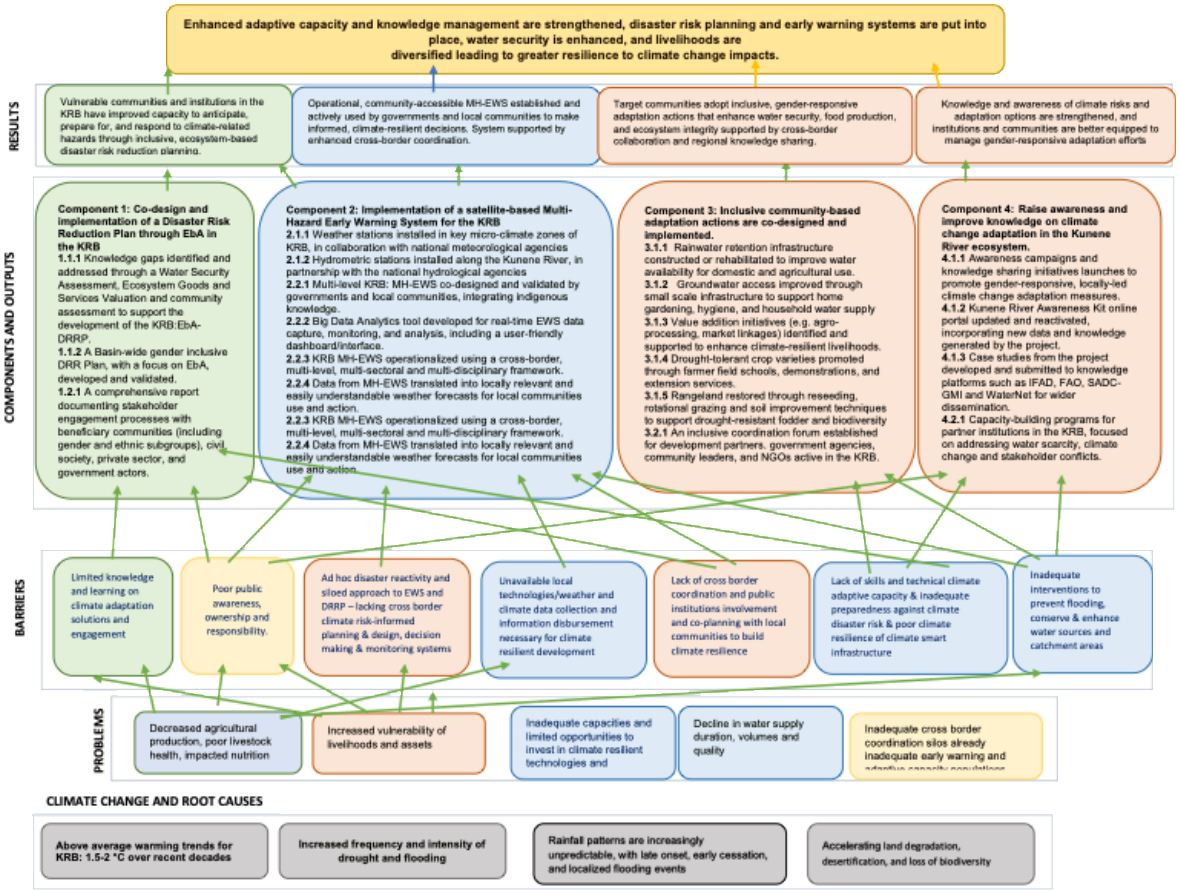
Annex 4. Theory of Change



Annex 5. Free, Prior and Informed Consent (FPIC)

Introduction

Free, prior, and informed consent (FPIC) is an operational principle empowering local communities to give or withhold their consent to proposed investment and development projects that may affect their rights, access to land, territories, resources, and livelihoods (IFAD, 2015).

FPIC should be solicited in a manner that ensures all affected community members—regardless of gender, age, or socio-economic status—are fully informed and have an equal opportunity to provide consent. Information should be provided in formats and languages that are accessible to all community members, including visual aids or oral presentations for those who may not be literate. The project will ensure that consultations are culturally appropriate and timed to respect community customs and schedules. The information shared must be comprehensive and sufficiently detailed, covering potential environmental, social, and economic impacts, and should include any long-term commitments the community will need to make.

Potential rights infringed upon	Negative Impacts
Right of physical access Right to food Rights to secure land tenure including Right to natural resources Right to decision making and self-determination Right to work · Right to a healthy environment including social amenities	Loss of culture and natural heritage Loss of land tenure Exclusion and/or undermined participation in decision making Forced participation (at times in exploitative systems) Loss of income and/or employment Exacerbation of poverty Reduced food and nutritional security Weakened local governance system · Increased inter and intra conflict

FPIC is a principle protected by international human rights standards that state, 'all people have the right to self-determination' and linked to the right to self-determination – 'all people have the right to freely pursue their economic, social and cultural development.' This guide is deeply rooted in a human rights-based approach and is designed to assist the implementing project team to respect the right to FPIC when developing and implementing the project.

The Guide is also supported by the Policy on Environment and Natural Resource Management (2011): "Respecting the principle of free, prior and informed consent, IFAD supports indigenous peoples in enhancing the resilience of the ecosystems in which they live and in developing innovative adaptation measures and emerging opportunities for indigenous peoples' engagement in carbon sequestration and the provision of other environmental services."
FPIC is solicited through consultations in good faith with the representative institutions endorsed by communities. It ensures that they participate in decision-making processes concerning a given development project.

All elements within FPIC are interlinked, and they should not be treated as separate elements. The first three elements (free, prior, and informed) qualify and set the conditions of consent as a decision-making process. In short, consent should be sought before any project, plan or action takes place (prior), it should be independently decided upon (free) and based on accurate, timely and sufficient information provided in a culturally appropriate way (informed) for it to be considered a valid result or outcome of a collective decision-making process.
Consent should be sought in a way that is "free, prior and informed" [1]:
Free implies no coercion, intimidation, or manipulation.

- Prior implies that consent has been sought sufficiently in advance of any decision point or commencement of activities.
- Information implies that information provided covers all relevant issues to make decision maker fully enlightened.
- Consent is the expected outcome of the consultation, participation, and collective decision-making process by the local communities.

General Guiding Principles

Responsibility and institutional capacity for seeking FPIC.
The IFAD general policies and procedures stipulate that the borrower or grant recipient is responsible for project and project preparation, including social, environmental and climate assessments and seeking FPIC. In this case, the

Government of Angola and Namibia represented by the Ministries of Environment will be responsible for seeking the FPIC from affected communities. However, the project's implementing entity, IFAD, will play a supportive role in facilitating this process. IFAD will provide technical assistance in the design and execution of FPIC processes, ensuring that community engagement is done transparently and inclusively. IFAD will also support the Ministries in aligning the FPIC process with international human rights standards and best practices.

The first step is for the Governments to identify the laws that regulate the rights to land, sea, and other resources. If regulations and boundaries are not clearly known or if the process was never done, this can be rectified by conducting early consultations with concerned communities and inclusion in project implementation design of the measures, approaches, and resources for ensuring demarcation and recognition of territorial and communal rights.

Identifying representative institutions

To ensure legitimacy, it is crucial that FPIC be obtained from the representative institutions of local communities. Understanding how communities make decisions is the first important step in the FPIC process. The important criteria are that representation should be determined by the concerned people and communities themselves to avoid misrepresentation or manipulation. This can be done in line with the community structure for representation, in accordance with the table below.

Local governance structures

Level of Governance	Institutions
Central Government	Government Ministries and Departments
Local Government	Provincial and District Delegations Chief of Administrative Post
Traditional/Community Authority	Traditional Chiefs Head of Ten Households Village Committees Water Point Committees, FFSs

In general, representative institutions must strive to adhere to the principles of inclusive consultation, participation, and consent in their internal decision-making processes. The FPIC process at design and implementation phases is intended to ensure that the project does not negatively affect future beneficiaries. Solutions should be found during the consultation on how to maximize benefits expected from local communities.

Consultation, participation, and consent

Consultation is an important feature of any project design process. The project is expected to follow the IFAD participatory approach to ensure that local communities are included in project design. It will give appropriate attention to women and young people in these consultations.

Besides the initial Impact assessments of the project at design stage, Governments of Namibia and Angola will institute a continuous consultation process during implementation.

Consent to the project or to a project component or specific activity under a component will be an outcome of the collective decision-making process by the local communities. GoA and GoN will seek recorded consent agreements with the concerned communities through their freely chosen representative bodies to engage in the FPIC process.

The consent agreement and record will document the outcome(s) of the process and terms and conditions agreed upon. It will also document any dissent to the overall project or project activities. The agreement must be independently verified as fair and true by the communities and follow the process agreed by them.

The procedures and rules of the FPIC process will be largely determined by the communities affected and those who have the right to give or withhold consent. The FPIC process must be in harmony with their own governance and internal collective process for taking decisions.

Consultation processes will be designed to align with the cultural values and practices of the communities involved. Special consideration will be given to **Indigenous knowledge systems**, ensuring that consultations are held in locations and at times that respect traditional structures. The project will involve **traditional leaders** and community elders in the consultation process, alongside modern governance representatives, to ensure inclusivity and respect for community traditions. The project will also facilitate consultations using language and formats that are accessible to all community members, including oral and visual methods for those who may not be literate.

In addition to ensuring the inclusion of **women** and **youth** in the FPIC process, the project will integrate gender-sensitive approaches to consultation and decision-making. Special efforts will be made to ensure that women's voices are heard and that they have an equal role in the decision-making processes. This will be facilitated through targeted community sessions focused on women, as well as ensuring that women are well-represented in community leadership roles related to the FPIC process. The project will also engage vulnerable groups such as the elderly, people with disabilities, and marginalized communities to ensure that their perspectives are included in the consultation and consent process.

Documenting consultation, participation, and FPIC
GoA and GoN will undertake to document all consultations, participation, and consents in the following manner:
Keep record of consultations undertaken: - how participants were selected and invited; what documentation/information they received beforehand and in which language; who participated; what was discussed; and what was agreed.

Keep record of participation: when did representatives of indigenous peoples and local communities participate; how they were selected; what institutional roles or accountability links to constituents do they have; what commitments do they assume; and what agreements were made.

Document specific instances that express FPIC: often FPIC is expressed as an agreement between the borrower (or the duly designated implementing agency) and the concerned local communities. These agreements should clearly articulate what has been agreed (issues, commitments, time frames, budgets, roles, responsibilities, etc.); who entered into the agreement (clearly identifying the individuals involved as well as their title and role); and what mechanisms have been set up to maintain dialogue and address disagreements.

In addition to documenting FPIC agreements, a Grievance Redress Mechanism (GRM) will be implemented to address any complaints or concerns that arise during the consultation and implementation phases. The GRM will allow community members to voice concerns, lodge complaints, and track the resolution of their issues. Any withdrawal of consent by a community during project implementation will be formally addressed through this mechanism, and steps will be taken to understand the reasons behind the withdrawal and resolve any issues identified. The GRM will be accessible in both rural and urban areas and will ensure that communities are informed of the steps to take if they feel their rights are infringed upon.

A feedback loop will be integrated into the FPIC process to ensure continuous communication with the affected communities. This feedback loop will include regular follow-up consultations, where community members can provide ongoing input into the implementation of the project. This will ensure that any concerns or changes in the community's needs are addressed in a timely manner. The feedback will be documented and acted upon by the project management team, with an open and transparent process for resolving any issues that arise.

To ensure that FPIC is adequately and timely solicited, the project will establish a clear timeline for each stage of the FPIC process. This includes timelines for:

Sociocultural and land tenure assessments (to be completed within three months of project initiation).
Community consultations (to take place during the first six months of the project).
FPIC decision-making (to be formalized within nine months).
Timelines will be outlined in the Indigenous Peoples Plan and communicated to the community, ensuring that all stakeholders are informed of the process and its key milestones.

Where to seek FPIC

FPIC is not so much a safeguard principle, rather a proactive approach to identify development pathways with local communities and it is applied in two scenarios (IFAD, 2015): Investment projects that may have an impact on the land access and use rights of rural communities, Projects targeting indigenous peoples or rural areas that are home to indigenous and tribal peoples and ethnic minorities. The first scenario refers to the type of investment project and the second to the type of project area and target groups. The table below outlines the FPIC requirements according to these two criteria.

Table 792: FPIC requirements based on project type and areas of intervention.

No.	Location	Project likely to affect land access and/or use rights of communities	Agricultural and rural development projects unlikely to affect land rights (agricultural technologies and production, value chain development, social infrastructure)	Project supporting demand-driven services to individuals (rural finance, small and medium-sized enterprise development)
1.	Rural areas without indigenous peoples or minorities.	YES	· NO	· NO
2.	Rural areas with some indigenous peoples and minorities' communities.	·YES	On a case-by-case basis	· NO
3.	Indigenous people's territories or tribal areas	·YES	· YES	· YES

In projects that affect land access and use rights of communities, the principle of FPIC is applied to local communities in a broad sense, i.e., the local communities that will potentially be affected, are identified during project design and in application of SECAP. However, there is a general requirement for FPIC [2]. in areas that are home to indigenous and tribal peoples and ethnic minorities.

Seeking FPIC at design phase

When the precise nature and specific location of an investment is known and well defined, FPIC must be solicited at design stage. In the case of this project the precise nature and specific locations of the potential investment were not known, thus GoA and GoN were not expected to directly seek FPIC at this stage.

However, the project was required to carry out an Environmental, Social and Climate Management Framework (ESCMF) study using the IFAD Social, Environmental and Climate Assessment Procedures (SECAP). IFAD Social, Environmental and Climate Assessment Procedures (SECAP) is a key mechanism to identify requirements for FPIC at the design stage. The ESCMF identifies project components with potential direct and significant impact on local communities, which require FPIC of national or subnational representative institutions of local communities during the design phase.

Seeking FPIC at implementation stage

FPIC of investments is sought during the implementation phase when:

The project, or some of its components, is likely to affect land access and use rights of local communities, and/or

The project area is home to indigenous and tribal peoples and ethnic minorities.

Communities are not identifiable at project design stage.

Specific investments in specific communities are not predefined during the project design phase, but open to communities' demand during the project implementation period.

If at design stage the specific locations and communities to be affected were not identifiable, the project documents will include the FPIC implementation plan describing how the participatory and consultation process for seeking communities' consent would be conducted. The FPIC would then be sought during implementation before a specific investment is decided in each community.

Since investments in specific communities and territories were not identifiable during the project design stage, FPIC will further be solicited during the implementation phase.

The outline for the FPIC plan includes the following steps:

Sociocultural and land tenure assessment

Identification of decision-making institutions and representatives to ensure full, effective, and equal participation of stakeholders.

Consultation process leading to FPIC.

Formalized consent agreement.

The FPIC implementation plan indicates:

- When and how the sociocultural and land tenure assessment will be undertaken.
- When and how consultations will be carried out to identify decision-making institutions.
- When and how consultations leading to FPIC will be carried out.
- By when the consent agreement will be formalized with the local communities.
- The FPIC implementation plan will outline the following steps:

- Sociocultural and land tenure assessment: This assessment will identify the governance structures, land tenure systems, and potential risks to community rights.
- Identification of decision-making institutions: This step will ensure that the relevant local authorities, traditional leaders, and community representatives are included in the FPIC process.
- Consultation process leading to FPIC: The process will include a series of consultations, meetings, and public discussions that will allow for community-wide input into the project.
- Formalized consent agreement: The outcome of the FPIC process will be documented in a formal consent agreement that outlines the terms and conditions agreed upon by the community. This will be signed by community representatives and the project implementing team and will be kept on record as evidence of community consent.

Annex 6. Gender Assessment

Gender context: the situation of women in the target communities and opportunities for greater social inclusion

In the project's target areas, women make up more than 70 per cent of the active agricultural workforce and dominate crop production and informal marketing channels.[40] Women are responsible for domestic food security and have few economic alternatives outside of agriculture. A gender analysis of the agricultural sector reveals significant disparities in access to critical resources and opportunities, including land ownership, financial capital, agriculture, machinery, and credit; access to market institutions and public infrastructure; access to agricultural inputs; and technical training, Women also face barriers to participation in income-generating projects. To address these inequalities, the project will support targeted efforts to strengthen women's technical capacities, improve access to capital, and facilitate their transition to higher-value activities. This will be achieved through inclusive mechanisms such as gender-responsive farmer field schools, which promote equal access to skills development, information, and productive resources.

The main barriers to women's empowerment stem from normalized discriminatory social customs, practices and behaviors that restrict women's mobility, voice, and agency. These challenges are compounded by limited access to essential services and infrastructure, including Furthermore, lack of services such as clean water, basic education, literacy programs, maternal and child health care, sexual and reproductive health education services, access roads, public transport, energy, decent housing, and mobile telecommunications. The absence of inadequacy of these services disproportionately affects women, limiting their opportunities for economic participation, education, and leadership. These structural barriers to empowerment are further exacerbated by the impacts of climate change, which intensify resource scarcity and vulnerability, placing additional burdens on women as primary caregivers and food providers. Addressing these multi-layered constraints is essential to achieving gender-equitable resilience and sustainable development. The social environment in rural communities reflects persistent conditions of underdevelopment, requiring the population to adopt coping mechanisms in the absence of timely and adequate support. While rural communities are adapting to climate change, the process is uneven and often reinforces existing social inequalities. Women, children, and the elderly are disproportionately affected by climate-related stresses. Women and older individuals typically shoulder the burden of unpaid care work and household responsibilities, while men frequently migrate with livestock in search of pasture. This pattern of mobility and labor division leaves elderly people—especially elderly women—with limited support, often confined to homes that lack adequate infrastructure or living conditions. These gender- and age-specific vulnerabilities must be addressed through inclusive adaptation strategies that consider mobility constraints, care responsibilities, and unequal access to resources and services. [41]

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[40] An Overview of Women's Work and Employment in Angola – Decisions for Life MDG3 Project, Country Report #2:

[41] https://mercado.co.ao/opiniao/o-idh-esperanca-de-vida-escolaridade-e-diversificacao-LX1220409

The social environment in rural communities reflects conditions of underdevelopment, necessitating the population to adopt coping mechanisms in the absence of timely and adequate support. While rural communities are adapting to climate change, the process is uneven and often reinforces existing social inequalities. Women, children, and the elderly are disproportionately affected by climate-related stresses. Women and older individuals typically shoulder the burden of unpaid care work and household responsibilities, while men frequently migrate with livestock in search of pasture. leaves elderly people. This situation leaves elderly people, especially elderly women—with limited support, often confined to homes that lack adequate infrastructure or living conditions who may have limited mobility, confined to their homes without adequate living conditions. These gender- and age-specific vulnerabilities must be addressed through inclusive adaptation strategies that consider mobility constraints, care responsibilities, and unequal access to resources and services.

In Angola, the incidence rate of multidimensional poverty in rural areas (87.8%) is more than double that of urban areas (35.0%). Financial problems are more frequent among women in rural areas (76%) than in urban areas (58%). It was also found that the problem of distance to the nearest health facility is greater in rural areas (68%) than in urban areas (45%). The results of the 2015-2016 Multiple Indicators and Health Survey (IIMS) published in June 2017 state the following:

Water for drinking: Two-thirds of households in urban areas and one-third in rural areas have access to appropriate water sources for drinking.

Toilet facilities: About one third (32%) of households have appropriate, non-shared toilet facilities. However, 9% of households in urban areas and 63% in rural areas do not have any sanitation facilities.

Electricity: In only 21% of households had access to electricity.

Over time, the situation of extreme poverty has become worse in rural areas, reaching 63% of the population. This scenario is reflected in the reality of women in the rural communities visited in the commune of Chitado.[42]

In Angola, climate change disproportionately impacts women due to entrenched cultural norms and roles. Men typically hold dominant positions as household heads, reinforced by customary laws that often contradict gender equality standards. This perpetuates inequalities in economic participation and legal rights, leaving women vulnerable in agriculture and food production. Limited access to land, resources, and training intensifies their susceptibility to climate shocks such as drough ts, undermining economic independence and food security. Meanwhile, men migrating for income during environmental crises increase women's household and agricultural responsibilities despite their limited rights. Boys may leave school for economic support, while girls take on more domestic duties, risking dropout or early marriage. Women and girls face greater health risks and gender-based violence due to compromised water and sanitation systems during climate events. These disparities highlight how climate change exacerbates gender inequality, hindering equitable development in Angola.

In the consultations conducted with communities in Chitado commune, Angola, it became evident that the population is dispersed, with families requiring extensive land for grazing purposes. Traditionally, men typically move across regions to locate suitable grazing areas and water sources for their livestock, while women remain behind to tend to small livestock and care for children. Importantly, women in this region do not inherit property or cattle. Due to limited access to services and healthcare facilities within Angola, many women migrate to Namibia seeking employment opportunities and better healthcare. Language barriers further complicate access to services within Angola, whereas across the border in Namibia, Himba people—who share the same language—often find services more accessible and accommodating.

Women migrating to Namibia for work often bring their children, but the Himba's polygamous practices sometimes leave women neglected as they care for their children alone. High divorce rates have increased households headed by women, breaking traditional collectivism as households manage independently on their farms.

Water accessibility is the primary challenge highlighted by communities. Women trek long distances for water, while men seek pasture and water for livestock in Namibia. Limited boreholes exist, with issues like saline water and unreliable natura l springs and hand-dug wells due to droughts and safety concerns. Access to the Kunene River is restricted by commercial

[42] Angola - Inquérito de Indicadores Múltiplos e de Saúde (IIMS) - 2015-2016 (gov.ao)

Field Code Changed

farmers, forcing risky bucket use for fetching water where possible. Communities stress that improved water access would support vegetable cultivation for food security.

Accessibility issues include poor roads hindering drought relief distribution to remote communities. Lastly, inadequate connectivity with no antennas for data transmission limits early warning systems. Electricity is sparse outside local authority offices, complicating staff retention due to isolation from basic amenities and families.

In Namibia, the impacts of climate change underscore the influence of established gender norms. Women, primarily responsible for water collection, food preparation, and agriculture, face heightened burdens as climate-induced droughts and resource depletion limit their time for education and economic activities. Men, traditionally involved in livestock rearing, may migrate due to changing pasture conditions and water scarcity, disrupting family dynamics, and increasing women's responsibilities. Boys often interrupt their schooling to support agricultural tasks or fill roles left by migrating fathers, impacting their educational achievements and future opportunities. Girls, typically tasked with domestic chores like water fetching, bear increased responsibilities during environmental stresses, leading to higher dropout rates and constraining their prospects. These impacts transcend economic impacts, affecting health, education, and overall well-being, highlighting the necessity for adaptation strategies that address and accommodate gender roles for equitable outcomes in Namibia's communities.

The consultations with the women in Namibia revealed the challenges faced by the community mainly due to drought and the broader impacts of climate change. The loss of livestock, the mainstay of livelihoods, has left families without milk or food for their children. Despite social grants intended to support families, these funds are largely spent on school fees, leaving little for other essential needs.
The situation is exacerbated by livestock diseases, which are not responding to available treatments, and further diminishing resources. Access to drinking water is a critical issue, with women often travelling long distances to fetch water from wells that lack proper safety measures, leading to tragic accidents.

Gender inequalities compound these hardships. Women, regardless of marital status, face significant disadvantages. They are often marginalized in decision-making processes and excluded from inheriting property or livestock. Economic opportunities are limited, and cultural norms such as polygamy perpetuate inequality, leaving many women and their children vulnerable.

The lack of support and the unequal distribution of resources within households place immense burdens on women, particularly single mothers who lack adequate social and economic protection. It's evident that addressing these complex issues requires comprehensive support, including improved access to safe water sources, better healthcare, and economic opportunities that empower women and promote gender equality.

Advocating for change in cultural norms and policies that uphold women's rights and economic independence is crucial. Communities and stakeholders must work together to ensure that women are included in decision-making processes and have equal access to resources. This holistic approach is essential for building resilience against climate impacts and promoting sustainable development that benefits everyone in the community.

Gender barriers and inequalities

Women and young people crave better living conditions for their families. Men have opportunities to access employment in Namibia on commercial farms, but most women in the target group face many barriers due to lack of access to information, very high level of illiteracy, and many do not have any form of identification, which limits their mobility.

The language of the pastoralist communities is not understood by everyone in the commune of Chitado, in the hospitals at the local level there are communication difficulties in addition to the lack of medicines, they resort to the neighboring country of Namibia in the public hospital units there is always someone who understands the language and facilitates presentation of health problems affecting women and children in medical care.

Women have limitations in terms of agronomic and environmental knowledge, financial and material means, which constitute difficulties in developing agriculture as a family subsistence activity.in addition the women lack secure land tenure to access finance.

Women have limitations in the use of ICTs, and this considerably limits them in their access to information and lack of knowledge of the reality of the country and the place where they live.

During transhumance, men move to other locations with pasture, and women and children are limited in access to animal milk and meat for food, leading to poorer nutrition.

There are no social projects to support the elderly, the elderly, children, and women, leaving them vulnerable against domestic violence.

Women face psychological violence, often because their partner has more than one wife, and claim rights for mistreatment without any defense and knowledge about human rights and women's rights to inhibit certain problems.

Raised concerns about polygamy in the community and its discontent in the way they live with their partners; in some cases, violence occurs in families.

Widowed women are afraid to remarry, to avoid family problems.

Customary traditions and weak legislative frameworks often deny women rights to land ownership and inheritance.

Lack of access to care for pregnant women and treatment of children due to lack of maternity hospital in the locality. The non-existence of maternity hospitals has led to deaths of pregnant women and newborn infants.

Transport and communication routes in poor condition do not facilitate the movement of the population, requiring long hours of travel from one location to another. People from the Angolan side of the border travel for up to 4 days to access social services in Namibia, which is closer than the provincial capital of Kunene.

Many children in pastoral communities do not have access to school because they live too far away.

Schools do not have access to teaching materials and cannot provide school meals, given the local context, to support children and prevent dropouts.

Lack of access to healthcare facilities places a particular burden on women, as they are primarily responsible for caring for the sick.

Difficulties in accessing communication, due to the lack of telecommunications connectivity, means that forecasts and warnings issued by the responsible authorities may not be received by the communities. As women travel less into the urban centers, they have lower access to information than men.

Hunger phenomenon is due to drought and rainwater shortages.

Cattle theft has been a constant problem, negatively impacting on the livelihoods and nutrition of families.

Cutting down trees without replacing them has led to deforestation, harming nature, and leading to a less supportive natural environment for human health, lack grazing for animals and fuelwood.

Cases of violent crime and sexual abuse have occurred, with little response capacity of public services, due to the remoteness of the communities.

There are no women in the local police force due to poor working conditions.

In 2021 was the year that saw the highest emigration of rural people from Angola to Namibia, and many Angolans did not return to their homelands, as they found better living conditions in relation to their areas of origin.

G**ender needs that the project could be addressed in the target communities.**

- The following needs were identified in consultation with the target communities that they would like the project to address:
- Literacy and language learning programs in communities, to facilitate their effective participation in development projects.
- Capacity building in the use of new agricultural and animal production technologies including rehabilitating rangelands through planting of fodder crops.

- Improving knowledge on climate change adaptation
- Inclusion of education services for children in the communities and access to school meals
- Installation of solar pumps for the irrigation of crops and access to water for family consumption
- Improving knowledge about reforestation and afforestation
- Leadership training for women, so that they can participate more effectively in decision-making at community level and empower women's participation in decision-making processes.
- Environmental education to improve knowledge on the potential impact of climate change and reduce vulnerability in the communities.
- Reinforcement of knowledge about pest control in livestock and crop agriculture
- Access to the means for greater production in agriculture, such as access to finance.
- Promotion of technical and professional courses for young people
- Greater access to water through labor-saving technologies
- Awareness rises on human rights and women's rights, to curb discrimination and gender-based violence.
- Capacity building in the use of new agricultural and animal production technologies
- Access and reinforce knowledge to be able to use ICTs, to access climate information and early warnings.
- Secure land tenure: While there are legal frameworks supporting women's land rights in Angola, advocacy and reforms are necessary to fully realize and implement these protections.
- Special considerations for indigenous women, widows, and female-headed households include tailored support to address their diverse needs and challenges effectively, thereby ensuring that development efforts leave no one behind.

Annex 7. Gender Action Plan

To ensure equitable participation and benefits for women and men in the project, the following activities are proposed. These activities are incorporated into the project results framework, and the budgets for them are incorporated into the project activity budget. Please note that as this project targets the semi-nomadic agro-pastoralist indigenous communities of the KRB, it is intended that all the beneficiaries of the Gender Action Plan shall be from this category of stakeholders.

Gender Action Plan

Impact statement Improve gender-responsive adaptive capacities and resilience to climate variability and change of rural crop/livestock smallholder farmers, agro pastoralists, and pastoralists in Kunene water basin.					
Component 1: Co-design and implementation of a Disaster Risk Reduction Plan through Ecosystem-based Adaptation in the KRB					
Activities	**Indicators**	**Target**	**Timeline**	**Responsibilities**	**Costs**

Output 1.1.1 Knowledge gaps identified and addressed through a Water Security Assessment, Ecosystem Goods and Services Valuation, and community-based climate vulnerability and needs assessments to support the development of the KRB: EbA-DRRP. Activity 1.1.1.1 Conduct a participatory Water Security Assessment in the KRB, with a focus on gender-responsive and EbA disaster risk reduction Consultation meetings held with women on water security in Kunene. Activity 1.1.1.2 Undertake a participatory and gender responsive Ecosystem Goods and Services (EGS) quantification and valuation across the KRB and community-based climate vulnerability and needs assessments. Awareness and consultation meetings with indigenous people including women on EbA in Kunene	A minimum of 10 meetings will be held in the first 3 months with the goal to reach 1,000 women in 10 communities (30% of which are from female headed households and other vulnerable sub-groups (e.g., widowed, minorities, disabled, the elderly) in total (baseline at implementation start: 0). A minimum of 10 meetings will be held in the first 3 months with the goal to reach 1,000 women in 10 communities (30% of which are from female headed households and other vulnerable sub-groups (e.g., widowed, minorities, disabled, the elderly) in total (baseline at implementation start: 0)	1,000 women reached by project by the end of the water security assessment (year 1) 1,000 women reached by project by the end of the EbS goods and services qualification assessment (year 1)	Start by year 1. 6,000 women by end of year 1	PIU Gender Specialist	$50,000 $50,000
Output 1.1.2 A basin-wide, gender-responsive DRR Plan focused on EbA is co-designed, developed, validated, and endorsed by key stakeholders across the KRB, incorporating local priorities and ecological knowledge gathered through participatory scenario planning processes EbA	A minimum of 10 meetings will be held in the first 3 months with the goal to reach 1,000 s women in 10 communities (30% of which are from female headed households and other vulnerable sub-groups (e.g., widowed, minorities, disabled, the elderly) in total (baseline at implementation start: 0)	1,000 women reached by project by the end of the development of the inclusive DRR Plan focused on EbA (year 1)	Start by year 1. 3,000 omens by year 1	PMU. Consultant, Gender Specialist	$50.000
Activity 1.1.2.1 Facilitate the co-development of a basin-wide, gender-responsive DRRP focused on EbA through an inclusive, participatory	A minimum of 2 DRRP KRB co-planning activities per year with the goal to reach	15,000 women reached by project mid-term (year 3)	Start by year 1. activities conducted annually By year 3 (15,000	PMU, GoA, GoN	$40.000

stakeholder engagement process. Hold consultative meetings with women at national, provincial, municipal and community level on co-planning of the DRRP. Hold awareness and consultation meetings with indigenous women on FPIC in the KRB Conduct Scenario Planning during the FPIC consultations. **Output 1.2.1 A comprehensive record of inclusive multi-stakeholder engagement processes in the KRB is developed, documenting meaningful participation of beneficiary communities (with specific attention to gender and ethnic groups), civil society, private sector, and government institutions, to inform the development of the EbA focused DRR Plan** Activity 1.2.1.1 Facilitate inclusive stakeholder engagement and co-planning across the KRB. Activity 1.2.1.2 Facilitate the development and implementation of a Free, Prior and Informed Consent (FPIC) Plan for indigenous communities. Activity 1.2.1.3 Facilitate inclusive dialogue among gender and ethnic subgroups using participatory scenario planning approaches	25,000 women in 20 communities. (30% of which are from female headed households and other. vulnerable subgroups (e.g., indigenous, widowed, minorities, disabled, the elderly) in total. (Baseline at implementation start: 0) Gender-inclusive consultation processes with stakeholders at the national, provincial, municipal and community levels across Angola and Namibia A minimum of 2 FPIC consultations activities per year (one in Namibia and one in Angola) with the goal to reach 10,000 indigenous women in 20 communities, 30% of whom are from female headed households and other vulnerable sub-groups (e.g., widowed, minorities, disabled, the elderly) in total. (Baseline at implementation start: 0)	25,000 women reached by project finalization (year 5) 6,000 women reached by project mid-term (year 3) 10,000 women reached by project finalization (year 5)	women reached) By year 5 (total of 25,000 women reached) Start by year 1. activities conducted annually By year 3 (6,000 women reached) • By year 5 (total of 10,000 women reached)		$75,000
Component 2: Strengthening technical infrastructure and institutional systems for a satellite-based MH-EWS for the KRB					

Output 2.1.1 Automatic weather stations installed and operational in key micro-climate zones of KRB, in collaboration with national meteorological agencies, enhancing localized risk monitoring capacity. Activity 2.1.1.1 Install 24 automatic weather stations (AWS) across the KRB in collaboration with national meteorological agencies. Provision of training for women and differentiated gender groups in the design and implementation of weather information system	12 local weather stations per country under management by indigenous women's groups are established in the project area in total (progress goal: minimum of 2 by year 2) (Baseline at implementation start: 0)	By the end of the project 80% of indigenous women in the project area will have access to weather information (30% of whom are from FHH and other vulnerable subgroups) (baseline at implementation start: 0%)	21,680 indigenous women by end of the project	GoN, GoA, PMU	$20,000
Output 2.1.2 IoT-enabled hydrometric and water quality monitoring stations installed and integrated into national monitoring systems along Kunene River, in partnership with the national hydrological agencies, to support real-time flood and drought risk tracking and early response planning. Activity 2.1.2.1 1 Install16 hydrometric and water quality monitoring stations along the Kunene River, in collaboration with the national hydrological agencies : Provision of training for women and differentiated gender groups in the design and implementation of hydrometric stations	16 IoT enabled hydrometric stations under management by Women's groups are. established in the project area in total (progress goal: minimum of 2 by year 2) (Baseline at implementation start: 0)	By the end of the project 80% of women in the project area will have access to hydrometric information (30% of whom are from FHH and other vulnerable subgroups) (baseline at implementation start: 0%)	21,000 women by end of the project	GoN, GoA, PMU	$20,000
Output 2.2.1 Multi-level KRB: MH-EWS co-designed and validated by governments and local communities, integrating indigenous knowledge. Activity 2.2.1.1 Facilitate participatory design of the MH-EWS with national institutions and local communities, ensuring gender and social inclusion	A minimum of 4 community level workshops (2 for Angola, 2 for Namibia, in year 1 and 2) with the goal to reach 200 women in 10 communities (30% of which are from female headed households and other vulnerable sub-groups (e.g., indigenous people, widowed, minorities, disabled, the elderly) in total (baseline at implementation start: 0)	200 women reached by year 1.	Start year 1, activities. 100 women reached by year 1 and 200 by year 2	PMU. Consultant, Gender Specialist	$40.000

Output 2.2.2 Operational Big Data Analytics platform developed for real-time capture, monitoring, and analysis of EWS data, with an accessible, user-friendly dashboard tailored to decision-makers and community users. Activity 2.2.2.1 Develop and operationalize a real-time Big Data Analytics platform and user interface to support MH-EWS forecasting and dissemination. **Output 2.2.3 KRB MH-EWS operationalized using a cross-border, multi-level, multi-sectoral and multi-disciplinary framework.** **Activity 2.2.3.1 Operationalize a MH-EWS for the KRB** **Output 2.2.4 Data from MH-EWS translated into locally relevant and easily understandable weather forecasts for local communities use and action.** Activity 2.2.4.1 Co-design, simplify, translate, and disseminate gender-responsive weather forecasts in local languages spoken in the KRB. Women in meteorological and broadcasters trained to simplify, translate, and disseminate seasonal, weekly, and daily weather forecasts in local languages	A minimum of 50 women in meteorological services and broadcasting trained per year with the goal to reach 150 women in 75 in Namibia and 75 in Angola in the first 3 years (baseline at implementation start: 0)	Expected number of women trained by year 3 is 150. 150 women trained by project finalization (year 5)	Start by year 1. activities conducted annually until year 3 (150 women trained) • By year 5, 150 women trained	Meteorological departments and radio and TV broadcasting stations in Namibia and Angola	$18,000
Component 3: Inclusive community-based adaptation actions are co-designed and implemented to strengthen climate-resilient livelihoods, natural resource management, and water security in the KRB.					

Output 3.1.1Rainwater harvesting and retention infrastructure constructed or rehabilitated to improve water availability for domestic and agricultural water access, particularly during dry periods. Activity 3.1.1.1 Rehabilitate 20 existing earth/sand dams. Activity 3.1.1.2 Construct 20 new rainwater retention ponds Include women in management committees for the earth dams and water retention ponds. Women are participating in O&M conservation works for the dams and ponds. Women in income generating farming projects utilize water from the dams for watering small livestock and kitchen gardens. Activity 3.1.1.3 Install 20 rooftop rainwater harvesting systems on public buildings for community use. Activity 3.1.1.4: Establish and build the capacity of 10 community Water-EWS Action Committees	A minimum of 20 women co-opted into the Water-EWS Action Committees per year with the goal to reach 100. women in 50 in Namibia and 50 in Angola in 5 years (30% of which are from female headed households and other vulnerable sub-groups (e.g., widowed, minorities, disabled, the elderly) in total. (Baseline at implementation start: 0) A minimum of 200 women trained and conducting O&M for dams and ponds per year with the goal to reach 1000. women in 500 in Namibia and 500 in Angola in the 5 years (30% of which are from female headed households and other vulnerable sub-groups (e.g., indigenous people, widowed, minorities, disabled, the elderly) in total. (Baseline at implementation start: 0) A minimum of 200 women engaged in income generating projects from dams and ponds per year with the goal to reach 1,000 women (500 in Namibia and 500 in Angola) in the 5 years (30% of which are from female-headed households and other vulnerable sub-groups (e.g., indigenous people, widowed, minorities, disabled, the elderly) in total (baseline at implementation start: 0 Community Water-EWS Action Committees have a minimum 50% female composition	Expected number of women reached By year 3 is 60 • 100 women reached by project finalization (year 5) Expected number of women reached By year 3 it is 600 • 1,000 indigenous women reached by project finalization (year 5) Expected number of indigenous women reached By year 3 it is 600 • 1,000 indigenous women reached by project finalization (year 5)	Start by year 1. activities conducted annually • By year 3, 60 women trained • By year 5, 100 women in dam/pond management committees Start by 200 women year 1. activities conducted annually • By year 3 (600 women trained in O&M) • By year 5, 1000 women trained in O&M Start with 200 women in year 1. Activities conducted annually. • By year 3, 600 women in income generating enterprises • By year 5, 1,000 women in income generating projects using dam/pond water	PMU	$100,000

Output 3.1.2 Groundwater access improved through small scale infrastructure to support home gardening, and household water supply. Activity 3.1.2.1 Rehabilitation of existing boreholes for vegetable gardens and domestic use Provision of improved domestic water source for women Establishment of home gardens by women employing traditional and indigenous knowledge Outreach and awareness on nutrition, health, GALS, GAPS/FFS and climate resilient agriculture for indigenous women Women representation in water point management committees	A minimum of 5,600 women accessing water per year with the goal to reach 28,000 women in total, 14,000 in Namibia and 14,000 in Angola in the 5 years. (30% of which are from female headed households and other vulnerable sub-groups (e.g., indigenous groups, widowed, minorities, disabled, the elderly) in total (baseline at implementation start: 0) A minimum of 30 women per borehole establish home gardens reaching 450 women per year with the goal to reach 2,250. women in 1,125 in Namibia and 1,125 in Angola in the 5 years (30% of which are from female headed households and other. vulnerable sub-groups (e.g., indigenous people, widowed, minorities, disabled, the elderly) in total. (Baseline at implementation start: 0) A minimum of 4,500 women receives awareness training on nutrition, GALS, CSA GAPS per year with the goal to reach 22,500. women in 11,250 in Namibia and 11,250 in Angola in the 5 years (30% of which are from female headed households and other. vulnerable sub-groups (e.g., widowed, minorities, disabled, the elderly) in total. (Baseline at implementation start: 0) A minimum of 60 women co-opted into the management committees per year with the goal to reach 300 women in	Expected number of women reached By year 3 it is 16,800 • 28,000 women reached by project finalization (year 5) Expected number of women reached By year 3 it is 1350 • 2,250 women reached by project finalization (year 5) Expected number of women reached by year 3 is 13500 • 22,500 women reached by project finalization (year 5) Expected number of women reached by year 3 is 180. • 300 women reached by project finalization (year5)	Start by year 1. Activities conducted annually • By year 5, 28,000 women with improved domestic water Start by 450 women in year 1. Activities conducted annually • By year 5, 2,250 women practicing home gardening Start by 4,500 women in year 1. Activities conducted annually. • By year 3 • By year 5, 22,500 women with awareness in nutrition, health, GALS, GAPS/CSA/FFS Start by 60 women in year 1; activities conducted. annually • By year 3,180 women trained • By year 5,300 women in water point management committees	PMU	$50,000

	150 in Namibia and 150 in Angola in 5 years (30% of which are from female headed households and other vulnerable sub-groups (e.g., indigenous people, widowed, minorities, disabled, the elderly) in total (baseline at implementation start: 0)				
Output 3.1.3 High Nutrient drought-tolerant crop varieties promoted through farmer field schools, demonstrations, and extension services. **Activity 3.1.4.1 Promote drought-tolerant food varieties.**	450 women per year with the goal to reach 2,250. women in 1,125 in Namibia and 1,125 in Angola in the 5 years plant (30% of which are from female headed households and other. vulnerable sub-groups (e.g., indigenous people, widowed, minorities, disabled, the elderly) in total. (Baseline at implementation start: 0)				
Output 3.1.4 Degraded rangeland restored through reseeding, rotational grazing, and soil improvement techniques to enhance drought-resistant fodder availability and ecosystem health. Activity 3.1.4.1 Establish nurseries for drought-resistant fodder crops and Moringa tree cultivation, to be managed by women's groups. Activity 3.1.4.2 Secure and rehabilitate 20,000 hectares of rangeland in partnership with traditional leaders and local institutions	The number of people in the community participating in nurseries provide seedlings for certified saplings because of the project, with the numbers. disaggregated for different gender sub-groups (such as by sex and age, ethnicity, economic class, widowed, female-headed household etc.).	By the end of the project 80% women In the project area we will have access to improved drought resilient forage crops (40% of which are from FHH and other vulnerable subgroups) (baseline at implementation start: 0%)	By project midterm	PMU CSA Specialist	$319,546
Activity 3.1.4.3 Promote integration of Moringa trees into household gardens to enhance nutrition, soil health, and water retention in women-led production systems	The number of people in the community participating in moringa tree propagation, with the numbers. disaggregated for different gender sub-groups (such as by sex and age, ethnicity, economic class, widowed, female-headed household etc.).	By the end of the project 80% of i women in the project area will have access to the moringa trees for seedlings propagated in the nurseries and trained on planting and maintenance in their home gardens s. (40% of which are from FHH and other vulnerable subgroups) (baseline at implementation start: 0%)	By project midterm	PMU CSA Specialist	$340,000
Component 4: Strengthening awareness, knowledge, and capacity to adapt to climate change and variability and knowledge sharing					

Output 4.1.1 11 Knowledge on climate risks, adaptation strategies, and the ecological dynamics of the KRB is generated, shared, and used to inform inclusive adaptation planning and resource management. Activity 4.1.1.1 1 Enhancing community capacity through gender-responsive climate knowledge and awareness	Number and percentage of different sub-groups of women and men engaged in benefit-sharing discussions such as related to payment schemes for ecosystems. services.	80% of indigenous women in the project area will have knowledge about gender equity and social inclusion (40% of which are from FHH and other vulnerable subgroups) (baseline at implementation start: 0%)	Throughout the project	PMU Gender Specialist	$200,000
Activity 4.1.1.2 Enhancing Adaptive Capacity through Integrated Nutrition and Literacy Support	Number and percentage of different sub-groups of women and men trained in Literacy, nutrition, and gender mainstreaming in adaptation	80% of indigenous women in the project area will have been trained in literacy, nutrition, and gender. (40% of which are from FHH and other vulnerable subgroups) (baseline at implementation start: 0%)	Throughout the project	Service Provider	$360,000
Output 4.1.2 Kunene River Awareness Kit (RAK) online portal updated and reactivated with gender-responsive, climate smart content and community outreach tools. Activity 4.1.2.1 Reactivate and update the Kunene River Awareness Kit (RAK) online platform to support inclusive, data-driven water governance. Output 4.1.3 Three case studies from the project developed and submitted to knowledge platforms such as IFAD, FAO, SADC-GMI and WaterNet for wider dissemination. Activity 4.1.3.1 Develop case studies	Number and percentage of different sub-groups of women and men trained in adaptations to ecosystem-based land management practices,	80% of indigenous women in the project area will have awareness in adaptation (40% of which are from FHH and other vulnerable subgroups) (baseline at implementation start: 0%)	Throughout the project	PMU Gender Specialist with Service Provider	$150,000
Output 4.2.1 Capacity-building programs for partner institutions in the KRB, focused on addressing water scarcity, climate change and stakeholder conflicts developed. Activity 4.2.1.1 Institutional capacity building and strengthening for effective management of gender-responsive climate change adaptation initiatives	A minimum of 5 new activities per year with the goal to reach 80 indigenous. women in 8 communities (60% of which are from female-headed households and other vulnerable sub-groups (e.g., widowed, minorities, disabled, the elderly)	75% of indigenous women in the project area will have knowledge about GALS (30% of which are from FHH and other vulnerable subgroups) (baseline at implementation start: 0%)	Throughout the project	PMU Gender Specialist and Service Provider	$200,000

Annex 8. Stakeholder Engagement Reports and Participation Lists

As indicated above, stakeholders' consultations conducted in 2019, supplemented with those conducted in 2024, informed the design of the project. The tables below summarize the stakeholder meetings held in the capital cities and project areas.

Namibia Stakeholder Consultation Report: Mission dates: 27 May to 3 June 2024

Date and Location	**Name,** position, **and organization**	**Meeting Summary**
27 May 2024, Windhoek	Mr. Petrus Muteyauli (Head of Multilateral Agreements, MEFT 2. Timoteus Mufeti, Environmental Commissioner, MEFT 2.Sion Shifa, Senior Conservation Scientist, MEFT	**Meeting with Ministry of Environment** The first meeting was with the Ministry of Environment, where we met the Environmental Commissioner and the Head of Multilateral Agreements. The Commissioner stressed that Kunene, Omusati, and Ondjozondjupa regions have seen a significant reduction in rainfall. In fact, the reduction in rainfall is affecting the whole country, especially Kunene region, where land use is of pastoral nature and the community there is unique and very severely affected by drought. He stressed that we need to understand how people live, and there is a need for capacity building that should include the government as well as many partners. There is also a need to strengthen early warning and disaster risk management at national and regional levels. He also stressed that he wants to see something that works well, so relevant institutions must be involved. Mr. Muteyauli also said that a project like this needs to consider tangible benefits to communities. He also pointed out that a similar project funded by the Green Climate Fund through UNDP is looking at early warning systems, and they have already done regional consultation. UNDP is earmarked for Kunene, so we should conduct them for overlap. They have also included Hardap and Karas regions. Therefore, exploring the gaps between the two projects and looking for synergies is necessary. Another project by WFP, which is looking at the water and energy nexus, is also applying for funding from the Adaptation Fund. So, there is a need to look at the gaps and synergies for those projects. According to the Commissioner, disaster risk management is still a challenge in the country and does not seem to work. So, there is a need for proper early warning systems in the country. Both the commissioner and Mr. Petrus also mentioned that they have available literature and data that can be used to provide information to support the project proposal. The information will be made available through Mr. Shifa. The disaster risk management committee also has some information and reports that they can share, and most of this information is in digital format, which Mr. Shifa can provide.
28 May 2024, Windhoek	1.Mesag Mulunga, Director of Planning, MAWLR 2.Mathews Ndjodhi, Chief Agro-Business Ambassador, MAWLR 3.Ismael Ehamba, Acting Director, MAWLR 4.Alfeus Moses, Chief Hydrologist, MAWLR 5.Olga K. Tjiueza, Chief Meteorological Technician, MWT 6.Simon Dirkse, Chief Meteorological Technician, MWT 7.Anna Haufiku, Senior Hydrologist, MAWLR	**Meeting with Ministry of Agriculture, Water and Land Reform (MAWLR)** The second meeting was at the Ministry of Agriculture, where we had a joint meeting with different institutions such as the meteorology services, the directorate of resource management, the directorate of rural water supply, the directorate of agricultural planning, the directorate of agricultural production extension and engineering services and they all gave their input. The acting director commented that it is a good project: Building the resilience of the communities in the Kunene Basin. He inquired whether the Angolan side had also been consulted and emphasized the importance of including key stakeholders such as the Ministry of Environment, Forestry and Tourism (MET). It was noted that stakeholder engagement must be inclusive, with active participation from women, youth, and marginalized groups, to ensure the project addresses the diverse needs and vulnerabilities within the basin communities He wanted to know if the Angolan side was also consulted, etc. Furthermore, they emphasized that important stakeholders such as MET must also be consulted. The hydrologist wanted to know if the early warning system would also include warnings such as water levels. It was thought that the early warning system needed to be usable by all people – especially important for people that live remotely in rural areas. They shared that a similar project would shortly commence in Kunene, entitled 'Enhanced Water Security and Community Resilience in the Adjacent Cuvelai and Kunene Transboundary Basins.' There could be an overlap in some outputs. They should see where they can collaborate. It is a UNDP-GEF project. The Cuvelai Water Course Commission could also be contacted for more information. Another project implemented in the same area includes SCORE by UNDP, which focuses on climate change resilience. Perhaps it is better to build on what was there before and learn from their ups and downs. Yet, another project by Millennium Account that had to do with rangeland management had a component of sustainability, so perhaps it is also worth reviewing. Repeating the same initiatives is not a good idea unless it is meant to strengthen and address the gaps. They assured us they would provide the relevant information and documentation to help us craft the proposal. They stressed that Kunene is the most drought-affected region in the country, so the project is significant. We also need to look at their nomadism, utilization of grazing, etc. Are they still nomadic? Capacity building is key in terms of knowledge and relevant technology. Regarding the drought issue, we are trying to review the drought policies, so we have policies before and after the drought to see which component would be important to address and activities for before and after. The key issue is early warning systems; the current one is not specific but is more of a broader focus. It would be useful to have a specific focus for each area. Then, we can make a significant impact. The broad one is not always location-specific and may be inaccurate. For documents, we can look at the current trends, such as marketing incentives for animals sold, and in terms of grazing, that information can be provided. We have reports on early warning, and reports and assessments of food security, and all sorts of disasters such as fires. We do this before, during, and after disaster. Pre-harvest, during harvest, and post-harvest.

29 May 2024, Opuwo	1.Uendjipa Thom, Senior Councilor, Wita Traditional Authority 2.Kapangare Tjambiru, Senior Councillor, Kakurukouse Traditional Authority 3. Verikouje Ndundu, Regional Officer, Red Cross 4. Kazorondu Heuita, Game Guard, Karuru Kopuse Traditional Authority 5. Tjikunda Katjina Kulunga, Administrative Control Officer, Epupa Constituency 6.Asnath Katjimbari, Chairperson, Kunene Rural Women Association 7. Ben U. Kapi Ngatuuone, Chairperson RFU 8.Ian Van der Merwe, Representative, Ngatuuane RFU 9.Chris van der Merwe, Chairperson, Ohaukororo RFU 10.Sennobia Charon Katjiuongua, Vice-Chairperson, Kunene Community Radio NCC 11.Ambata Eliaser, Chief Technician, MAWLR-DAPEES 12.Tutupenini T. Tjazapi, Chairman, Okozorgominya	**Meeting with traditional leaders, local authorities, regional bodies, and farmers' association** In Opuwo, we met the traditional leaders, Regional Management for Meteorological Services and the Ministry of Agriculture, the Regional Council, representatives of Women's and Youth Groups, and the Farmers Union. They stressed that the information for early warning does not reach the target people. The people who need the information do not get it. They need boosters for network or cellphone reception so they can easily spread information to the people. Network coverage is, therefore, key. Perhaps team up with telecommunication companies such as MTC to improve cell phone coverage to enhance information sharing on early warning systems. It was also stressed that it is best to involve the communities from the beginning of the project. There are various challenges that need to be addressed, such as road conditions, so sometimes it's not at all possible to access some communities because there are no roads there. This can be resolved by having focal points for each community where the information is shared, and then the focal point shares this information with the community. **Key question: What are the main challenges of climate change, and how have these affected the communities?** Agriculture is the main livelihood in this area, and it is rain-fed. Without rain, there are no sources of livelihood, and therefore even the people's health is also affected. That means no income to meet the needs, such as school fees. Because of drought, there is no food, and people are forced to move close to the river. The old people who cannot migrate are affected, but the young ones usually migrate to greener pastures. There are also no boreholes, just human-made wells, and no water left. This is obviously because of climate change, so the main problem is drought. Climate change affects us all. For example, animal prices are dropping as animals are losing value due to drought. For people living near rivers, the method we use to irrigate our crops is drawing water with buckets, and we don't have any protection from crocodiles. We must risk our lives by fetching water from the river where there are crocodiles. Poverty, food insecurity, and lack of water are the main climate change challenges in this community. We are faced with extreme hunger, and this causes people to migrate to greener pastures such as towns. Ecosystems are very much affected by the lack of water. The impacts of climate change are different across genders. The most affected are women and children, as well as the elderly. They are suffering the most. The project must ensure that there are alternative water sources, such as water harvesting, to mitigate the impacts of climate change. New methods of agriculture are needed for people to produce food as a tangible outcome of the project. There need to be measures to reduce migration, and reforestation activities should be implemented. Perhaps it's also good to introduce seeds that are robust to drought, such as genetically modified ones. Climate change also affects wildlife, and the entire ecosystem is affected. We have lost out on important tree species, such as medicinal plants. There is local extinction of some of the important species that we depend on. The project must create awareness of the need to preserve plants and biodiversity. Deforestation is, for example, a problem, so we need reforestation and restoration activities implemented. The social structures are disrupted because of climate change, and this is due to factors such as migration, which have affected the Himba culture. Many are no longer able to sustain their traditional livelihood strategies. Every year is a drought year. So, climate change has affected our culture and traditional practices. For example, one can lose their identity when migrating to cities and towns. **Aspirations and expectations:** There are many ways to help people create or generate income, so there are various income-generating activities such as break-making for young people. Another way to overcome remoteness is to go through traditional authorities so they can be empowered to mobilize their community to help them. We need to look at what people have and what is on the ground that can be used to empower the communities.

30 May 2024, Okanguati	Vemukondjisa Thom, Vetumbua Muhenje, Ester Koikoi, Munenje Tjanakambembe, Tjambura Karikamba, Wararimue Muhenje, Rahangauka Ngombe, Qena Muhenje Mayaa, Kandimuine Mukambengera, Kauya Ngwa-Muhonje, Meramia Mbuare, Kauijazemua Ijambiru, Maria Kandimune Kuaundja Ombura, Muhenge Wetupotjinyoa, Mamuini Tjavara et al.	**Community consultations** **Meetings with the female community members in Okanguati and Epupa** There is a drought, and our animals are dying. All the livestock have been killed, and now there is not even milk or food for children. We thought the government had thought about us by giving us social grants, but we give them back to the government through school fees. The other main issue is diseases for livestock, killing our goats and cattle, and the medicine does not work. We are truly pleading for help. Drought is the main impact of climate change in this community, and it is killing all our livestock, and we rely on this for our livelihood. Rain is important to sustain our livelihood and food security, so we try planting many things to survive, but the harvest is poor because of the lack of rain. So, now, our main livelihood is social grants, but we can only support our children with them. It is not enough to support everyone in the family. So, we only send some children to school, and some are left at home, leaving us with some money to sustain ourselves. Another issue is a shortage of drinking water. We have a shortage of drinking water, so we travel long distances to fetch water. The water points for animals are also very far. So, most of our water sources are wells that we have dug by ourselves with our hands, but there is no safety around the wells. We have cases of children falling into these wells and dying, so we need proper infrastructure. So really water supply is our only and main solution. Drought is affecting mostly the women. For example, sometimes, men can divorce women, leaving them as single mothers with children and with no support. So, all women are affected whether they are married or not. For example, women do not have the right to hunt or look for food, and women do not inherit cattle, and they have no right to the animals. **Gender issues** In our culture, women are not considered at all as important. You may be advantaged if you are married to a rich man, depending on whether the marriage is stable. This is because men do not share their property with their women. And so, when the man or the husband dies, the women don't inherit anything, and they are left vulnerable with their children. Widowed women are not allowed to find work. Regarding inheriting from men, when we get married sometimes, we build together with our husbands including obtaining livestock and even clothes and accessories for decoration to make ourselves beautiful. But when our husbands die their families take everything, including the accessories, leaving us naked. The children and their mothers are left without anything at all. Polygamy is also another issue that makes life difficult. Sometimes the men may choose their favorite wife. For example, a man married to five wives, and he may only have a favorite wife and so the other wives and their children are left to beg. The other thing is men do not really want women to succeed so we are really in a very critical condition, and our men are not treating us well. **Infrastructure and water** We do not even get drought relief because we do not have infrastructure and it takes two weeks to travel to the hospital or to the clinic where I live. We don't have access to a Mortuary too. When our loved one dies, we bury them the same day because we don't have access to the right facilities. Those living by the river do not even have the means to pump water to make gardens, so we use the bucket instead and this is very dangerous. Drought relief helps us a little bit and social grants also help a lot. **Discrimination** Another social problem is tribalism and discrimination. Originally, I was a Tjimba, and my livelihood is collecting wild fruits and wild honey. So, vulnerability is more pronounced among the Tjimba people than the Himba people. This is because the Tjimba people are stigmatized by the Himba, and they're regarded as inferior. This stigma is because of poverty. So, I just want to repeat that we need gardens, we need schools and roads and hospitals and infrastructure. **Traditional forecasting methods**

		We have many trees that we look at that tells us that there is drought or that drought is coming. A particular one is called Ohwangwe. So, we usually look at the flowering season. If we notice that there are no flowers, then we know that there is going to be drought. So many times, we can tell when drought is coming however, we do not have the means to prepare so we don't prepare for anything though we know that danger is coming, we don't have the capacity to do anything. **Impacts on women.** As mothers and my children, we have lost our livestock because of drought we no longer have anything, and so we resort to begging. We sometimes make bracelets and jewelry to sell to tourists. However, this is a seasonal thing, and it does not always give us enough. We need more income generating activities for women. We have realized the importance of education, and we all want to send our children to school. However, it is very challenging because we do not have enough money to pay for their school fees so sometimes what we do is we send some to school and some they stay at home. **Women's expectations and aspirations from the project** Our expectation is for women's associations to be established to empower women to grow food and for them to sell to improve their livelihoods. We need community gardens under the women associations. Furthermore, we also want to be trained as women so that we can be empowered, and we can develop our skills so we can improve our livelihoods. We are also advocating for water harvesting to make gardens for our own food.
31 May 2024,	Mavetwapi Tjiumba, Maepingiko Ijindumba, Riamana Oruhama, Maaruka Mupurua, Peihama Tjindunda, Kanungojo Muhenje, Kapangere Tjambiru, Kauta Koruhama, Vaatako Hembinda, Kuapunawa Tjirambi, Chief Vemui Tjambiru, Ijisuta Kaitema, Kanaumba Mohenje, Repute Japeule, Steven M. Jambiru, Kanambiya Shinga, Simon Effraem, Njumbi Ujamba, Mutambo Mautjindika, Charles Uanje, Maaruka Muparua, Hevita Mgumebiti, Ngumbi Mbomi, IJambiru Uvawura, Alungongo Wilbard, Rutemba Ngumbi, Muhenje Katazuu, Hepate Kautaarua, Muhenje Katoho, Japyanguka Tjhanje, Hambinda Kaninounusa, Tjindandi Kaukareerua, Tjinana Kaunrina et al.	**Meetings with the male community members in Okanguati and Epupa** All the young people here have parents, and the drought has affected their parents which also directly affects them. As you can see that these young people are grown up, they're hungry. That is the main thing here, our young people are hungry. They don't have jobs and so they turn to stealing. All these young people here are from different tribes, but they all need help; they're all suffering in the same way. I'm a young farmer and I depend on livestock. I keep some goats and sheep and cattle and to some extent also grow some crops. Many times, we must migrate to greener pastures when there is drought. But where we migrate there is no water. We only use traditional boreholes, and they are all dry now. The help we need is proper boreholes for us to give water to our animals and to grow food. During the rainy season when there is a bit of grass near the river our livestock stays near the river but when grazing is no longer there, we move far away, even 80 kilometers from the river into the mountain and there is no water there. When there is drought there are also many diseases for livestock and sometimes, we try our best to treat our animals using traditional knowledge such as using aloe vera. However, they don't always work and many times we must buy medicine from the pharmacies. As a young person, I kept cattle for my livelihood but as you can see, the drought has killed all our animals, so we need jobs or maybe even irrigation opportunities to grow food. We need opportunities such as income-generating activities such as making bricks, painting houses, building houses etc., because some of us have these skills but we don't have any jobs, and many would want to be trained in these trades too. Many of us here do not have education so we need training. So, what this project can do is build a business hub to train our young people in different skills so they can secure jobs. Some of us would have loved to finish school, however finishing school is a problem in this area because our parents do not have the money to help us finish. Many times, for us to pay for school uniforms, we need to sell livestock, and our livestock is gone because of drought. So, we are forced to drop out of school. Many of us here have dropped out of school we have not been able to finish. So, we need help to pay school fees so that we can finish our education. We grew up in the good hands of our parents, but the drought killed all their animals. And that is why we are on the streets without jobs now. I think the only help and the only hope really is for us to grow food and for this to happen we need water supply. We are ready to start. **Men's expectations and aspirations from the project** The main concern is our young people. We need young people to get jobs. There should be avenues for job creation for young people. So instead of handouts young people can work. If they are not helped, they usually end up becoming thugs and hazardous to the communities. Young people need to be considered and maybe create awareness or association for young people that represent them in a community to express their voices and to empower them as well.

3 June 2024, Windhoek	1.Ndina Nashipili, MAWLR –DWA 2.Fulgentia Magira, CPM 3.Helvi Akwenye, MAWLR-DWA 4.Enich Petrus, MAWLR-DEPEES 5.Silvanus Uunona, CUVECOM 6.Nicholas Tembwe, MSYNS 7.Timoteus Mufeti, MEFT 8.Teofilus Nghitila, MEFT 9.Qingyun Diao, FAO 10.Eugene Kanguatjivi, FAO 12.Ilvorurue Kheijavi, MAWLR 13.Eugene Simwanza, MAWLR 14.Gottlieb S. Kahana, MAWLR 15.Anastasia Shiviya, MAEPESIL 16.Scholastica Chatu, NPC 17.Anna Dumeni, OPM	**Validation meeting with national and regional stakeholders** The Namibia Mission culminated in a wrap-up meeting with government and key stakeholders including the Kunene Permanent Joint Technical Commission, to validate the project design and outline next steps. The key agreements from this meeting were to: Establish a dedicated interdepartmental Project Management Unit (PMU) to coordinate and oversee the project's implementation, ensuring effective collaboration among relevant government agencies and stakeholders. (GRN) Develop a comprehensive project implementation plan, outlining clear roles, responsibilities, and timelines for each component, to be endorsed by the Project Steering Committee (PSC) and all implementing partners. (IFAD, FAO, GRN) Conduct targeted capacity building and training programs for project staff, government officials, NGOs, and communities to enhance their skills in climate change adaptation, ecosystem-based disaster risk reduction, and sustainable livelihood development. (IFAD, FAO) Create robust monitoring, evaluation, and learning (MEL) framework, incorporating gender-responsive indicators and participatory approaches, to track progress, assess impact, and facilitate adaptive management throughout the project lifecycle. (IFAD, FAO) Foster strong partnerships and coordination mechanisms among government agencies, development partners, civil society organizations, and private sector actors to leverage expertise, resources, and knowledge for effective project implementation and sustainability. (IFAD, FAO)

Angola Stakeholder Consultation Report, Angola Mission Part 1, 20-24 May 2024

Date and Location	**Name,** position, **and organization**	**Meeting Summary**
20 May 2024, Luanda	1. Ivone Pascoal, Head of Department, DNACDS 2.Teotania Domingos, Technical Specialist, DNACDS 3.Anselmo Paulo, Technical Specialist, DNACDS 4.Benjamim Tchiyevo, Country Project Coordinator, IFAD 5.Liudmila Saiovo, Climate Change Project Assistant, FAO	**Meeting with the Directorate for Sustainable Development and Climate Action, Ministry of Environment** The Director of the Environment Department emphasized the importance of concentrating efforts on areas that have not yet been addressed by existing adaptation projects. The target areas outlined in the concept note were suggested by local authorities. It will be necessary to build upon existing initiatives to enhance disaster risk planning, which currently tends to be reactive. Government constructed the Cafu Canal in Kunene Province to mitigate the effects of drought and provide water for crops and livestock. The Climate Change Directorate has ongoing projects in Cunene Province, focusing on addressing gaps in climate projects. One of these projects is a two-year initiative funded by the Global Environment Facility (GEF), aimed at enhancing resilience in the region. Additionally, the River Basin project, extended to four years, includes components such as community adaptation, with UNDP serving as the primary implementing partner. National partners involved in this effort include ADPP, NGOs, Water Agriculture, EDF, and ADRA. The project supported the capacity building of INAMET (National Institute of Meteorology) on civil society engagement and early warning systems. The Cafu project, focused on drought resilience, included capacity building and equipment programs, as well as a radio program implemented through ADPP, which proved instrumental during the COVID-19 pandemic. The management of weather monitoring stations by INAMET enabled the collection of vital information crucial for drought and flood forecasting and response. These monitoring stations have been upgraded to automatic systems, improving efficiency compared to previous manual methods. The Cafu canal is a government investment overseen by the National Irrigation Water Resources Management. Kunene faces challenges with both droughts and floods. The FAO is currently developing a project in Kunene. To avoid duplication and to capitalize on existing efforts, it is crucial to identify synergies with ongoing projects. This underscores the importance of assessing existing initiatives before embarking on new investments. The gaps identified include: the sharing information from monitoring and evaluation. This can be achieved by engaging with other stakeholders, consulting community leaders, and validating proposals through a working group. The information gathered will be shared with the Ministry of Environment to enhance the Early Warning Service database. The national observatory, established by law, faces the challenge of operationalizing through the integration of all data into a web-based database. Each project includes a sensitization component, highlighting the importance of a communication strategy. The observatory, funded by partners in 2022, collaborates with the EU through the Institute of Farmers in Kunene, Namibia, and Huila provinces. Given its presence in each project, there is a critical need for synergy. Pilot projects also provide field equipment to support these efforts. Climate change disproportionately affects women and children, necessitating targeted actions. The UNFCCC action plan involves engaging National Gender Focal Points to adapt and develop national action plans. Climate change significantly impacts children, emphasizing the importance of sensitization and support when they are affected. For example, women often endure long journeys to fetch water and firewood, highlighting the need to educate them on climate change mitigation **and adaptation** strategies. Operational Focal Points: There is an established focal point for the Global Environment Facility (GEF), but none for the Adaptation Fund. The department proposes a focal point focusing on Disaster Risk Reduction (DRR), early warning systems (river systems), livestock adaptation, and knowledge management for replication. The implementation status and needs at INAMET regarding early warning systems need assessment and prioritization. Inclusion Strategy: The strategy includes Persons with Disabilities (PWD) within its communication strategy, emphasizing gender and climate change considerations. Indigenous people in agro-pastoralist areas are targeted for engagement, particularly through projects like FRESAN working with minority communities.
20 May 2024, Luanda	Manuel, Francisco, Henrique; Administrators, ADPP	**Meeting with ADPP (Ajuda de Desenvolivmento de Povo para Povo)** In Cunene Province, ADPP is actively supporting water and nutrition interventions through the FRESAN project. They have installed boreholes, solar panels, animal troughs, and facilitated domestic agriculture initiatives. Concurrently, CODSPA is engaged in agricultural projects. Vulnerable populations are receiving nutrition education focusing on drought-resistant crops, cooking demonstrations, agroforestry (including planting fruit trees), and resilient species. ADPP also operates a teacher training school in rural areas. Key needs and priorities include fostering strong relationships with local governments, especially since few organizations operate in Kunene. Challenges include the region's harsh climate and water accessibility issues, particularly reaching remote areas like Curoca, where families are dispersed up to 10 kilometers apart. The main minority groups, including the Kwanyama, Khoisan, and Himba, are focused on water access and nutrition, with initiatives such as honey production for dietary enrichment. The target communities are chosen based on their specific needs. Access to water enables sedentary lifestyles, enhances food security, and empowers local communities with knowledge and self-sufficiency. The Himba, traditionally nomadic pastoralists, benefit from settled lifestyles supported by these projects, which address vulnerability. The FRESAN project spans three years, emphasizing community stability when water sources are accessible for livestock. Women particularly benefit, gaining more opportunities to care for children and manage household duties. Having water closer to home reduces laborious tasks, providing women with increased participation in water management and community activities. Nutritional efforts focus on improving the health of mothers and children within these communities.
21 May 2024, Luanda	1.Mamisoa Rangers, Deputy Resident Representative UNDP 2.Pinto Vunge, Programme Manager, UNDP 3.Teotania Domingos, DNACDS	**Meeting with United Nations Development Program (UNDP)** In 2021, UNDP conducted an assessment in Kunene in response to drought conditions and initiated voucher distribution. Additionally, in 2002, UNDP began addressing malnutrition through food distribution, concluding this effort in September 2022. In 2023, malnutrition treatment initiatives were launched in Kahama, Obanjie, and Nemakukura. Under CERF funding, UNDP and partners like UNICEF and WFP are responding to El Niño, focusing on acute and moderate malnutrition treatment in health institutions and communities across Ombadja and Kwanjambe. The project, implemented through partners such as World Vision and JAM, targets rural areas with high malnutrition rates, particularly in Kunene, Huila, and Namibie provinces. Ongoing assessments are evaluating El Niño's impact, with FAO conducting assessments in 11 municipalities and UNDP planning to expand coverage to 12-15 additional municipalities for IPC analysis. These efforts span Namibie, Huila, Cunene, Cuando Cubango, and Moxico provinces, with Kunene being most severely affected, leading to migration into Namibia in search of food and water.

	4.Anselmo Paulo, DNACDS	The main livelihoods in Kunene, Huila, and Namibe are centered around crops and livestock farming. Household responsibilities are typically shared equally between men and women, with men primarily managing pasture and women engaged in crop farming. Both genders are significantly affected by drought conditions. In 2021, areas such as Kahama, Kuroka, and Kwanjambe experienced IPC 4 (Integrated Food Security Phase Classification), indicating severe food insecurity. In 2022, Gambos in Huila was the most affected by drought, with no significant improvement noted since 2021. WFP projects typically span six months, with community members admitted and removed based on their recovery status.
21 May 2024, Luanda	Antonio Paolo, Vulnerability Analysis and Mapping Officer, WFP	**Meeting with World Food Program (WFP)** There are insufficient resources allocated to build resilience among communities, exacerbated by severe locust infestations during drought periods. Lessons learned highlight that chronic food insecurity, as seen in Sango, differs from acute situations, both of which are prevalent. Past emergency and development programs have shown limited success. To address these challenges, there is a pressing need to enhance income generation and resilience-building efforts. Community kitchens have been established, strategically placed where water is accessible, supporting the cultivation of kitchen gardens. The school feeding program, managed through the Ministry of Education, has been a successful initiative. However, challenges persist among nomadic groups like the Himba, who follow water sources and practice migratory lifestyles. The project aims to establish ecosystem-based infrastructure to support their needs. Access to land remains culturally determined, posing challenges, especially along the 165 km long Cafu canal. Water availability is typically under a 99-year lease managed by local governments.
24 May 2024, Ondjiva	6.Neri Tuhafeni, Provincial Coordinator, FAO	**Meeting with the Food and Agricultural Organization (FAO) field office** FAO is currently implementing the FRESAN project across six municipalities in Kunene Province, benefiting 2625 beneficiaries. They are establishing 75 FFS across various localities: 13 in Cahama, 18 in Ombadja (including Kanyama), 6 in Nekunde, and 23 in Cuvelai. The project provides training on seed cultivation for maize, sorghum, and millet, along with extension services in horticulture production and food processing. Each community hosting an FFS has a designated facilitator to offer technical expertise. Technological advancements such as solar and diesel pumps, as well as drip irrigation systems, have been introduced to enhance agricultural productivity and nutrition outcomes. Commercialization efforts include initiatives like chicken farming and egg sales. In areas like Ombadja, Kwanyama, and Curoca, which are inhabited by nomadic pastoralists, some individuals own up to 1000 cattle, relying primarily on meat and milk for sustenance. However, gaps have been identified, including limited intervention coverage in the target areas, which is insufficient to meet community needs effectively. There is a clear need for additional partners to expand interventions and support more people. Moreover, farmers lack the financial capacity to invest in equipment necessary for effective irrigation, despite the construction of three irrigation canals. Efforts to address these gaps should prioritize increasing partner involvement and providing adequate resources and support to enhance agricultural productivity and sustainability in the region.
24 May 2024, Ondjiva	David da Costa, Data Manager, WHO	**Meeting with World Health Organization (WHO) field office** WHO is currently active in Cuvelai and Kwanyama, focusing on raising awareness about guinea worm disease. This disease affects both humans and animals, remaining in the body for up to 12 months. WHO's efforts include community sensitization on the risks associated with using unprotected water sources. The government's response involves promoting awareness and implementing measures to mitigate the disease's spread, including distributing water filters to improve water quality for human consumption. However, there is currently no solution available to protect animals from contracting guinea worm. The initiative to separate water sources for humans and animals is crucial in preventing the spread of the disease. This initiative is supported by the Carter Centre USA, given that Angola is one of the five African countries affected by guinea worm disease. The scarcity of water forces affected communities drinking from any available source, often resulting in consumption of salty water. Consequently, women often endure long journeys to locate suitable water sources.
24 May 2024, Ondjiva	Onias Mpofu, Project Coordinator, ADPP	**Meeting with ADPP field office** ADPP in Kunene is primarily focused on nutritional initiatives, while ADRA is promoting groundwater tanks designed to provide each family with one bucket of water per day. These tanks tap into water levels ranging from 12 to 18 meters underground. The Cafu canal represents a significant investment, but efforts are needed to distribute water to interior villages for improved access. Water scarcity often forces people to migrate to riverbanks, where land ownership issues arise, necessitating land demarcation along the canal. Kunene's population is predominantly nomadic, with approximately 500 wells but a lack of potable water. Desalination could potentially address this issue. The Himba, comprising various tribes such as the Kwanyama and Omaja, are concentrated between Curoca and Oncocua, facing accessibility challenges due to dispersed households. ADPP employs community facilitators (ADECOs) to mobilize local communities, translating information into local languages. FAO collaborates with FFSs and water point management committees, where women play key roles. Effective monitoring involves ensuring safety, language accessibility, and local administration involvement, necessitating the establishment of focal points in each area. Community mobilization often requires approval from traditional leaders, facilitated by clearance letters from provincial governments. ADECOs require basic training on topics like climate change and gender equity, alongside incentives to effectively carry out their roles. Communities also face food security challenges amid low literacy levels. Men and youth often migrate in search of better opportunities, leaving women and children behind.

The mission team met with stakeholders including the Ministry of Environment at head office and provincial level, United Nations Development Program, World Food Program, ADPP, World Health Organization, traditional leaders, local authorities, and communities comprising of men, women, and youth.

The following institutions were identified as potential collaborators at local level:

The local administration (Chitado Administration) could support with monitoring of field activities and report periodically, taking into consideration transport and communication challenges.

The National Police, who are responsible for environmental education as assigned to them by the provincial Government, would also monitor related activities. Weather stations would be placed close to the police posts or near traditional leaders to guarantee some level of security. Fire fighters support INAMET with collecting and reporting weather data to INAMET. Data processing and dissemination is done by INAMET. The firefighters, however, provide support with emergency responses in the case of floods and weather-related hazards/incidences.

Community facilitators (ADECOs) – community members trained by the project to facilitate project implementation at community level. The project could make use of ADECOs but may not be available. During the follow up mission, the ADECOs based in Chitado were not available, but the secretary to the administration supported the mission with translation and contact with the community.

Angola Mission part 2, 11-16 June 2024, Summary of stakeholder consultations

Date and Location	Name(s)	Position and organization	Meeting Summary
13/06/2024 – Ondjiva Municipality	1.Contreiras Tchingungo	Head of Department in the Provincial Department of Environment	We met the Provincial environment office, Provincial IDA Department, Representation of FAO; IFAD/FAO Mission team, and MINAMB. The Provincial Government represented by the Head of department for Environment in Kunene formally received the mission team. The mission team presented the mission objectives to the governments. The mission team undertook visits to Curoca Municipality, specifically Chitado Commune.
	2. Teotania Domingos	Technical Specialist, DNACDS	Chitado population comprises 27,697 people, and its ethnic group is Mundimba, Muchimba Muhacaona.
	3.Sheila Neto,	Consultant, SREP project	**Findings and challenges** It was described that with regards to climate change, the observed effects are intense draughts and floods which in turn result in rural exodus from the nomadic population. The impact of climate change has significantly negatively local ecosystems and biodiversity resulting in livestock and land loss by many families. The Muchimba and Mundimba groups are the most vulnerable due to their nomadic characteristics. Another challenge presented by the local environmental representative is the absence of mechanisms to attend negative effects caused by climate change, such as control equipment, transport, environmental education with high deficit. Identified risks are cutting of trees, burning resulting in wildfires and consequently low levels of precipitation leading to drying of intermittent rivers, increased temperatures, emergence of ravines, occupation of areas with ecological potential, poaching (animals and plants), and many other negative aspects. Such risks pose a difficulty in the planning, definition, and distribution of land use. Furthermore, they lead to families leaving their lands due to degradation and loss of soil fertility, hunger, loss of livestock and even people perishing. There are few projects related to climate change supported by the Ministry of Environment,
	6.Neri Tuhafeni	Provincial Coordinator, FAO	**Suggestions** The project being designed can align with existing political and environmental frameworks at national and regional levels, by observing and using lessons learnt from existing or previous projects and mechanisms. Useful adaptation strategies to deal with impacts of climate change can be centered around training the community in topics related to climate change, including the community in decision making and execution of certain activities and projects that will affect and benefit them. Adaptation measures used by the local environmental institution are the installation of pilot committee and installation of weather stations which are currently non-operational. The local environmental department can provide data related to climate, biodiversity, flora, fauna, hydrological resources, and minimum historical climate data. Vet services for animals. Installation antenna for communication.
14/06/2024 – Curoca Municipality – Chitado Village			We met the Communal Administrator, traditional leaders, religious leaders, National Police, Firefighters, teachers. *Chitado Population:* 27,697 *Ethnic groups:* Mundimba, Muchimba (Himba), Muhumbe, Mutyiavikwa, Mungambwe, Mútua and Muhacaona. Number of police in Chitado is 11, i.e., 8 for public order and 3 fire fighters. Traditional leaders highlighted that rain is not regular in the community. Community depends on purchased food using income from animal sales. High number of people from Curoca migrated to Namibia in 2021/2022 due to hunger and caused deaths of humans. Cunene Government repatriated them back to Angola, but they abandoned the concentration camp going back to Namibia in seek for better life conditions. Main drivers of migration include hunger, due to lack of water, availability of casual work opportunities in Namibia, Language commonality with Namibians, and proximity to services in

Date and Location	Name(s)	Position and organization	Meeting Summary
			Namibia. The cost of accessing basic services and goods from the rest of Angola is higher than accessing them from Namibia. **<u>Key challenges</u>** *Transport and communication challenges*. The lack of road network to the rest of Angola (Ondjiva), and lack of mobile network services. Development projects in Chitado lagged due to lack of human resources willing to serve in these conditions, and the experience of SREP and FRESAN projects. *Recurrent Droughts*. Over 90% of families practice crop cultivation and livestock rearing, all rainfed for crops and forage for the animals. The droughts have resulted in death of cattle and a decrease in cattle population, and hunger exacerbated. *Land issues*. The community has little control over the land along the Cunene River to access water for gardening and for their cattle. The land is occupied by privately owned commercial farms. *Exclusion from employment opportunities* by interventions of the private sector and development interventions. The population believe they have something to contribute but are discriminated against based on their culture. **Main proposals by the community leaders** Vet services for animals including medicine. Irrigation support for gardening Installation of Antenna for mobile service - communication Road Access to rest of Angola School gardens for nutrition interventions Environmental education – also proposed by the Provincial Environment department. **Partners available in Chitado** **IDA** is present in Chitado through SREP but has made no progress yet. No extension staff stationed there, due to access problems. **FAO** is present through the FRESAN project and has implemented 8 FFSs in Chitado. Challenge has been the lack of physical access and communication for effective monitoring of activities. **ADPP** intervened in Chitado until 2022. **Government**: Health, Education, National Police, Firefighters, Communal Administration (Administrator, Vice administrator, Secretary) **The police** are providing environmental awareness to communities as recommended by the provincial government, but transport is a challenge. The church and Traditional Leaders (are equally influential in the community)
14/06/2024 - Chitado Village	*Comité Molumbua*	The Local Traditional Leader	During the public consultation, it mentioned that during the colonial era, the rainfall was not as irregular as it is now. They did not experience long periods without rain or even floods. Currently, they can go up to a year without rain in some areas which in turn affects agricultural practices. The community only has 1 school, 1 health centre, which does not meet their needs in terms of capacity and other aspects. Communication networks are non-existent. They request that a water channel is built benefiting Chitado, Calueque and Chitapaúa
	Tchohucu Manuel Txali	Local Traditional Leader	The village has been experiencing lack of rainfall for the past 8 years and for that reason, most of the livestock has perished. When it rains, they plant sorghum and other cereals, but very far from their houses because of the proximity to water sources. The community or individuals usually dig rudimental holes to harvest water for consumption and for the animals.
	Luis Katiaka	Community member – Herder	Kids cannot go to school due to hunger and long distances they need to walk to reach the institutions.
	Catamohambo Tchindumba	Community member - Farmer	There are no water infrastructures such as dams, dikes or other storage infrastructures like in other places. There are a lot of private farms near the river, making it difficult to access it.
	Camucaiona Tchinhunga	Community member - Herder	The community doesn´t work and is not used to irrigation, cultivating only when it rains. She wants the kids to have access to education, but because of the lack of transportation and road infrastructures, she does not see how that can be achieved.
	Augusta Baptista	Teacher	The project should implement vegetable gardens in the schools with the aid of FFSs, to combat hunger and promote the importance of community vegetable gardens. The interventions and training should be taught in the local language for better engagements and dissemination of the information.

Date and Location	Name(s)	Position and organization	Meeting Summary
		Religious leader	There needs to be capacity building for the youth in all thematic areas that will be useful for their future, such as languages, IT, woodworking, mechanics, agricultural practices, and many others. Youth should also be taught the pros and cons of early marriage versus education, and sexually transmitted diseases.
15/06/2024 – Chitado Village, Kutanga Community			33 participating community members, 14 males, 19 females. The community has about 50 households. Households are large, composed of more than one nuclear family. This is a cultural set-up for better control of family wealth (cattle).
		Traditional Community Leader	The village has limited access to the rest of the province, due to the poor road infrastructure and lack of transportation. The existing transport which is motorbikes tends to be extremely expensive/ costly. The community asks for intervention on that matter
15/06/2024 – Chitado Village, Ndaveva Community			32 participating community members, 13 males, 19 females. The community has about 50 households. Households are large, composed of more than one nuclear family. This is a cultural set-up for better control of family wealth (cattle).
	Veronica	Business owner	I own a small tuck shop and sometimes it is hard to get the merchandise due to poor road infrastructure and poor communication network in Chitado. Most times the network used is from Namibia with a very weak signal. Another important aspect to mention is that even if we must help solve the problem of climate change, we lack the knowledge and technology to do so.
28 June 2024, Luanda			Project validation meeting At the end of the mission, a validation meeting was held in Luanda, where several government and civil society stakeholders discussed the challenges and opportunities in the Cunene River Basin, and validated the interventions proposed by the mission team

Lists of stakeholders consulted.

IFAD CONSULTATION FOR KRB PROJECT, Venue: MINAMB, Date:20 May 2024

No	Name	Gender	Organization	Title	Email & Contact No
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7	Joylyn Ndoro	F	IFAD	Consultant, Social Inclusion, Nutrition and Gender Specialist	joylynndoro@gmail.com
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UN-Agencies, Stakeholder consultation for the KRB Project, Date:20 May 2024

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UN-Agencies and NGOs, Stakeholder consultation for the KRB Project, Date:21 May 2024

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IFAD, I, UN-Agencies and NGOs in Cunene, Stakeholder consultation for the KRB Project, Date:24 May 2024

No	Name	Gender	Organization	Title	Email & Contact No
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IFAD
Provincial Government – Directorate of Environment – Cunene, Stakeholder consultation for the KRB Project, Date:15 June 2024

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IFAD, Government, UN Agencies, and NGOs – Luanda; Stakeholder consultation for the KRB Project Date: 28 June 2024

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IFAD, Communal Administration – Chitado – Curoca – Cunene, Stakeholder consultation for the KRB Project, Date:16 June 2024

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	Agostinho	M	Religious group	Religious Leader	935909056
	Joao Bastista	M			
	Manuel Malungu Mawonila	M	Health	Head of Health centre	922194554
	Carlos Jonacis	M	Residents Committee	President	
	Manuel Felisberto	M	Chitato Elementary School	Teacher	934224067
	Alvaro Chineva	M	Chitato Elementary School	teacher	934919251
	Ngola Nkhula	M		worker	
	Venancio H. Ngikavanga	M	Chitato Elementary School	Teacher	925703043
	Manuel Fenengo	M			
	Joao Mateus Kambuta	M	Traditional Leadership	Village Headman	
	Francisco Tholongo	M	national police	Commander	932095609
	Fernando Cabinda	M	SPCB	Commander	948829703
	Juliana Laussati	F	Community	member	
	Augusta Baptista	F	Chitato Elementary School	Teacher	927475805
	Hibalukassa V. P. Naikete	M	Chitato Elementary School	Teacher	937514501
	Teresa Zomba	F	Ex-combatant	ex-combatant	
	Avelina Jamba	F	Ex-combatant	ex-combatant	
	Waheya Chiramba	F	Community	farmer	
	Kamukayona Tchuna	F	Community	farmer	
	Muhasila Ndiambe	F	Community	farmer	
	Victorina Tchipuco	F	Community	farmer	
	Belita Katututu	F	Community	farmer	
	Juliana Sabino	F	Administration –Chitado	Social Action Department - Chitado Administration	933848695

IFAD
Community Consultation for KRB Project, Date: 16 June, Venue: Kutanga - Chitado

No	Name	Gender (M/F)	Indigenous people (Yes/No)	Email & Contact No
1	Joao Mateus	M	Yes	
2	Ananias Kapera	M	Yes	
3	Mundikovei Tfirambi	M	Yes	
4	Tyome Tunga	M	Yes	
5	Gulherme kapata	M	Yes	
6	Elau Tjinidanti	M	Yes	
7	maria Muculepi	F	Yes	
8	katjiphele Tyanli	M	Yes	
9	Tariana Bolede	F	Yes	
10	Bibiana Cuhuna	F	Yes	
11	Toutala Titusa	F	Yes	
12	Rusia kodino	F	Yes	
13	Clementina Francisco	F	Yes	
14	Dina Tjipotawo	F	Yes	
15	maite Mugondo	F	Yes	
16	Emilia Selino	F	Yes	
17	Kavetjihola kahongo	F	Yes	
18	kafina velenu	F	Yes	
19	baningilua Petra	F	Yes	
20	madalena katiti	F	Yes	
21	Tyahangwa Kabuta	F	Yes	
22	Kavelithi Mupungua	F	Yes	
23	Sudite kahongo	F	Yes	
24	Tosicava Inosu	F	Yes	

IFAD
Community Consultation for KRB Project, Date: 17 June 2024.Venue: Ndaveve - Chitado

No	Name	Gender (M/F)	Indigenous people (Yes/No)	Email & Contact No
1	Roinde batista	F	Yes	
2	Rlembeka Mbimbo	F	Yes	
3	Muasoquele Kuya	F	Yes	
4	laimi Tjoabeka	F	Yes	
5	kakuimuqua kawoko	F	Yes	
6	Kalali Rubuna	F	Yes	
7	Riemueta Kuva	F	Yes	
8	Senifa Mulenduli	F	Yes	
9	Veholeti Maulisu	F	Yes	
10	Neso Kuva	M	Yes	
11	Rimembo maulisu	F	Yes	
12	Rio Ndaviti Wana	M	Yes	
13	Gideon Sitanu	M	Yes	

No	Name	Gender (M/F)	Indigenous people (Yes/No)	Email & Contact No
14	Itauzi Mbedula	M	Yes	
15	Mbututu Kuva	M	Yes	
16	Tyohuku manuel	M	Yes	
17	Milanda maulisu	M	Yes	
18	Siena kalupela	M	Yes	
19	Utaya Tyuma	M	Yes	
20	Kazamuhambo Tyindya	M	Yes	
21	Ruis katyaka	M	Yes	
22	kamungewa Tyali	F	Yes	
23	Virilua Tinavilika	F	Yes	
24	Katutalwa Mbimbi	F	Yes	
25	vapaizako Tyiema	F	Yes	
26	Kasukona Tyawana	F	Yes	
27	Igoona beja	F	Yes	
28	kandungundungu Maulisu	M	Yes	
29	Mandalena Wambinda	F	Yes	
30	Ngolotia Ananis	F	Yes	
31	Mukamikunde Mundyua	F	Yes	

72**Participants lists from stakeholder consultation meetings in Namibia.**

IFAD, CONSULTATION FOR KRB PROJECT, Venue: WWF, Date:3 June 2024

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6.	Qingyun Diao	F	FAO	Country Representative	Qingyun.Diao@fao.org
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8.	Simon Thuo	M	IFAD	Regional Consultant	

IFAD, Meeting with UN Agencies., Stakeholder consultation for the KRB Project, Date: 27 May 2024

No.	**Name**	**Org.**	**Title**	**Email and contact no.**
1.	Hopolang Phororo	UN	Resident Coordinator	Hopolang.phororo@un.org
2.	Enoch Shebudd	UN-WFP	Deputy County Director	
3.	Nelson Zakarafi	UN-RCO	Development Coordinator	Nelson.zakarafi@un.org
4.	Ivonald da Cruz	UN -IFAD	Project Management Specialist	i.dacruz@ifad.org
5.	Christian Shingiro	UNDP	Deputy Representative	Christian.Shingiro.undp.org
6.	Emilia Inman	IFAD	Consultant	haimbiliemilia@gmail.com
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8.	Eugine Kanguatjivi	FAO	Project Officer	Eugene.Kanguatjivi@fao.org
9.	Simon Thuo	IFAD	Regional Specialist	Simonthuo@gmail.com
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IFAD, 27 May 2024, Ministry of Agriculture, Water and Land Reform.Ministry of Works and Transport, Stakeholder Consultations for the KRB Project, Date: 27 May - 03 June 2024

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	Mesag Mulunga	MAWLR	Director of Planning KBD	mesag.mulunga@mawlr.gov.na
	Mathews Ndjodhi	MAWLR	Chief Agro-Business Ambassador	mathews.ndjodhi@mawlr.gov.na
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	Olga K. Tjiueza	MWT-MET	Chief Met Technician	olga.karunga@mawlr.gov.na
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	Simon Thuo	IFAD	Regional Specialist	s.thuo@ifad.org
	Eugene Kanguatjivi	FAO	Project Officer	Eugene.kanguatjivi@fao.org
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IFAD, 21 May 2024, Kunene Region, Regional Leadership, Stakeholder Consultations for the KRB Project, Date: 27 May – 03 June 2024

No.	Name	Organization	Title	Email and contact No.	Gender	Youth
	Sion Shifa	MEFT	SCD	sionshifa@yahoo.com 0812781707	M	
	Qingyun Diao	FAO	REP	Qingyun.Diao@fao.org	F	
	Eugene Kanguatjivi	FAO	Project Officer	Eugene.kanguatjivi@fao.org	M	
	Simon Thuo	IFAD	Regional Specialist	s.thuo@ifad.org	F	
	Shirley Magazi	IFAD	Consultant	smagazi@gmail.com	F	N
	Emilia Inman	IFAD-UNAM	Consultant	haimbiliemila@gmail.com	M	N
	Mr. Tjinezuma Kavari	HIPO	Board Chairperson	kavari@gmail.com	M	N
	Steven M. Jambiru	Kakurukouje T/A	Senior Council	stevenjambiru@gmail.com 0812839550	M	N
	Mr. A.M Kapi	Zahumuka P. Co-op NNFU	Board Chair – board Member	amakapi@gmail.com	M	N
	Unangatenua Kupi	IRDNC	Coordinator	unangatenuak@yahoo.com	M	N
	Tufupeni T. Tjazapi	Okozorgominya FA	Chairman	tupenitjazapi@gmail.com	M	N
	J. Muteze	Vita Royal	senior Council	0813812061	M	N
	Victorino Simon	MAWLR-DWOSSC KUNENE	Senior ***	victorino.simon@gmail.com 0814975911	M	N
	Rex T. Sheehana	Ngatunan RFU	Secretary	0811465031	M	N
	Tjipundi Kemumuine	Otuharu Tutatu Fwniesasion	Chairperson	kemumuinetjipundi@gmail.com 0812324820	M	N

IFAD, Stakeholder Consultations for the KRB Project, Date: 27 May – 03 June 2024

No.	Name	Organization	Title	Email and Contact No.	Gender	Youth
17.	Uendjipa Thom	Wita Traditional Authority	Senior Council	0818249147	M	NO
18.	Kapangare Tjambiru	Senior Councilor	Kakurukouse TR	071482554	M	NO
19.	Verikouje Ndundu	Red Cross	Regional Officer	0812086013	M	YES
20.	Kazorondu Heuita	Karuru Kopuse Traditional Authority	Game Guard	0814798606	M	NO
21.	Tjikunda Katjina Kulunga	EPUPA Control Admin Constituency Officer	Admin Control Officer	0813714577 0811295741	M	
22.	Asnath Katjimbari	Kunene Rural Women Association	Chairperson	0812356748	F	NO
23.	Ben U. Kapi	Ngatuuone RFU	Chairperson	0812632528	M	
24.	Ian Van der Merwe	Ngatuuane RFU	Crops Representative	0812560965	M	NO
25.	Chris Van der Merwe	Ohaukororo	Chairperson	0813171340	M	YES
26.	Sennobia Charon Katjiuongua	Kunene Comm Radio NCCI	Board Member Vice- Chairperson	katjiuonguacharon@gmail.com 0816968168	F	NO
27.	Ambata Eliaser	MWLR-DAPEES	Chief *** Technician	chiaserambata70@gmail.com 0811248797	M	NO

28.	Tutupenini T. Tjazapi	Okozorgominya FA	Chairman	tutupenitjazapi@gmail.com	M	NO
29.	Amos Mchambo	Ufumano Church	Deacon	0812405511	M	NO
30.	Kavari Muharukua	Opuwo Churches	Chairman	0817988556	M	NO

IFAD, Stakeholder Consultations for the KRB Project, Date: 27 May - 03 June 2024, MEFT Management 27 May 2024

No.	Name	Organization	Title	Email And Contact No.	Signature And Date Consulted
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	Sion Shifa	MEFT	SCS	sionshifa@yahoo.com	
	Petrus Mutiyauli	MEFT	Deputy Director	petrus.mutiyauli@meft.gov.na	
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	Emilia Inman	IFAD-UNAM	Consultant	haimbiliemila@gmail.com	
	Simon Thuo	IFAD	Regional Specialist	s.thuo@ifad.org	
	Eugene Kanguatjivi	FAO	Project Officer	Eugene.kanguatjivi@fao.org	
	Qingyun Diao	FAO	FAO	Qingyun.Diao@fao.org	

IFAD, Community Consultation for KRB Project, Date: 27 May -03 June 2024, Venue: Epupa

No.	Name of participant	Gender (M/F)	Youth under 35 years old (yes/no)	Indigenous people (yes/no)	People with disabilities (yes/no)
	Veitjuiua Thom	M	Yes	Yes	No
	Vazurarisa Tjamoiru	F	Yes	Yes	No
	Vakarereia Tjiposa	M	Yes	Yes	No
	Izilda Tjokoeoke	F	Yes	Yes	No
	Uasatarora Mutambo	M	Yes	Yes	No
	Vemukondjisa Thom	F	Yes	Yes	No
	Vetumbua Vi Muhenje	F	Yes	Yes	No
	Ester Koikoi	F	Yes	Yes	No
	Munenje Tjanakambembe	F	Yes	Yes	No
	Tjambura Karikamba	F	Yes	Yes	No
	Kovizia Maariseki	M	Yes	Yes	No
	Veripeuavi Muhenje	F	Yes	Yes	No
	Bertha Mbambi	F	Yes	Yes	No
	Mbimutyita Muhenje	M	Yes	Yes	No
	Tjeore Verikonga	M	Yes	Yes	No
	Tjikuendi Jakwatavi	M	Yes	Yes	No
	Utjuziua Kuvare	F	Yes	Yes	No
	Maria Kandiimuine	F	Yes	Yes	No
	Secilia T. Mualiputji	F	Yes	Yes	No
	Pena Sakeusa	M	Yes	Yes	No
	Hamandike Muhenje	F	Yes	Yes	No
	Kambopi Tjambiru	F	Yes	Yes	No
	Rusia Muanjangambo	F	Yes	Yes	No
	Katunovandu Thom	F	Yes	Yes	No
	Kasokona Thom	F	Yes	Yes	No
	Sarender Thom	F	Yes	Yes	No
	Ndian Thom	F	Yes	Yes	No
	Tjazapuije Tjambiru	F	Yes	Yes	No
	Kaunambonga Ephraem	M	Yes	Yes	No
	Kazezenia Tjambiru	F	Yes	Yes	No
	Ngunonie Thom	F	Yes	Yes	No
	Wapanderaine Thom	M	Yes	Yes	No
	Kamdjendje Hepute	F	Yes	Yes	No
	Kamugewa T. Ndunda	F		Yes	Yes
	Mikiina Muhenje	F		Yes	Yes
	Kavenaye Efraem	F		Yes	Yes
	John Muhenje	M		Yes	Yes
	Kama T. Tiquopuini	M		Yes	Yes
	Amosa Mbendura	M		Yes	Yes
	Yekutomba	M		Yes	Yes
	Viasaida Kandimune	F		Yes	No
	Nico Kaita	M	Yes	Yes	No
	Remeber Kaita	M	Yes	Yes	No
	Mariyes Kaita	M	Yes	Yes	No
	Martha Ijambiru	F	Yes	Yes	No
	Mathew Ijidunda	M	Yes	Yes	No
	Wakandjanao Mbenduya	F	Yes	Yes	No
	Jimbasi Mbendura	M	Yes	Yes	No
	Filipus Hoeb	M	Yes	Yes	No
	Kasops Kakoi	M	Yes	Yes	No
	Tieus Mbendura	M	Yes	Yes	No
	Racheal Kamoruao	M	Yes	Yes	No

	Moposipi Muhenje	M	Yes	Yes	No
	Rutjindo Katironaam	M	Yes	Yes	No
	Kahitire Muhenje	M	Yes	Yes	No
	Umuna Danuel	M	Yes	Yes	No
	Mbarirako Muhenja	M	Yes	Yes	No
	Kahurukirue Tjinange	F	Yes	Yes	No
	Ripueni Shituripo	M	Yes	Yes	No
	Uendjiundjai Ruiter	F	Yes	Yes	No
	Kakunaa Muhenje	F	Yes	Yes	No
	Marijua Mutambi	M	Yes	Yes	No
	Tjambiru Ngavetungue	M	Yes	Yes	No
	Munenje Watusurirep	M	Yes	Yes	No
	Ngumdara Muhenje	M	Yes	Yes	No
	Rapall Tjihita	M	Yes	Yes	No
	Murambi Huputt	M	Yes	Yes	No
	Verinyaerako Kayeya	M	Yes	Yes	No
	Hambepe Tjambiru	M	Yes	Yes	No
	Vyasapo Une-Kariro	M	Yes	Yes	No
	Ukongorera Mbinge	M	Yes	Yes	No
	Mamureve Hepute	M	Yes	Yes	No
	Kauijazemua Ijambiru	F	Yes	Yes	No
	Maria Kandimune	F	Yes	Yes	No
	Kuaundja Ombura Muhenge	F	Yes	Yes	No
	Wetupotjinyoa T.	F	Yes	Yes	No
	Mamuini Tjavara	F	Yes	Yes	No
	Eugene Kanguatjivi	M	Yes	Yes	No
	Analdus Ijiura	M	Yes	Yes	No

IFAD, COMMUNITY CONSULTATION FOR KRB PROJECT, DATE 31ST MAY 2024, VENUE: EPUPA

No.	Name of participant	Gender (M/F)	Youth-under 35 years old (yes/no)	Indigenous people (yes/no)	People with disabilities (yes/no)
	Raul Murotwa	M		YES	YES
	Ananias Kaluwapa	M		YES	YES
	Katuyi Muhenje	M		YES	YES
	Veiyiua Thomo	M		YES	YES
	Mbeumuna Rafael	F		YES	YES
	Loide Amukoshi	F		YES	NO
	Flora Francisico	M		YES	NO
	Mazumo Ngombe	M		YES	NO
	Emmanuel Daniel	M		YES	NO
	Gabriel Kaita	M		YES	NO
	Katoho Muhonje	M		YES	NO
	August Kapera	M		YES	NO
	Tjakuvaka Muhenje	M		YES	NO
	Kavari Kaihorerua	M		YES	NO
	Gabriel K. Tjambiru	M		YES	NO
	Karukurue Tjiuma	M		YES	NO
	Mbitito Kavari	M		YES	NO
	Kandjima Muhenje	M		YES	NO
	Maveya Kavari	M		YES	NO
	Mario Tavares	F		YES	NO
	Treza Kazera	M		YES	NO
	Kariyoro O. Ngombe	M		YES	NO
	Kambuaoko Muhenje	M		YES	NO
	Verinyaerako Kageya	M		YES	NO
	Kambondjo Tjiposa	M		YES	NO
	Marikondjo Tjambira	M		YES	NO
	Wararimue Muhenje	F	Yes	Yes	No
	Rahangauka Ngombe	F	Yes	Yes	No
	Qena Muhenje	F	Yes	Yes	No
	Mayaa Kandimuine	F	Yes	Yes	No
	Mukambengera M.	F	Yes	Yes	No
	Kauya Ngwa-Muhonje	F	Yes	Yes	No
	Meramia Mbuare	F	Yes	Yes	No
	Amuldus Tjivera	M	Yes	No	No

IFAD, COMMUNITY CONSULTATION FOR KRB PROJECT, Venue: Okanguati, Date: 30th May 2024

No.	Name of participant	Gender (M/F)	Youth-under 35 years old (yes/no)	Indigenous people (yes/no)	People with disabilities (yes/no)
	Mavetwapi Tjiumba	M	No	Yes	No
	Maepingiko Ijindumba	M	No	Yes	No

	Riamana Oruhama	M	No	Yes	No
	Maaruka Mupurua	M	No	Yes	No
	Peihama Tjindunda	M	No	Yes	No
	Kanungojo Muhenje	M	No	Yes	
	Kapangere Tjambiru	M	No	Yes	
	Kauta Koruhama	M	No	Yes	No
	Vaatako Hembinda	M	No	Yes	
	Kuapunawa Tjirambi	M	No	Yes	
	Chief Vemui Tjambiru	M	No	Yes	
	Eugene Kanguatjivi	M	No	Yes	
	Ijisuta Kaitema	M	Yes	Yes	No
	Kanaumba Mohenje	M	Yes	Yes	No
	Repute Japeule	M	Yes	Yes	No
	Steven M. Jambiru	M	Yes	Yes	No
	Kanambiya Shinga	M	Yes	Yes	No
	Simon Effraem	M	Yes	Yes	No
	Njumbi Ujamba	M	Yes	Yes	No
	Mutambo Mautjindika	M	Yes	Yes	No
	Charles Uanje	M	Yes	Yes	
	Maaruka Muparua	M	Yes		No
	Hevita Mgumebiti	M	Yes		No
	Ngumbi Mbomi	M	Yes		No
	IJambiru Uvawura	M	Yes		No
	Alungongo Wilbard	M	Yes		No
	Rutemba Ngumbi	M	Yes	Yes	No
	Muhenje Katazuu	M	Yes	Yes	No
	Hepate Kautaarua	M	Yes	Yes	No
	Muhenje Katoho	M	Yes	Yes	No
	Japyanguka Tjhanje	M	Yes	Yes	No
	Hambinda Kaninounusa	M	Yes	No	No
	Tjindandi Kaukareerua	M	Yes	No	No
	Tjinana Kaunrina	M	Yes	Yes	No
	Hunga Jipara	M	Yes	Yes	No
	Mutambo Kiapiti	M	Yes	No	No
	Ijiumbua Hijambifise	M	Yes	No	No
	Tjinana Kaharakana	M	Yes	Yes	No
	Tjindandi Muangemba	M	Yes	No	No
	Tjindandi Kapata	M	Yes	No	No
	Jiposa Ijarambua	M	Yes	No	No
	Hembinda Vapuzako	M	Yes	No	No
	Muhenye Njomuu	M	No	Yes	No
	Hembinda Tjiuone	M	Yes	No	No
	Ngombe Vakuvirapi	M	Yes	No	No
	Jambiru Kavepanga	M	Yes	No	No
	Tjiposa Kamupandera	M	Yes	No	No
	Ingi David	M	Yes	No	No
	Kampenderu Jiposa	M	No	No	No
	Kampepua Jiposa	M	Yes	No	No
	Kapika Undaka	M	Yes	No	No
	Ijiuma Uarimo	M	No	No	No
	Mgombe Tjilonga	M	Yes	No	No
	Mgumbi Uakuatwatyapa	M	Yes	Yes	No
	Tjingee Jarara	M	No	Yes	No
	Mbinge Hangekaava	M	No	Yes	No
	Kapika Vemupiana	M	No	Yes	No
	Hembinda Vezepaumue	M	No	Yes	No
	Tjirambi Uatakanisa	M	No	Yes	No
	Ngombe Kautouenua	M	No	Yes	No
	Harire Makuljavi	M	No	Yes	No
	Kambindja T.	M	No	Yes	No
	Efraem Angure	M	No	Yes	No
	Kurinaua Tjinana	M	Yes	Yes	No
	Muundjua Varrakana	M	No	Yes	No
	Manjombara Muncomuaba	M	No	Yes	No
	Thom Mdolazu	M	No	No	No
	Unda Tjimba	M	Yes	No	No
	Kavare Kuzeeko	M	Yes	No	No
	Ngombe Vemujera	M	No	No	No
	Hepute Tjikuva	M	Yes	No	No
	Mbendura Tjihekata	M	Yes	No	No
	Jambiru Riapaapo	M	Yes	No	No
	Tjindandi Rikondjerua	M	Yes	No	No
	Jambiru Jaunduka	M	No	Yes	No
	Hepute Nduzuzu	M	Yes	Yes	Yes
	Tjambiru Kanjonjua	M	Yes	Yes	Yes

	Nanaa Ushuna	M	No	Yes	No
	Hepute Makahapapi	M	Yes	Yes	No
	Mbinge Vakaakua	M	Yes	Yes	Yes
	Jambiru Kanjanda	M	Yes	Yes	No
	Muhenje Nguindara	M	No	Yes	No
	Muhenje Ndinaani	M	Yes	Yes	No
	Muharukau Mbopata	M	No	Yes	Yes
	Tjiumbua Mavatwaapi	M	Yes	Yes	Yes
	Rutjindo Vemujakara	M	Yes	Yes	No
	Yradans Tjiua	M	Yes	No	No

IFAD, COMMUNITY CONSULTATION FOR KRB PROJECT, Venue: Windhoek County Club, Date:3 June 2024
Debrief Session

	Name	Gender (M/F)	Organization	Title	Email and contact No.
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	Helvi Akwenye	F	MAWLR-DWA	Ms.	Helvi.akwenye@mawlr.gov.na
	Enich Petrus	M	MAWLR-DEPEES	Mr.	Erich.Petrus@mawlr.gov.na
	Silvanus Uunona	M	CUVECOM	Mr.	suunona@covecom.org
	Nicholas Tembwe	M	MSYNS	Mr.	Nicolars.tembwa@msynsigo.vana
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	Ilvorurue Kheijavi	M	MAWLR	Agricultural Scientific Officer	concyngaruka@gmail.com
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	Anastasia Shiviya	M	MAEPESIL	DD	
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	Shirley Magazi	F	IFAD	Consultant	smagazi@gmail.com
	Anna Dumeni	F	OPM	Control Adm. Officer	Anna.dumeni@opm.gov.na

Consultations in Okanguati, Namibia *Community leader (Okanguati) narrating*

Consultations in Matala, Huila, Angola
the historic memory of the past droughts

Annex 9. Environmental and Social Risk Management Plan

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
Component 1: Co-design and implementation of a Disaster Risk Reduction Plan through EbA in the KRB							
1.1.1 Knowledge gaps identified and addressed through a Water Security Assessment and Ecosystem Goods and Services Valuation to support the development of the KRB: EbA-DRRP.	1.1.1.1 Undertake a Water Security Assessment of the KRB Data gaps or low data quality - Limited cooperation across borders or sectors - Exclusion of community-level input 1.1.1.2 Undertake ecosystems goods and services quantification and valuation. - Misevaluation of cultural/non-market services - Lack of capacity to conduct EGS studies - Risk of commodifying ecosystems without protecting rights	1,1,1,1 Use multiple data sources and triangulation - Engage stakeholders early to ensure buy-in - Include participatory water mapping with local communities 1,1,1,2 Use mixed-method valuation approaches - Build local technical capacity - Ensure Indigenous and cultural values are included	1.1.1.1 Number of hydrological or water resource assessments using at least two independent data sources. Percentage of data products (e.g., maps, reports) that incorporate triangulation from field, satellite, and community data. Number of discrepancies identified and resolved through triangulated data analysis. Number of stakeholder engagement meetings held during the planning phase. Percentage of key stakeholders (e.g., government, communities, NGOs) participating in project design Number of action points or recommendations from stakeholders integrated into final plans. Number of participatory water mapping exercises conducted with communities. Percentage of target communities engaged in water resource mapping. Number of maps or spatial plans validated by local users and integrated into basin-wide planning. 1.1.1.2 Number of valuation studies using both quantitative (e.g., economic valuation) and qualitative (e.g., community ranking, perception surveys) methods. Percentage of ecosystem valuation	PMU	All 15 principles	Registers Meeting reports Progress reports	$100,000 $100,000 $75,000 $50,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			reports that document the use of at least two distinct methodologies. Number of cross-validation efforts or peer reviews conducted to ensure reliability of findings. 2. Build local technical capacity Number of local stakeholders (e.g., government, community members) trained in valuation tools and techniques. Percentage of valuation exercises led or co-led by local institutions. Number of follow-up support sessions provided post-training. 3. Ensure Indigenous and cultural values are included Number of valuation reports that explicitly incorporate Indigenous knowledge or cultural ecosystem values. Number of consultation sessions held with Indigenous groups to inform valuation criteria. Percentage of Indigenous or local cultural priorities reflected in final valuation outputs				
1.1.2 A Basin-wide gender inclusive DRR Plan, with a focus on EbA, developed and validated. EbA	1.1.2.1 Develop a basin-wide gender-inclusive Disaster Risk Reduction Plan focused on EbA. **- Failure to integrate diverse gender/ethnic perspectives** **- EbA approaches not fully understood** **- Poor alignment with national disaster plans**	Seeking representation from different gender and gender subgroups Hold separate men and women meetings and other gender subgroups including indigenous people. -1.1.2.1 Conduct gender and social analysis - Provide training on EbA principles - Align with national and local DRR policy	1. Seek representation from different gender and gender subgroups Percentage of meetings with balanced representation across gender and gender subgroups (e.g., women, men, non-binary, Indigenous) Number of stakeholders from marginalized gender subgroups participating in planning and decision-making Number of engagement sessions that include gender-	PMU	All 15 principles	DRR plan Progress reports	$200,000 $200,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			specific issues or priorities in the agenda. 2. Hold separate meetings for men, women, and other gender subgroups, including Indigenous people Number of gender- or subgroup-specific consultations held (e.g., women-only, Indigenous-only sessions) Percentage of total community engagement activities that use separate sessions to ensure safe, open participation. Number of action points from separate meetings integrated into overall planning processes. 1.1.2.1 Conduct gender and social analysis Number of gender and social analyses completed and documented before project implementation. Percentage of project components informed or adapted based on gender and social analysis findings. Number of consultations held with diverse social groups to inform analysis. 2. Provide training on Ecosystem-based Adaptation (EbA) principles Number of training sessions conducted on EbA for stakeholders and community members. Percentage of participants trained, disaggregated by gender and social group. Participant satisfaction and knowledge gain measured through pre-				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			and post-training assessments. 3. Align with national and local Disaster Risk Reduction (DRR) policy Number of project activities mapped against relevant national and local DRR policies. Percentage of project plans reviewed and updated to comply with DRR frameworks. Number of coordination meetings held with DRR authorities to ensure policy alignment				
1.2.1 A comprehensive report documenting stakeholder engagement processes with beneficiary communities (including gender and ethnic subgroups), civil society, private sector, and government actors.	1.2.1.1 Facilitate engagement and co-planning of the KRB by its stakeholders. - Stakeholder fatigue or low participation - Power imbalances dominate the process - Decisions not implemented due to weak governance 1.2.1.2 Facilitate development of a Free, Prior and Informed Consent (FPIC) Plan - Misunderstanding of FPIC principles - Incomplete or rushed consultation - Risk of tokenistic participation 1.2.1.3 Facilitate dialogue between beneficiary gender and ethnic subgroups through Scenario Planning - Exclusion of marginal voices - Scenario outputs too abstract or non-actionable - Conflict between groups during dialogue	1.2.1.1 - Use inclusive facilitation methods - Set transparent criteria for participation - Tie planning outcomes to institutional mandates 1,2.1.2 Conduct FPIC training with facilitators - Allocate adequate time for community engagement - Document and respect for all community decisions. 1.2.1.3 Use skilled, neutral facilitators - Ensure scenarios are grounded in local realities - Use conflict-sensitive facilitation and mediation approaches	1.2.1. 1.. Use inclusive facilitation methods. Number of meetings or workshops employing inclusive facilitation techniques (e.g., participatory tools, accessible language) Percentage of participants reporting feeling heard and included in feedback surveys. Number of facilitators trained in inclusive and culturally sensitive facilitation. 2. Set transparent criteria for participation Availability and dissemination of clear participation criteria before engagement activities Percentage of participants who meet the set criteria, ensuring fair representation. Number of grievances or disputes related to participation eligibility reported and resolved. 3. Tie planning outcomes to institutional mandates Number of project plans explicitly linked to institutional roles and mandates.	PIU, Gender Specialist and gender focal points of the executing entities	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 5 (gender equality)	Annual progress report Gender action plan report	$50,000 $50,000 $25,000 $25,000 $50,000 $ 50,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			Number of coordination meetings held with relevant institutions to align responsibilities. Percentage of institutional stakeholders reporting clarity on their roles in project implementation 1,2,1.2 1. Conduct FPIC training with facilitators. Number of facilitators trained in Free, Prior, and Informed Consent (FPIC) principles and practices. Percentage of facilitators who pass post-training assessments on FPIC knowledge. Number of refresher or follow-up FPIC training sessions conducted. 2. Allocate adequate time for community engagement Average duration of community engagement processes per site, compared to planned timelines. Number of community meetings held to ensure thorough consultation before decisions. Percentage of community members reporting satisfaction with the engagement process length 3. Document and respect all community decisions Number and percentage of community decisions formally documented and signed off. Number of instances where project activities were adjusted based on community decisions. Number of grievances related to disregard of community decisions reported and resolved.				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			1,2,1,3 Use skilled, neutral facilitators Number of facilitators with verified skills and neutrality assigned to engagement activities. Percentage of facilitation sessions led by trained neutral facilitators Participant feedback rating facilitator impartiality and professionalism 2. Ensure scenarios are grounded in local realities Number of scenario planning exercises developed with direct input from local communities. Percentage of scenarios reviewed and validated by local stakeholders for relevance. Number of adaptations made to scenarios based on community feedback. 3. Use conflict-sensitive facilitation and mediation approaches Number of facilitators trained in conflict-sensitive methods and mediation techniques. Number of conflict incidents reported during engagement and effectively managed through facilitation. Participant satisfaction with conflict resolution processes during project consultations				
Component 2: Implementation of a satellite-based MH-EWS for the KRB (KRB: MH-EWS)							
2.1.1 Weather stations installed in key micro-climate zones of Kuene River Basin, in collaboration with national meteorological agencies.	Environmental risks Weather stations may be installed in ecologically sensitive areas, such as wetlands, forests, or grazing lands. Construction activities may produce waste, fuel	**Environmental mitigation measures** -Conduct site selection with environmental screening (avoid protected or sensitive areas). - Use minimal-impact designs and	Percentage of proposed sites that undergo environmental and social screening before approval. Number of sites rejected or modified due to identification of protected or sensitive areas.	PMU and Meteorological Agencies	9 (protection of natural heritage} 7 (indigenous people)	Annual progress report	$232,000 $1,160,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
	spills, or damage to vegetation. Equipment may alter the natural aesthetics of the landscape or cultural sites. <u>Social risks</u> Local communities may not be consulted, leading to mistrust or opposition. Weather stations may be installed on land with unclear or contested ownership. If communities are not engaged or benefit-sharing is unclear, equipment may be targeted. Installation or use of data may not benefit all groups equally	low-footprint infrastructure. 1- Enforce environmental construction standards. - Use trained technicians and eco-friendly materials. - Clean up all waste and restore disturbed areas. 2 Choose visually unobtrusive designs. - Avoid sites of cultural or aesthetic importance. 3 Social mitigation measures - Apply Free, Prior, and Informed Consent (FPIC) principles. - Conduct community meetings before installation. 4- Verify land rights with local authorities and community leaders. - Sign access agreements with landowners or customary authorities. -5 Involve local communities in security and maintenance. - Provide awareness-raising on the purpose and benefits of the stations. 6- Ensure women and marginalized groups are involved in planning and benefit-sharing. - Share weather data in accessible formats (radio, SMS, community boards).	1. Availability and completeness of environmental screening reports for all project sites Percentage of infrastructure projects designed following minimal-impact and low-footprint guidelines. Number of design reviews conducted to verify adherence to environmental standards. Number of post-construction site assessments confirming minimal environmental disturbance 2 Percentage of infrastructure designs reviewed and approved for visual compatibility with the local landscape. Number of community consultations conducted to assess aesthetic concerns. Number of design modifications made to reduce visual impact. Number of cultural heritage and aesthetic value assessments conducted during site selection. Percentage of proposed sites excluded due to cultural or aesthetic sensitivity. Number of consultations with local cultural leaders or custodians to identify sensitive sites 3 Number of FPIC consultations held with affected communities before project activities. Percentage of sites with documented FPIC approval prior to installation Number of participants in FPIC				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			processes, disaggregated by gender, age, and social group. Number of community meetings conducted prior to infrastructure installation. Percentage of target communities reached through meetings and consultations. Number of issues or concerns raised by communities and addressed before project commencement. 4 Number of land rights verifications completed with official records or local authority confirmations. Percentage of project sites with documented land tenure status verified by relevant authorities Number of consultations held with community leaders to confirm customary land rights. Number and percentage of sites with signed land access or use agreements before project implementation. Number of disputes or grievances related to land access reported and resolved prior to installation. Documentation of completeness rate for access agreements, including terms and conditions. 5 Number and percentage of stations with community members actively engaged in security and routine maintenance. Number of training sessions conducted for community members				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			on station upkeep and troubleshooting. Frequency of community-led maintenance activities reported. Number of awareness campaigns or meetings held explaining station functions and benefits. Percentage of local population reached through awareness activities. Level of community understanding measured through surveys or feedback sessions. 6 Percentage of planning and decision-making meetings attended by women and marginalized group representatives. Number of outreach sessions specifically targeting women, Indigenous peoples, persons with disabilities, and other marginalized groups Number of projects or benefits explicitly designed to address needs of marginalized communities. Number of weather alerts and forecasts broadcast via local radio in relevant languages. Number of SMS weather alerts sent to community members, disaggregated by gender and group where possible. Number of community information boards displaying weather updates in accessible locations				
2.1.2. Hydrometric stations installed along the Kunene River, in partnership with the national hydrological agencies.	Installation sites may be on land with unclear ownership or community rights.	- Confirm land ownership or use rights before installation. - Engage local leaders and apply Free, Prior and	Number of infrastructure sites with documented proof of land ownership or legal use rights	PMU and Meteorological Agencies	9 (protection of natural heritage} 7 (indigenous people)	Annual progress report	$84,000 $364,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
		Informed Consent (FPIC) protocols.	% of project sites screened for land tenure conflicts before implementation Number of land-related grievances reported and resolved prior to installation. Number of consultations held with local leaders and affected communities using FPIC principles. % of target communities providing documented FPIC before project activities begin Number of community members (disaggregated by gender and age) participating in FPIC processes Existence of signed consent forms, meeting minutes, or declarations verifying community approval				
	Lack of consultation may lead to resistance or vandalism. .	Conduct public awareness campaigns explaining the purpose and benefits of the stations. - Involve communities in planning and oversight.	Number of awareness campaigns conducted in communities near station sites. % of target population reached by information materials (e.g., flyers, radio messages, community meetings) % of surveyed community members who understand the purpose and benefits of the stations (via pre-/post-awareness surveys) Number of communication materials produced in local languages and accessible formats. Number of community consultations held during station planning and site selection. % of station sites selected through participatory processes Number of community members	PIU Gender Specialist, PIU DRR+EWS Specialist, Meteorological Agencies, Hydrological Agencies	2(access and equity) 3 (vulnerable groups) 5 (gender equality) 11 (climate change)	Annual progress report	

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			(disaggregated by gender, age, and group) involved in oversight committees or local monitoring. Number of issues raised by communities addressed through oversight or feedback mechanisms				
	Benefits of data (e.g., flood warnings, irrigation planning) may not reach all social groups. -	Ensure inclusive dissemination of data (local languages, radio, visual formats). - Engage women, pastoralists, and Indigenous groups in awareness and response planning.	Number of female trainers., indigenous groups engaged. Number of media used to disseminate information. % of weather and early warning messages disseminated in local languages Number of dissemination channels used (e.g., radio, posters, SMS, community boards) % of messages using low-literacy or visual formats (e.g., icons, color codes) % of target population who report receiving and understanding forecasts or alerts (via community surveys) Number of targeted engagement sessions held with women, pastoralists, and Indigenous communities. % of disaster risk reduction (DRR) and early warning planning meetings attended by representatives from these groups Number of culturally appropriate training sessions on preparedness and response conducted. % of local disaster response plans that reflect priorities and knowledge of women and Indigenous groups	Gender focal points of executing entities, PIU DRR+EWS Specialist, PIU Gender Specialist		Annual progress reports feature participation figures on vulnerable (including women) users. Report on gender action plan	

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
	Poorly placed structures might affect water flow or sediment transport. -. -.	- Design structures that do not obstruct or redirect flow. - Position equipment outside of main flow channels where possible.	Percentage of infrastructure designs reviewed and approved by hydrologists/engineers to ensure no flow obstruction. Number of hydrological impact assessments conducted prior to construction. Number of post-construction monitoring reports confirming natural flow maintained. Percentage of installed equipment is located outside main river or stream flow paths. Number of site inspections confirming equipment placement avoids erosion-prone or ecologically sensitive areas. Number of adjustments made to equipment placement based on community or environmental feedback.				
	Fuel, lubricants, or construction materials may enter the river.	- Use spill-prevention protocols. - Train contractors in safe practices. - Store materials securely and away from the riverbank.	% of construction sites with approved spill-prevention and response plans in place Number of spill incidents recorded and resolved according to protocol. Number of workers trained in spill containment and clean-up procedures. Number of contractors and site workers trained in environmental health and safety (EHS) procedures. % of contractor staff demonstrating knowledge of safe construction practices (via post-training assessment) Frequency of site inspections for compliance with				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			safety and environmental protocols % of construction materials stored in designated, secure, and environmentally safe locations Number of incidents of material loss, runoff, or contamination due to improper storage Number of site inspections confirming safe distance between storage areas and watercourses				
	If communities are not engaged or see no benefit, stations may be vandalized or stolen.	- Employ local custodians or community watch systems. - Use tamper-resistant designs. - Share data with communities to demonstrate value.					
2.2.1 Multi-level KRB: MH-EWS co-designed and validated by governments and local communities, integrating indigenous knowledge.	2.2.1.1 Design MH-EWS in consultation with beneficiary communities- Exclusion of marginalized groups (e.g., women, Indigenous communities, pastoralists) - Community fatigue or lack of trust - Overlooking Indigenous/traditional knowledge systems	2.2.1.1. Apply participatory and gender-responsive approaches. - Schedule consultations with sufficient time and cultural sensitivity - Integrate Indigenous knowledge into hazard mapping and response design	Number and percentage of female participants in stakeholder workshops.	National Project Managers	2 (access and equity) 3 (vulnerable groups) 5 (gender equality)	Annual progress report	$40,000 $40,000
2.2.2 Big Data Analytics tool developed for real-time EWS data capture, monitoring, and analysis, including a user-friendly dashboard/interface.	. 2.2.2.1 Identify and select providers of suitable data platform and user interface - Selection of platforms that are not locally usable (e.g., high-tech but low accessibility) - Exclusion of national/local tech providers - Vendor lock-in or limited data interoperability - 2.2.3.1 Operationalize a MH-EWS for the KRB- -Unequal access to alerts (e.g.,	2.2.2.1 Prioritize open-source or interoperable platforms. - Include accessibility criteria (language, offline use, mobile-friendliness) - Ensure procurement is transparent and inclusive of local expertise 2.2.3.1 Use multi-channel alerts (radio, SMS, community alert systems)	2.2.2.1 1. Prioritize open-source or interoperable platforms. Number and percentage of selected platforms that are open-source or support interoperability standards. Documentation of platform compatibility with existing systems used by stakeholders Number of integration tests conducted to verify interoperability. 2. Include accessibility criteria	National Project Managers	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 11 (climate change)	Annual progress report	$235,000 $235,000 $120.000 $120.000 $100,000 $100,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
	remote, or low-literacy populations) - Lack of response capacity at local level - Technological failure or maintenance gaps 2.2.4.1 Support meteorological agencies to simplify, translate, and disseminate weather forecasts in local languages - Inaccurate or poorly translated forecasts may reduce trust. - Disparities in information access across communities - Agencies may lack capacity or local linguistic knowledge	- Train local responders and disaster committees - Establish maintenance protocols and assign responsibility (e.g., local authorities or CSOs) 2.2.4.1 - Work with local translators and communication experts - Test messages with focus groups before dissemination - Build agency capacity with training and culturally adapted templates	(language, offline use, mobile friendliness) Number of platforms meeting defined accessibility standards (multi-language support, offline functionality, mobile optimization) Percentage of user feedback indicating ease of access across different devices and literacy levels Number of platforms tested for usability in low-connectivity or resource-limited settings. 3. Ensure procurement is transparent and inclusive of local expertise Number of procurement processes publicly advertised with clear criteria. Percentage of procurement contracts awarded to local vendors or experts. Number of stakeholder consultations held during the procurement process to ensure inclusiveness. 2.2.3.1 1. Use multi-channel alerts (radio, SMS, community alert systems) Number of alerts disseminated through different channels (radio broadcasts, SMS, community systems) Percentage of target population receiving alerts via at least two communication channels Frequency of alert testing drills conducted across channels. 2. Train local responders and disaster committees Number of local responders and disaster committee				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			members trained on alert protocols and response actions. Percentage of trained individuals demonstrate competency in drills or simulations. Number of refresher training sessions conducted annually. 3. Establish maintenance protocols and assign responsibility Presence of documented maintenance protocols for alert system equipment and processes Percentage of maintenance tasks completed on schedule by assigned local authorities or CSOs. Number of equipment failures reported and resolved within defined timeframes. 2.2.4.1 1. Work with local translators and communication experts. Number of communication materials translated into local languages by qualified translators. Percentage of materials reviewed and approved by local communication experts. Number of collaborations established with local language and communication specialists. 2. Test messages with focus groups before dissemination Number of focus group sessions conducted test message clarity and cultural appropriateness. Percentage of messages revised				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			based on focus group feedback. Participant satisfaction scores from focus group testing 3. Build agency capacity with training and culturally adapted templates Number of training sessions provided to agencies on culturally adapted communication. Percentage of agencies using adapted templates for public messaging Pre- and post-training assessments indicating increased capacity in culturally sensitive communication				
Component 3. Inclusive community-based adaptation actions are co-designed and implemented							
3.1.1 Rainwater retention infrastructure constructed or rehabilitated to improve water availability for domestic and agricultural use. 20 existing earth/sand dams rehabilitated 20 rainwater retention ponds established XX rooftop rainwater harvesting systems installed on public buildings	3.1.1.1 Rehabilitate 20 earth/sand dams (10 per country) - Erosion or sedimentation if poorly designed. - Disruption to downstream flows - Conflict over water access 3.1.1.2 Construct 20 new rainwater retention ponds - Poor sitting may lead to flooding or pollution. - Mosquito breeding and health hazards - Livestock-wildlife conflicts 3.1.1.3 Install rooftop rainwater harvesting on public buildings - Contamination risk (roof materials or storage tanks) - Maintenance burden on local institutions -	3.1.1.1 - Conduct hydrological assessments - Use erosion control measures - Engage communities in water sharing rules 3.1.1.2 - Use environmental screening for site selection - Include drainage and safety designs - Fence off sensitive areas if needed 3.1.1.3 Use food-safe materials - Train custodians on system upkeep - Install first-flush diverters and filters	Number of water infrastructure sites assessed using hydrological studies. Percentage of infrastructure designs based on hydrological assessment data. Number of follow-up monitoring points installed for flow or recharge rates. Percentage of water infrastructure sites with erosion control measures implemented. Number of hectares treated or stabilized with erosion control around infrastructure. Number of maintenance or inspection visits per year Number of communities with agreed water-sharing rules or charters Percentage of water committees or users trained in shared access.	PIU	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitats) 11 (climate change) 15 (public health)	Annual progress report	$500,000 $500,000 $200,000 $200,000 $200,000 $200,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			Number of disputes over water use resolved through. agreed mechanisms. Percentage of proposed infrastructure sites that undergo environmental and social screening. Number of infrastructure projects modified or relocated due to screening outcomes. Existence of complete screening checklists and reports Percentage of water infrastructure sites that include drainage and overflow management systems in design. Number of safety features (e.g., spillways, signage, embankment stability) incorporated into infrastructure. Number of post-construction safety audits conducted. Number of ecologically or socially sensitive areas identified near infrastructure sites. Percentage of identified sensitive areas that are fenced or demarcated. Number of community consultations held before fencing or access restrictions. Percentage of rainwater harvesting systems constructed using certified food-safe materials. Number of quality assurance checks conducted during construction. Existence of documented material specifications in				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			procurement and construction records Number of designated custodians trained in operation and maintenance of rainwater systems. Percentage of systems with trained custodians regularly performing maintenance tasks Number of refresher training sessions conducted per year. Percentage of rainwater systems equipped with first-flush diverters and filters. Number of water quality tests conducted. Percentage of systems showing acceptable water quality for intended use % of systems constructed using certified food-grade storage tanks and piping Number of quality control inspections completed during installation. Presence of material compliance certificates in procurement documentation number of custodians trained in maintenance and basic repairs. % of systems with trained custodians actively performing routine maintenance Frequency of refresher training held per year. % of installed systems equipped with operational first-flush diverters and filtration units Number of water quality tests				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			conducted post-installation. % of water samples meeting safe-use standards for domestic or garden use				
3.1.2 Groundwater access improved through small scale infrastructure to support home gardening, and household water supply.	3.1.2.1 Rehabilitate 180 boreholes (90 per country) - Over-extraction of groundwater. - Conflict over usage rights - Borehole collapse risk if not well managed -	3.1.2.1 - Conduct groundwater assessments - Establish user committees - Train in sustainable abstraction practices	Number of groundwater assessments completed prior to borehole rehabilitation. Percentage of rehabilitated boreholes supported by groundwater monitoring data Number of sites with ongoing groundwater level monitoring installed use in project community's due borehole rehabilitation Number of water user committees formed or reactivated. Percentage of water user committees with women and marginalized group representation Number of committee meetings held annually with documented action points. Percentage of committees trained in basic maintenance, water quality, and conflict resolution	PIU	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitats) 11 (climate change) 15 (public health)	Annual progress report	$750,000 $750,000
3.1.3 Drought-tolerant crop varieties promoted through farmer field schools, demonstrations, and extension services.	3.1.3.1 Promote drought-tolerant food varieties - Risk of low market demand. - Loss of crop diversity or local seed systems -	3.1.3.1 - Promote diversity alongside drought resilience - Involve farmers in varietal selections - Link to extension and seed banks	Number of drought-resilient crop varieties promoted. Percentage of farms cultivating multiple resilient varieties Change in household food security indicators (e.g., dietary diversity score) Number of participatory varietal trials conducted with farmers. Percentage of selected varieties based on farmer feedback.	PIU Conservation Agriculture Specialist	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitants) 11 (climate change) 15 (public health)	Annual progress report Community surveys	$600,000 $600,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			Number of farmers trained in varietal evaluation and seed selection. Number of partnerships with agricultural extension services and local seed banks Percentage of promoted varieties available through local seed banks or cooperatives Number of farmers receiving extension support on new varieties				
3.1.4 . Rangeland restored through reseeding, rotational grazing, and soil improvement techniques to support drought-resistant fodder and biodiversity.	3.1.4.1 Create nurseries for drought-resistant fodder crops near ponds - Water competition with other uses. - Invasive species risk - Land tenure issues -. 3.1.4.2 Secure 20,000 ha for rangeland restoration (10,000 ha per country) - Displacement or restriction of traditional land users - Land tenure conflict - Failure due to poor grazing controls -	3.1.4.1 - Select non-invasive, locally adapted species - Engage communities in access and benefit sharing - Secure land use agreements 3.1.4.2 - Use participatory land mapping - Integrate community grazing committees - Legalize land access agreements	The number of women in leadership and decision-making roles or positions in the community where rangelands are under community-based protection (differentiated to account for ethnicity, economic class, age, and indigeneity) Number or size of property lost. Percentage of planted species that are non-invasive and locally adapted. Number of local ecological assessments conducted prior to species selection. Survival rate of planted species after 12 months Number of community members involved in benefit-sharing design processes disaggregated by gender, age group, and community (including Indidisgenous groups) Existence of documented Access and Benefit Sharing (ABS) agreements Percentage of community members reporting satisfaction with ABS outcomes	National Project Managers	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitats) 11 (climate change) 15 (public health)	Annual progress report	$159,773 $159,773 $270,000 $270,000 $220,000 $220,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			Number of signed land use agreements between communities and implementing partners Percentage of restoration areas under formal land tenure or agreements by country or administrative region Number of conflicts or disputes related to land use resolved through project mechanisms. Number of hectares mapped through participatory processes. Number of community members trained in participatory mapping techniques by gender, age group, and role. Percentage of mapped areas agreed upon and validated by communities. Number of community grazing committees established or strengthened. Percentage of grazing committees with women and youth representation Number of grazing plans developed and adopted by communities. Number of land access/use agreements formalized through legal or customary systems. Percentage of community members aware of the terms of land agreements Number of land-related disputes resolved through participatory mechanismsl				

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
3.2.1 An inclusive coordination forum established for development partners. government agencies, community leaders, and NGOs active in \ the KRB.	3.2.1.1 Convene quarterly development partners meetings in project area - Low coordination uptake. - Marginalization of local voices	3.2.1.1 - Include community representation - Document and share action points - Align with local development plans	Percentage of planning meetings with community representatives present disaggregated by gender, age group, and community (including Indidisgenous groups) Number of community representatives actively contributing to planning discussions disaggregated by elder, youth, farmer, women's group Existence of formal selection criteria for community representatives	National Project Managers	(Access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitats) 11 (climate change) 15 (public health)	Annual progress report	$20,000
Component 4: Raise awareness and improve knowledge on climate change adaptation in the Kunene River ecosystem							
4.1.1 Awareness campaigns and knowledge sharing initiatives launches to promote gender-responsive, locally led climate change adaptation measures.	4.1.1.1 Raise awareness and build capacity on locally led gender-responsive adaptation - Gender-responsive approaches may be poorly understood or superficially applied. - Risk of elite capture or exclusion of marginalized groups 4.1.1.2 Provision of nutrition, literacy, and GALS training (Gender Action Learning System) - Training may not be sustained without follow-up. - Risk of reinforcing gender stereotypes if not facilitated well - Low participation from overburdened women - Schedule training at accessible times and locations	4.1.1.1 - Use gender experts and Participatory Methods - Prioritize inclusion of women, youth, and vulnerable groups - Use local languages and culturally relevant formats 4.1.1.2 - Schedule training at accessible times and locations - Ensure female facilitators and gender-balanced participation - Link training to income or food security activities for incentive	Number and percentage of female participants in stakeholder workshops Number of knowledge products developed on locally led gender responsive adaptation. Presence of a gender expert in project management Number of awareness creation campaigns held on climate change adaptation. Number and percentage of female, male, youth, elderly, people with disabilities, indigenous people participants in stakeholder workshops Number of trainings organized with female facilitators. Percentage of training sessions held at times and locations identified as accessible by participants. Participant attendance rate by gender and caregiving status Number of feedback sessions conducted to assess training accessibility.	PIU Gender Specialist	2 (access and equity) 5(gender) 14(climate change)	Annual progress report	$100,000 $100,000 $180,000 $180,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
			Number of training sessions explicitly linked to income or food security opportunities. Percentage of participants reporting increased motivation due to livelihood linkage Percentage of participants who are women, youth, or from marginalized groups by gender, age, disability, and ethnicity. Participant satisfaction with facilitator approach and inclusion				
4.1.2 Kunene River Awareness Kit online portal updated and reactivated, incorporating new data and knowledge generated by the project.	4.1.2.1 Reactivating and updating the online Kunene River Assessment Toolkit - Low digital access among local stakeholders. - Language or technical barriers - Outdated or inaccessible content	4.1.2.1 - Ensure mobile compatibility and offline access - Provide translations and user-friendly design - Promote through community training and government channels	Percentage of digital tools/platforms optimized for mobile. Number of users accessing content through offline/low-bandwidth modes disaggregated to female, male, youth, elderly people with disabilities, indigenous people. User satisfaction with digital accessibility Number of digital materials translated into local languages. Number of accessibility features included in platform design. Number of community training sessions conducted on digital tool use. Number of government institutions engaged in toolkit dissemination. Percentage of trained users who report regular use of the tool/platform.	PIU DRR+EWS Specialist	2 (access and equity)	Annual progress report	$37,500 $37,500
4.1.3 Case studies from the Case studies from the project developed and submitted to knowledge platforms such as IFAD, FAO,	4.1.3.1 Develop and use case studies in awareness campaigns (on EbA, DRR, MH-EWS, Indigenous	.4.1.3.1 - Co-create case studies with communities - Validate content before publication	Number of case studies co-created with community. Percentage of case studies reflecting	PMU	All	Case studio documents, audio recordings, or videos	$75,000 $75,000

Output	Environmental / Social Risk	Risk mitigation measures	Indicators	Responsibility for implementing risk mitigation measures	AF principles	Means of Verification	Budget Namibia/Angola
SADC-GMI and WaterNet for wider dissemination.	knowledge, etc.) - Risk of oversimplifying or misrepresenting community experiences - Case studies may not be used if poorly distributed	- Use multiple dissemination channels (radio, social media, community events)	Indigenous/local knowledge and priorities Level of community satisfaction with co-creation process Number pf communities participating in case studies disaggregated to female, male, youth, elderly people with disabilities, indigenous people. Number of case studies validated and disseminated				
4.2.1 Capacity-building programs for partner institutions in the KRB, focused on addressing water scarcity, climate change and stakeholder conflicts developed. KRB	4.2.1.1 Institutional capacity building for climate adaptation management- Institutional uptake may be low without leadership buy-in - Trained staff may leave (capacity drain) - Weak cross-sectoral coordination	.2.1.1 - Align training with institutional mandates and responsibilities - Integrate into ongoing government programs - Encourage inter-agency coordination platforms	Number of dissemination activities conducted. Estimated audience reached per dissemination channel disaggregated to female, male, youth, elderly people with disabilities, indigenous people. Percentage of audience reporting improved understanding of the topic Number of materials translated into local languages or adapted for low literacy audiences. Percentage of project components reflected in government planning documents. Number of government staff trained to deliver or sustain integrated interventions disaggregated by gender. Number of inter-agency coordination meetings held. Number of agencies participating in coordination platforms Number of joint action plans or strategies developed. Participant satisfaction with coordination process	National Project Managers	All	Progress reports Training registers Strategic Plans and budgets Training reports	$100,000 $100,000

Component 1: Co-design and implementation of a Disaster Risk Reduction Plan through EbA) in the KRB (KRB: EbA-DRRP) EbAKRB						
1.1.1 Knowledge gaps identified and addressed through a Water Security Assessment and Ecosystem Goods and Services Valuation to support the development of the KRB: EbA-DRRP.	Willingness of participants to provide information	Making participation easy and convenient by reducing barriers such as time, cost, and effort to get more people involved, especially women Leverage on social media and traditional leaders to promote participation Provide clear information and communication about benefits of participation	Number of studies conducted to fill knowledge gaps for the preparation of the KRB: EbA-DRRP. Number of participants consulted (disaggregated by sex, age and ethnicity including IPs)	PMU	All 15 principles	Registers Meeting reports Progress reports
1.1.2 A Basin-wide gender inclusive DRR Plan, with a focus on EbA, developed and validated. EbA	Women and other marginalized groups may have limited participation in the planning and implementation processes due to social norms, lack of empowerment, or restricted access to resources and decision-making forums.	Seek representation from different gender and gender subgroups Hold separate men and women meetings and other gender subgroups including indigenous people Select venues accessible to all participants Use local language for consultations Observe ethical guidelines, including obtaining informed consent, ensuring confidentiality, and addressing any potential conflicts of interest	Basin-wide Gender inclusive DRR Plan focused on EbA. Number of participants consulted (disaggregated by sex, age and ethnicity including IPs)	PMU	All 15 principles	DRR plan Progress reports
1.2.1 A comprehensive report documenting stakeholder engagement processes with beneficiary communities (including gender and ethnic subgroups), civil society, private sector, and government actors.	Marginalized and vulnerable groups including indigenous people, men, women, and gender subgroups might not be represented in the consultations Willingness of stakeholders to work together availability of stakeholders to attend meetings Female government	Ensure representation of vulnerable people and the differentiated gender subgroups, during meetings including at least 50% representation for women. Provide information and clear communication on benefits of participation	Percentage of female participants consulted Number of stakeholders participating in joint planning and stakeholder engagements/dialogues (disaggregated by gender and sector) Number of stakeholder engagements/dialogues held by the project Percentage of female participants in training	PIU, Gender Specialist and gender focal points of the executing entities	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 5 (gender equality)	Annual progress report Gender action plan report

	officials are poorly represented in trainings	Ensure that at least 50% of government officials and field staff attending in trainings to be women				
Component 2: Implementation of a satellite-based MH-EWS for the KRB (KRB: MH-EWS)						
2.1.1 Weather stations installed in key micro-climate zones of Kuene River Basin, in collaboration with national meteorological agencies.	The location of the weather stations might not be accessible	Ensure that the weather stations are in accessible areas through consultations with stakeholders and gender subgroups	Number of hydrometric stations installed (disaggregated by country)	PMU and Meteorological Agencies	9 (protection of natural heritage} 7 (indigenous people)	Annual progress report
	Lack of involvement of women during the design and implementation of weather stations	Ensure the participation of women in the design and implementation of weather stations	Percentage of female participants in the design and implementation of weather stations.	PIU Gender Specialist and gender focal points of the executing entities	2 (access and equity) 3 (vulnerable groups) 5 (gender equality)	Annual progress report
	Weather information stations are not user friendly to women and gender subgroups	Simplify the information from weather stations by using the local language	Number of weather information reports in local language	PIU Gender Specialist and gender focal points of the executing entities	2(access and equity) 3 (vulnerable groups) 5 (gender equality) 11 (climate Change	Annual progress report
2.1.2. Hydrometric stations installed along the Kunene River, in partnership with the national hydrological agencies.	The location of the weather stations might not be accessible	Ensure that the hydrometric stations are in accessible areas through consultations with stakeholders and gender subgroups	Number of weather stations installed (disaggregated by country)	PMU and Meteorological Agencies	9 (protection of natural heritage} 7 (indigenous people)	Annual progress report
	Information on floods might not reach women on time. Early warning systems not accessible to women enhance preparedness and response capabilities during disasters	Provide downscaled flood advice to farmers, identifying high ground/ appropriate siting for investments especially in infrastructure	Percentage women receiving flood forecasts Guidelines for flood proof infrastructure developed	PIU Gender Specialist, PIU DRR+EWS Specialist, Meteorological Agencies, Hydrological Agencies	2(access and equity) 3 (vulnerable groups) 5 (gender equality) 11 (climate change)	Annual progress report
	Women excluded or underrepresented in disaster risk planning / training	Ensure that 50% of trainees are women involving women in disaster risk reduction planning and implementation of strategies that enhance community resilience. Ensure that the timing and location of training is convenient for and is clearly	Percentage of female trainers.	Gender focal points of executing entities, PIU DRR+EWS Specialist, PIU Gender Specialist		Annual progress reports feature participation figures on vulnerable (including women) users Reporting on gender action plan

2.2.1 Multi-level KRB: MH-EWS co-designed and validated by governments and local communities, integrating indigenous knowledge.	Vulnerable users are not consulted adequately. Their interests are not reflected in the Multi-level KRB: MH-EWS.	Ensure the representation of vulnerable users in stakeholder consultations on the formulation of the Multi-level KRB: MH-EWS.	Number and percentage of female participants in stakeholder workshops.	National Project Managers	2 (access and equity) 3 (vulnerable groups) 5 (gender equality)	Annual progress report
2.2.2 Big Data Analytics tool developed for real-time EWS data capture, monitoring, and analysis, including a user-friendly dashboard/interface.	Vulnerable people might find the data system less user-friendly and data access and usage difficult to understand	Ensure that the users are trained on EWS data capturing and monitoring, including a user-friendly system for data access and usage prepared.	Number and percentage of female trained	National Project Managers	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 11 (climate change)	Annual progress report
Component 3. Inclusive community-based adaptation actions are co-designed and implemented						
3.1.1 Rainwater retention infrastructure constructed or rehabilitated to improve water availability for domestic and agricultural use. 20 existing earth/sand dams rehabilitated 20 rainwater retention ponds established 20 rooftop rainwater harvesting systems installed on public buildings	Project related water contamination / outbreak of water-borne and/or water related diseases Women and marginalized are not represented in Water-EWS Action Committees Loss of natural and cultural heritage Loss of vegetation Loss of soil	- Maintain safe distance (30 feet) between latrine and water sources -Provision of potable water supplies and sanitation facilities, capacity building in sanitation and health issues, awareness campaigns -Take corrective action when water contamination is detected -Promote hygienic practices, including hand washing -Ensure 50% representation of female representation in Water-EWS Action Committees -Proactive inclusion of women and marginalized genders in consultations, planning, and decision-making structures (e.g. DRR committees, EWS design) -Conduct feasibility studies Implement fencing, -Introduce proper antiquity education projects	-Number of reported cases of water borne diseases (disaggregated by gender and subgroups) -Number of monitoring visit to assess water contamination -Number of women benefiting from water infrastructure constructed Number of women represented on Water-EWS Action Committees Number of existing earth dams rehabilitated. Number of rainwater retention ponds established Number of rainwaters harvesting systems installed Number of stakeholder engagement consultations - (disaggregated by gender and subgroups)	PIU	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitats) 11 (climate change) 15 (public health)	Annual progress report

		-Selective clearing of project sites -Reforestation and preservation of protected plant species -Alternative energy used -Use environmentally friendly technologies -implement awareness campaigns. -Stabilization of loose soil, controlled excavation, preservation of vegetation cover. -Controlled transportation of raw materials				
Groundwater access improved through small scale infrastructure to support home gardening, and household water supply.	Boreholes are poorly managed and not fully functional which could result in conflicts due to shortages of water Damage of critical habitats Dust, Emissions, Strong Light, Noise and Vibration Loss of vegetation Loss of Soil Disputes over water resources	Involve women and gender subgroups in Water-EWS Action Committees Conduct feasibility studies, fencing, introduce proper antiquity education projects Controlled operation times, use of appropriate equipment, proper orientation of lights, use of alternative materials, use water sprinklers to control dust, use of scrubbers Selective clearing of project sites, reforestation, preservation of protected plant species, use of alternative sources of energy, use of environmentally friendly technologies, awareness campaigns. Stabilization of loose soil, controlled excavation, preservation of vegetation cover, controlled	Reduction in time use (time saved) by different gender groups in collecting and carrying water for household use in project community's due borehole rehabilitation Number existing boreholes rehabilitated	PIU	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitats) 11 (climate change) 15 (public health)	Annual progress report

		transportation of raw materials, appropriate landscaping Provide water management training to farmers and introduce alternative sources of water such as boreholes. Establish mechanisms for complaints and conflicts resolution				
3.1.3 Drought-tolerant crop varieties promoted through FFSs, demonstrations, and extension services.	Declining soil health Use of species that are not adapted or suitable to a site Soil and water pollution from chemicals & fertilizers	Re-introduce indigenous varieties to benefit vulnerable gender subgroups Encourage crop diversification Train all stakeholder in CSA Controlled disposal of waste and effluent by use of appropriate disposal facilities, use of appropriate drainage structures, use of cleaner technologies, proper storage of materials, awareness campaigns Use of organic fertilizers and biocides	Number and percentage of women (differentiated by sub-groups taking age economic class or ethnicity into account) involved in drought-tolerant crop production Number of reported pollution events Percentage of target community members farming with drought-tolerant crop varieties Crop productivity	PIU Conservation Agriculture Specialist	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitants) 11 (climate change) 15 (public health)	Annual progress report Community surveys
3.1.4Rangeland restored through reseeding, rotational grazing and soil improvement techniques to support drought-resistant fodder and biodiversity.	Damage of critical habitats Use of species that are not adapted or suitable to a site Reduces access to natural resources Vulnerable households do not benefit from	Ensure proper planning of soil and water conservation works Participatory processes for planning interventions Promote women in rangeland management Conduct feasibility	The number of women in leadership and decision-making roles or positions in the community where rangelands are under community-based protection (differentiated to account for ethnicity, economic class, age, and indigeneity) Number or size of property lost	National Project Managers	2 (access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitats) 11 (climate change) 15 (public health)	Annual progress report
3.2.1 An inclusive coordination forum established for development partners. government agencies, community leaders, and NGOs active in \ the KRB.	Lack of consistency in attending the meetings	Rotate the chairing of the forum to encourage participation Invitations, minutes, and meeting agendas should circulate in advance to allow for planning	Number of meetings held	National Project Managers	(Access and equity) 3 (vulnerable groups) 5 (gender equality) 9(natural habitats) 11 (climate change) 15 (public health)	Annual progress report

Component 4: Raise awareness and improve knowledge on climate change adaptation in the Kunene River ecosystem						
4.1.1 Awareness campaigns and knowledge sharing initiatives launches to promote gender-responsive, locally led climate change adaptation measures.	Marginalized vulnerable users are not consulted adequately. Their interests are not reflected in climate change adaptation measures.	Ensure the representation of vulnerable users in stakeholder consultations on the formulation of gender responsive climate change measures. Hold at least one workshop in each commune/ constituency to invite views on the formulation of the gender responsive climate change measures	Number and percentage of female participants in stakeholder workshops Number of knowledge products developed on locally led gender responsive adaptation Number of awareness creation campaigns held on climate change adaptation Number and percentage of female participants in stakeholder workshops	PIU Gender Specialist	2 (access and equity) 5(gender) 14(climate change)	Annual progress report
4.1.2 Kunene River Awareness Kit online portal updated and reactivated, incorporating new data and knowledge generated by the project.	Users do not receive the information they need or are not informed about the project and are unwilling to cooperate as a result.	Identify information needs and design information services accordingly. Ensure timely information for planning use	Number of men and women reporting that they have used the portal and found it to be effective	PIU DRR+EWS Specialist	2 (access and equity)	Annual progress report
4.1.3 Case studies from the Case studies from the project developed and submitted to knowledge platforms such as IFAD, FAO, SADC-GMI and WaterNet for wider dissemination.	Researchers may have preconceived notions that influence the study. Findings from a single case may not apply to other contexts. Gathering accurate and comprehensive data can be difficult. Ensuring confidentiality and informed consent is crucial. Case studies often require significant time and resources	Use multiple researchers and triangulate data sources to reduce bias. Select cases that are representative of a broader population and clearly state the limitations. Use a variety of data collection methods (interviews, observations, documents) to ensure comprehensive data. Obtain informed consent, ensure confidentiality, and follow ethical guidelines. Plan and allocate resources effectively, and consider using technology to streamline resource use	Number of case studies on the learnings from the Kunene Basin project, on EbA in DRR, MH-EWS and integration of scientific and traditional knowledge	PMU	All	Case studio documents, audio recordings or videos

4.2.1 Capacity-building programs for partner institutions in the KRB, focused on addressing water scarcity, climate change and stakeholder conflicts developed.KRB	If the capacity-building efforts are not well-integrated into the institution's long-term plans, the improvements may not be sustainable There's a risk that partner institutions might become overly dependent on external support, which can undermine their autonomy and resilience. Institutional culture and resistance to new processes or technologies can hinder the effectiveness of capacity-building initiatives. The benefits of capacity strengthening might not be evenly distributed within the institution, leading to internal conflicts or dissatisfaction Willingness of the participants to be trained	Integrate capacity-building efforts into the institution's long-term strategic plans to ensure sustainability: *Encourage partner institutions to develop their own resources and capabilities to reduce dependency on external support *Foster a culture that is open to change by involving all stakeholders in the process and providing adequate training and support *Ensure that the benefits of capacity strengthening are distributed fairly within the institution to avoid internal conflicts. *Regularly monitor and evaluate the progress of capacity-building initiatives to make necessary adjustments and improvements	Number of institutions with capacity building plans integrated into long term strategic plans Stakeholders involved in training and support at different levels and disaggregated by gender and gender subgroups and ethnic groups Number of participants in a training session disaggregated by age, sex, and sub gender groups Number of training courses developed to build local and institutional capacity of governing bodies, water authorities, and local communities.	National Project Managers	All	Progress reports Training registers Strategic Plans and budgets Training reports

Annex 10. USP Environmental, Social, and Gender Screening Checklist

This checklist is to be used by executing agency to review the potential environmental, social and gender impacts of subprojects and determine whether the subprojects will trigger relevant AF or IFAD safeguard policies. It is a tool to screen, classify and evaluate the project activities during project preparation.

Project Title: Building Inclusive Resilience to Climate Change for Semi-Nomadic Agro-Pastoral Communities in the Transboundary Kunene River Basin

USP Title / Reference: [Unique ID or name of the subproject]

USP Location: [Municipality/ District / Coordinates if known] **Part One: Environmental Screening Checklist (Aligned with Adaptation Fund ESP) Issue**	**Answer (Yes/No)**	**Remarks**	**If Yes, Triggered AF ESP Principle(s)**	**If Yes, Required Documentation**
Will the subproject cause significant negative environmental impacts? Are these impacts sensitive, diverse, or unprecedented?			Principle 1 Principal 2 Principle 4 Principle 10	Detailed ESIA and ESMP required; may be excluded if impacts exceed project scope
Will impacts extend beyond the project area or involve irreversible environmental effects?			Principle 1 Principle 10	May be excluded from project scope; detailed ESIA and mitigation plan
Does the project have minimal or no adverse environmental impacts?			Principle 10	No detailed ESIA required; screening sufficient
Are impacts limited, site-specific, and reversible?			Principle 10	Abbreviated ESIA or Environmental and Social Management Plan (ESMP) required
Will the subproject cause serious negative social impacts (e.g., displacement, exclusion)?			Principle 4 Principle 5 Principle 6 Principle 7 Principle 11	Social impact assessment and mitigation plan
Will the project affect legally protected cultural heritage (e.g., historic sites)?			Principle 8	Exclude from scope or mitigation plan with national consultation
Will the project affect community cultural resources (e.g., shrines, local sacred sites)?			Principle 8	Consult local stakeholders; consider relocation or alternative sites
Does the project affect non-critical natural habitats (e.g., grazing lands, wetlands)?			Principle 9	Environmental and Social Management Plan (ESMP) required
Does the project affect critical habitats (e.g., protected, or endangered ecosystems)?			Principle 9	Likely exclusion from project scope
Will the project involve construction or rehabilitation of dams?			Principle 10 Principle 1 (if national dam safety law applies)	Excluded or requires compliance with national dam safety standards
Could the project deteriorate surface or groundwater quality?			Principle 10	Water quality protection measures in ESMP
Will the project involve use or procurement of pesticides, or influence pest control practices?			Principle 10	Integrated Pest Management Plan (IPMP) required
Will the project require land acquisition, economic displacement, or resettlement?			Principle 11	Resettlement Framework and Action Plan (if applicable)
Are Indigenous Peoples present and potentially affected?			Principle 7	Indigenous Peoples Plan and Free, Prior, Informed Consent (FPIC)
Will the project affect forests or forest-dependent people?			Principle 9	Forest impact mitigation plan or project exclusion
Will the project cause degradation of forest ecosystems or biodiversity?			Principle 9	May be excluded; if eligible, mitigation measures required

Part Two: Gender Screening Checklist (AF ESP Principle 5)

Issue	Answer (Yes/No)	Remarks	If Yes, Triggered AF ESP Principle(s)	If Yes, Required Documentation or Action
Have women, girls, and gender-diverse persons been meaningfully consulted in project design?			Principle 5	Include results in Gender Assessment and Action Plan (GAAP); adapt design if consultation was insufficient
Will the subproject affect women's or girls' access to land, water, or other resources?			Principle 5 Principal 2	Gender-responsive mitigation plan; ensure equitable access through CAAPs and CCACs
Are any project benefits likely to reinforce existing gender inequalities (e.g., training or resources channeled mostly to men)?			Principle 5	Revise targeting strategy; include safeguards in GAAP and work plans
Does the subproject include measures to promote female participation in leadership and decision-making bodies?			Principle 5	Must establish and track quota (e.g., minimum 40% female participation); integrate in M&E system
Are there legal, cultural, or practical barriers to women's participation in implementation or access to benefits?			Principle 1 Principal 5	Identify barriers in GAAP and address through capacity building and targeted outreach
Will the project provide capacity-building and skills development specifically tailored for women?			Principle 5	Must be reflected in activity design; training schedules, content, and locations should consider women's availability
Does the subproject risk increasing the workload or unpaid labor burden of women and girls?			Principle 5	Include workload reduction measures (e.g., mechanization, water access); monitor impacts on time use
Is there a system in place for gender-disaggregated data collection and gender-sensitive monitoring?			Principle 5 Principal 3	Yes: integrate into M&E plan and indicators; reference AF gender results indicators
Does the project promote women's access to and control over project-related assets (e.g., finance, equipment, land use rights)?			Principle 5	Required in project design and gender action plan; include in stakeholder agreements or by-laws
Will any activities be implemented in areas where female-headed households or women's groups are especially vulnerable?			Principle 5 Principal 4	Targeted interventions and safeguards needed; consult female leaders (e.g., Sobas Mulheres)
Does the grievance mechanism ensure accessibility and confidentiality for gender-based complaints?			Principle 5	Gender-sensitive grievance mechanism required; ensure female representation in grievance bodies

This checklist should be completed during the screening of all Unidentified Sub-Projects (USPs) and used to update the Gender Action Plan (Annex 7) and ensure compliance with AF Gender Policy and Action Plan.

Section 3: Safeguard Classification of the USP

Risk Category Assigned: A / B / C
(Following AF guidance: A = high risk; B = medium; C = low/none)
Justification: [Provide summary]

Section 4: Proposed Mitigation and Management Measures

Will a site-specific ESMP be prepared? □ Yes □ No

Will a Grievance Redress Mechanism (GRM) be accessible? □ Yes □ No

Will gender-responsive and socially inclusive consultation be conducted? □ Yes □ No

Section 5: Decision and Approval

Step	Signature / Initials	Date
Reviewed by Executing/Implementing Partner		
Reviewed by Environmental & Social Safeguard Focal Point		
Approved / Returned for Revision		

Notes:

This checklist must be completed before implementation of any USP.
All USPs must align with the main project's Environmental and Social Commitment Plan.
This framework should be referenced in the Project Operations Manual and annexed to the AF resubmission.

6. Annex 11. Environmental and Social Impact Assessment

Principle 1: Compliance with the Law
No further assessment of potential impacts and risks is required for compliance with the Angola and Namibia laws, since the project complies with all relevant national legislation and policies on agriculture, water management, climate change adaptation, among others as detailed in section II-F. Throughout the implementation of the project, ongoing consultations with relevant national, regional, and district authorities have been and will remain integral. These consultations are crucial to ensuring adherence to all pertinent laws and technical standards governing the project's activities. By maintaining this collaborative approach, the project aims to uphold regulatory compliance at all levels and effectively navigate any evolving regulatory landscapes that may impact its operations.

Principle 2: Access and Equity
The project is committed to equitable benefit distribution, following gender and age-based criteria established through stakeholder consultations. Component 3 will ensure that community engagement prevents disruptions to essential services and avoids worsening disparities. It aims to provide fair access to opportunities and resources for diverse groups, including youth, elders, women, and marginalized communities such as indigenous peoples and persons with disabilities. At least 50% of beneficiaries will be women, with outreach efforts tailored to be inclusive and gender sensitive. A grievance mechanism has been designed to address concerns fairly, while the project integrates Indigenous Traditional Knowledge and scientific expertise to achieve gender-differentiated adaptation outcomes and promote sustainable EbA for the KRB and its communities.

The project ensures equitable access and inclusion through targeted interventions, providing equal access to training, equipment, infrastructure, and services for marginalized groups such as women, youth, indigenous peoples, and individuals with disabilities. Rehabilitation planning and design will involve consultations with these vulnerable groups to address their specific needs. Transparency in benefit distribution will be upheld to prevent discrimination, with gender and age quotas guiding targeting criteria. Public advertising and outreach will be extensive for all contracts, including those for staff and contractors. Local water users will be actively involved in all stages of infrastructure development, ensuring equitable access, and addressing gender dimensions throughout.

Principle 3: Marginalized and Vulnerable Groups
The project is dedicated to enhancing the livelihoods of marginalized and vulnerable groups, particularly the semi-nomadic agro-pastoralist communities and transhumance pastoralists (who identify as indigenous peoples), with a strong focus on inclusion and climate resilience. Specific quotas have been established to ensure the participation of vulnerable categories: 50% women, 25% youth, and 30% indigenous peoples, as detailed in the proposal's targeting section. Project activities are designed to directly strengthen the climate resilience of these groups. Non-discrimination across all vulnerable categories is a fundamental principle, with robust measures in place to prevent exclusion or bias during consultations and project implementation. Efforts will facilitate equitable access to project services, events, and activities for all vulnerable beneficiaries, ensuring their meaningful participation and benefit. Potential risks such as overlooking specific needs or increasing vulnerability have been addressed by consulting marginalized groups, particularly women and indigenous peoples, during proposal development, and further consultations will occur at project inception to align with their identified needs and priorities. The project aims to empower vulnerable groups in decision-making regarding adaptation actions, valuing their traditional and local knowledge.

Principle 4: Human Rights
No further assessment of potential impacts and risks is required for compliance with human rights since the project is designed to respect and adhere to the requirements of all relevant conventions on human rights in compliance with the ESP.

The project is committed to upholding human rights, aligning with Angola's progress in civil and political rights following conflict. Angola has enacted significant legal reforms, including a revised Criminal Code against torture, new laws on freedom of religion, and ongoing updates to the Ombudsman law. Key priorities include combating corruption and

organized crime through initiatives like Operation Transparency, supporting refugees and asylum seekers, protecting against domestic violence, and safeguarding the rights of persons with disabilities, with a focus on women.[43].

In May 2021, Namibia received 283 recommendations during the OHCHR Universal Periodic Review, accepting 229 and noting 54 that require further consultation and potential reforms. The country faces challenges with increasing violence against women and children, including domestic and sexual violence, and is implementing the Prioritized National Plan of Action on Gender-Based Violence. Namibia has committed to enhancing inclusive education for children with disabilities, improving migration management and anti-trafficking efforts, and reforming its justice system. Although mechanisms for civil society engagement and rule of law monitoring have been established, there are ongoing concerns about rights violations against minority communities.[44]

To address OHCHR's concerns, the project will implement several key measures. It will integrate awareness of Gender-Based Violence (GBV) and sexual violence into all training activities and provide training in Gender Action Learning Systems (GALS) to household members to mitigate GBV. The project will specifically target internally displaced persons (IDPs) who lack adequate food, safe drinking water, and healthcare, addressing their vulnerability to GBV. Additionally, the project will promote human rights by raising awareness among all stakeholders — designers, executors, monitors, and evaluators — about the Universal Declaration of Human Rights, ensuring these principles guide every aspect of the project's implementation.

Principle 5: Gender Equality and Women's Empowerment
Gender equality and women's empowerment have been thoroughly assessed and included in the project design; no further assessment of this principle is needed. The project has conducted a Gender Assessment as required by the AF Gender Policy. The gender assessment analyzed gender disparities in terms of food and nutrition security; gender-based violence; access to land; poverty; culture context of gender roles; gender legal and national strategies; gender and access to labor; differentiated climate change impacts on gender groups; and the gender-related issues raised from community consultations. The findings of the assessment assisted the project in the development of targeted, gender-responsive strategies to ensure the project actively contributes to gender equality and poses no risk to the principle of women's empowerment. As a result, no further gender assessment is required at this stage.

Constraints: Gender-differentiated impacts of climate change in Angola and Namibia reveal significant disparities rooted in cultural norms and gender roles. Men typically hold dominant positions as household heads, while women are responsible for caregiving and agriculture, facing heightened vulnerability to climate shocks like droughts due to restricted access to land, resources, and training. Customary laws, especially in rural areas, often conflict with gender equality standards, exacerbating inequalities in economic participation and legal rights. Environmental crises can lead men to migrate for alternative income, increasing women's household and agricultural burdens without corresponding legal rights or social authority. Boys may leave school to contribute economically during these crises, and girls often face increased domestic chores, leading to higher dropout rates or early marriages. Women and girls also experience greater health risks and vulnerability to gender-based violence, particularly when water and sanitation systems are compromised. These factors highlight how climate change deepens existing gender disparities, limiting opportunities for equitable development in the region.

During the design phase, the project engaged in separate consultations with women, men, and youth to accurately capture and address their distinct challenges and needs. It features specific gender objectives, activities, and disaggregated targets, with dedicated budget allocations. The selection criteria for service providers and project management and implementation units (PMU/PIU) staffing will include provisions to ensure women's participation, thereby promoting gender outreach and mainstreaming gender concerns throughout the project.

Activities proposed: The project targets 50% women, including indigenous women, and 30% youth. It will implement the GAL to address gender inequalities by transforming gender relations and promoting women's empowerment through inclusive, participatory approaches involving both men and women. Women will be promoted in decision-making roles, such as on Water-EWS Action Committees. Specific gender-sensitive interventions include literacy programs, life skills development, leadership training, addressing gender-based violence, and nutrition education. The project will enhance women's economic empowerment by increasing their involvement in income-generating activities and providing labor-

[43] Human Rights Committee considers the report of Angola | OHCHR
[44] Human Rights Council adopts Universal Periodic Review outcomes of Namibia, Niger, and Mozambique | OHCHR

saving technologies, such as grain milling machines. These measures aim to promote gender equality, improve livelihoods, and foster sustainable development outcomes within the community.

Post-harvest activities such as food processing are pivotal for generating income and ensuring food security for women and their families. These activities enhance the value of harvested crops by extending their shelf life and creating marketable products that fetch higher prices. By processing surplus produce into finished products, the women can maintain a steady income throughout the year, even during off-seasons or market fluctuations. Moreover, these practices contribute to food security by providing communities and households with preserved foods that serve as a buffer against shortages and climate variability. Engaging in such activities not only boosts economic resilience but also empowers women with valuable skills in food processing, thereby supporting sustainable agricultural practices.

To mitigate potential risks such as reinforcing gender disparities and excluding women from decision-making, the project includes several measures: it addresses the gendered impacts of climate change with targeted strategies for women and girls; ensures 50% female participation to promote gender equality; and supports climate-resilient agricultural practices tailored to various groups, including small-holder farmers and indigenous women. The project also integrates participatory monitoring and evaluation to capture women's experiences, provides labor-saving technologies to reduce workloads, and ensures gender-inclusive infrastructure development. Partnerships with local organizations and community leaders, accessible early warning systems, and involvement in disaster risk reduction enhance women's preparedness and response. Additionally, the project promotes women's leadership in climate adaptation and economic empowerment through internal lending and savings clubs, and income-generating equipment, ensuring comprehensive support for women's empowerment and resilience.

Principle 6: Core Labor Rights

The potential risk of increasing exploitative labor practices (such as forced or child labor), gender-based violence, discrimination, and unsafe or unhealthy working conditions for individuals employed directly or indirectly by the project is assessed as low. The project will work with value chains that meet the national labor and international commitments and will ensure adherence to occupational safety and health standards. The project aligns with the International Labor Organization's (ILO) core labor standards as articulated in the 1998 ILO Declaration of Fundamental Principles and Rights at Work. These principles encompass four fundamental rights which are elaborated upon in eight core conventions: Freedom of association and the effective recognition of the right to collective bargaining (ILO Conventions 87 and 98); Elimination of all forms of forced or compulsory labor (ILO Conventions 29 and 105); Abolition of child labor in its worst forms (ILO Conventions 138 and 182); and Elimination of discrimination in respect of employment and occupation (ILO Conventions 100 and 111). These standards ensure that the project upholds principles of labor rights, providing a framework for protecting workers' rights, promoting decent work, and fostering equitable and inclusive employment practices.

Angola has been a member since 1976 and has ratified 35 ILO conventions, 29 of which are actively operational. The ILO supports initiatives in Angola aimed at extending social protection in the informal sector, enhancing capacity building for employees and worker organizations, and promoting labor administration to foster social dialogue[45]. These efforts contribute to maintaining fair and safe working conditions across various sectors, including those potentially involved in the project.

Namibia has been a member of the International Labor Organization (ILO) since 1978 and has ratified 17 conventions and one protocol of which 18 are in force. The country benefits from technical and financial support provided by the ILO to foster the creation of decent and productive employment opportunities. Additionally, the ILO assists Namibia in extending social protection coverage to all sectors of society. These efforts underscore the commitment to enhancing labor conditions and promoting inclusive economic development in Namibia with the support of international labor standards and practices facilitated by the ILO[46].

To address potential risks such as labor rights violations, worker exploitation, and inadequate working conditions, the project will comply with both international and national labor laws and standards in the involved countries. This includes adherence to legal requirements for wages, recruitment, and working conditions, as guided by ILO labor standards. The project aims to enhance income opportunities for marginalized groups, including indigenous women and youth. To

[45] Angola | International Labor Organization (ilo.org)
[46] Namibia | International Labor Organization (ilo.org)

overcome challenges related to remoteness and accessibility, the project will implement a "train the trainer" approach, equipping local community members to assist with the program's implementation and monitoring, thereby building local capacity, and ensuring effective oversight.

While the project is committed to complying with national laws and international labor standards, the project will expand an approach to preventing child labor by implementing additional mechanisms, including:
Stakeholder education and awareness programs target local communities to reduce incidences of child labor, particularly in project-related activities.
Regular monitoring to identify and prevent child labor through community and project worker feedback.
A clear reporting mechanism that allows community members to report suspected child labor cases anonymously.

Principle 7: Indigenous Peoples
The project will be implemented in areas inhabited by indigenous peoples, including those within its influence. It will operate on lands claimed by these communities, necessitating strict adherence to international standards and best practices for engaging with indigenous groups. This includes respecting their right to Free, Prior, and Informed Consent (FPIC) and safeguarding their cultural heritage, land tenure, and customary rights throughout the project's lifecycle. The project aligns with the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) by raising awareness of indigenous rights and integrating them into project implementation. It is designed to avoid displacing communities or altering their traditional economic activities, with no resettlement required, whether economic or physical.

Neither Angola nor Namibia has ratified ILO Convention No. 169, which aims to protect the rights of indigenous and tribal peoples, including their self-determination, participation in decision-making, and the protection of their lands, cultures, and traditional knowledge. Despite this, international principles from Convention No. 169 influence advocacy and policy efforts to safeguard indigenous rights. Angola is a signatory to ILO Convention No. 107 (1957), which it ratified in 1976, and has committed to several relevant international treaties, including ICERD, CEDAW-OP, CRC, ICCPR, and CESCR. Additionally, Angola supported the UN Declaration on the Rights of Indigenous Peoples in 2007, signaling its alignment with the declaration's objectives despite its non-binding nature.

Angola's approach to ethnic diversity diverges from international legal frameworks for Indigenous Peoples. The country's Constitution and laws do not explicitly recognize Indigenous Peoples but refer to certain groups, including the San and pastoralist communities (Ovatwa, Ovatjimba, Ovazemba, Kwisi, Kwepe), as "vulnerable groups." These communities, along with people with disabilities, rural women, and the extremely poor, receive support through rural programs. Angola uses the term "autóctone" for these groups, which is similar but not identical to the international term "Indigenous Peoples." Local groups in southern Africa often prefer their own names to emphasize their unique identities. While Angola acknowledges and supports these communities through domestic programs managed by ministries such as Social Action and Assistance and Social Reintegration, and through provincial governments, the lack of comprehensive reporting hinders a unified national assessment of these interventions' impacts.

The project will align with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), particularly regarding Free, Prior, and Informed Consent (FPIC) throughout its design, implementation, and evaluation phases. It will adhere to nine core principles from IFAD's Policy on Engagement with Indigenous Peoples, which include respecting cultural heritage, applying FPIC, fostering community-driven development, ensuring equitable access to resources, valuing indigenous knowledge, enhancing ecosystem resilience, facilitating market access, supporting empowerment, and promoting gender equality. Although FPIC could not be obtained during the project design phase, a detailed FPIC implementation plan has been developed. This plan outlines how FPIC will be sought during the early stages of implementation and before any investments are made, ensuring that it is accessible and executed promptly.

IFAD is committed to empowering indigenous peoples by involving them in determining their development priorities and strategies through collaborative project design and meaningful consultations. This approach aims to secure Free, Prior, and Informed Consent (FPIC) from indigenous communities, ensuring that they receive fair and equitable benefits from project activities. Projects are implemented in culturally sensitive and inclusive ways, respecting indigenous rights to their traditional lands, territories, waters, and resources. These principles ensure that IFAD's engagement with indigenous communities is both respectful and beneficial, aligning with their historical and cultural connections.
Expected outcomes from the FPIC process: The project is designed to prevent negative impacts on Indigenous Peoples (IPs) by ensuring no displacement or disruption of their traditional economic activities. It adheres to the Free, Prior, and

Informed Consent (FPIC) process, enabling IPs to make informed decisions about project interventions in a culturally sensitive manner, with the ability to withdraw consent at any stage. This process ensures IPs' active involvement in all phases of the project—design, implementation, monitoring, and evaluation—while valuing perspectives across genders and generations. The project is expected to have significant positive impacts, particularly for rural households, women, and children who are most affected by food insecurity and malnutrition. It aims to enhance smallholder farming through improved water access, technology demonstrations, good agricultural practices, and conservation agriculture via FFSs. By addressing the specific needs of IPs, including their reliance on key crops like cassava and sorghum, the project will support resilience against climate shocks, reduce food insecurity and poverty, and ensure that interventions are tailored to the unique technology and livelihood needs of IPs. Ongoing eligibility screening, consultation on Indigenous Peoples Plans, and adaptive project management will further ensure that potential impacts are effectively managed.

The involvement of indigenous peoples in the design and the implementation of the project/ and outcomes of the consultation process of the indigenous peoples

The Kunene region, spanning the mountainous desert landscape along the Kunene River which divides Angola and Namibia, is inhabited by diverse ethnic groups including the Himba, Zemba, Tjimba, and Twa. Each group upholds its unique culture and traditions while collectively facing the challenges of adapting to a modern market economy. Semi-nomadic pastoralists, these communities often rely on rain-fed agriculture, growing crops such as maize which are highly dependent on seasonal water availability. Their diet consists of sour milk and maize meal porridge, with wealthier individuals also owning livestock like goats and cattle.

The Himba, or OvaHimba, people are an ancient semi-nomadic pastoralist community residing along the Kunene River in Angola and Namibia. Known for their traditional cattle, sheep, and goat farming, they maintain substantial herds, often numbering up to 500 per family. Their economic independence is deeply intertwined with their land and livestock, driving their semi-nomadic lifestyle as they move between cattle posts in search of better grazing and water. Older women typically stay in permanent households while other members of the community move with the herds. The Himba number around 50,000 and reside in northern Namibia and southern Angola. They are known for their distinctive pastoral lifestyle and traditional practices, speaking OtjiHimba, a Bantu language closely related to Herero. The Himba maintain base homesteads for crop cultivation but move seasonally in response to rainfall and water resources, embodying one of the last semi-nomadic cultures in Namibia.

The San people, with approximately 5,000 individuals in Angola, are dispersed across the regions of Huila, Cunene, Moxico, and Cuando Cubango. Historically hunter-gatherers, many Sans in southern Africa have transitioned to a mix of subsistence agriculture, informal manual labor, and reliance on food aid. Despite this shift, they continue to maintain significant traditional practices, including gathering bush foods, hunting, and craft production.
The project's design phase involved thorough consultations with the Himba tribe and other stakeholders, including community organizations, government officials, and diverse groups in Namibia and Angola. Meetings were held in Okanguati and Epupa in Namibia, and with various ethnic groups in Curoca municipality, Angola, engaging 65 participants (27 males and 38 females), alongside traditional leaders. These consultations identified Indigenous Peoples' concerns and incorporated them into the project's design, adhering to IFAD's FPIC principles. Key challenges highlighted included irregular rainfall, food insecurity, water scarcity, high living costs, poor infrastructure, recurrent droughts, and social issues such as early marriages. Proposed solutions from the consultations included veterinary services, irrigation, improved communication, road access, school gardens, and environmental education. The region has been facing an eight-year drought, affecting agriculture, and prompting migration.

Evidence of the mutually accepted process between the project/project and the affected communities and evidence of agreement between the parties as the outcome of the negotiations

The project acknowledges low to moderate potential risks to indigenous peoples' rights and livelihoods, including insufficient engagement and conflicts over resource use. To address these, it has integrated robust measures such as adhering to Free, Prior, and Informed Consent (FPIC) principles and employing participatory planning methods. Consultations with communities, including women, youth, and marginalized individuals, have informed the project's approach, ensuring that activities reflect the needs of indigenous groups like agro pastoralists. A grievance mechanism and feedback system are established to ensure accountability, and while FPIC could not be obtained during the design phase, an FPIC implementation plan has been developed to ensure transparency and community involvement from the

outset of implementation. It is important to note that FPIC does not necessarily require unanimity and may be achieved even when individuals or groups within the community explicitly disagree.

Summary of reports, specific cases, or complaints that have been made with respect to the rights of indigenous peoples by the Special Rapporteur and that are relevant to the project/project.
The Kunene River, which forms the border between Namibia and Angola, has been the focus of various dam projects since the German occupation era. In 1991, a proposed hydropower project at Epupa faced strong opposition from the OvaHimba community and international resistance, leading to its cancellation. Instead, both nations explored alternative energy solutions, including importing electricity from South Africa. The Baynes Hydro Power Project, a collaborative effort between Namibia and Angola, aimed to generate 600MW from the KRB and was initiated in 2009. Despite undergoing Environmental and Social Impact Assessments (ESIA) and strategic evaluations, the project faced delays and resumed in 2018 with updated ESIA and stakeholder engagement plans, including a Resettlement Action Plan (RAP). In January 2020, a scoping visit by International Rivers, Earthlife Namibia, and the Epupa Conservancy to Himba communities along the Kunene River highlighted strong opposition from residents. They voiced concerns about the project's potential negative impacts on water quality, vegetation, wildlife, and land inundation, emphasizing threats to their livelihoods and cultural practices dependent on ancestral lands and seasonal cattle migrations.

Principle 8: Involuntary Resettlement
There is a low to moderate risk of involuntary resettlement. Site selection and water access development will involve consultations with communities, traditional leaders, and local authorities to ensure transparency and consensus. Conflict management related to land allocation will be effectively addressed. The project will undergo screening for environmental and social risks and will develop an Environmental and Social Management Plan (ESMP) to manage conflicts and guide Grievance Redress Mechanisms (GRM). The project commits to no involuntary resettlement. All consultations will adhere to the Free, Prior, and Informed Consent (FPIC) Principle. In the event of unforeseen resettlement or economic displacement during project implementation, the implementers and IFAD will engage in a consultation and negotiation process with potentially affected individuals, in line with FPIC and do-no-harm principles. If consensus cannot be reached, the project implementers will adjust or cease specific interventions associated with affected communities. Failure to conduct proper consultation and negotiation according to FPIC and do-no-harm principles may lead to the suspension of project activities, following IFAD's standard procedures for suspension.

Principle 9: Protection of Natural Habitats
The project area does not contain critical natural habitats including those that are (a) legally protected; (b) officially proposed for protection; (c) recognized by authoritative sources for their high conservation value, including as critical habitat; or (d) recognized as protected by traditional or indigenous local communities. No further assessment will consequently be necessary during project implementation. The project will employ EbA strategies, such as agroforestry and water conservation, to protect natural habitats and avoid converting or degrading critical natural areas. Consultations with government stakeholders, community leaders, and local communities will ensure that habitats of high conservation value or protected by legal or traditional means are safeguarded. Social and environmental screenings for Component 2 activities will further uphold these protections. While the project is not expected to impact critical natural habitats — confirmed during design consultations it will still address potential risks, including habitat degradation, biodiversity loss, and unintended ecological consequences.

Principle 10: Conservation of Biological Diversity
No further assessment of potential impacts and risks is required for compliance as the project area has not been found to contain UNESCO biosphere reserves or RAMSAR sites applicable to this ESP. Although the consequences are minor, the project could lead to an increased human wildlife conflict (e.g., with baboons and monkeys) due to shared water sources and improved crop and livestock production. The project could also lead to endangered species reduction or encroachment through the clearance of land for farms and gardens. The project will aim to introduce nutrient dense drought resilient crops and improve on the local varieties. To mitigate biodiversity risks in agroforestry due to the introduction of improved varieties and breeds, this project prioritizes local species and promotes multi-species plantations while strictly avoiding non-native and invasive species. All introductions of new breeds and varieties will adhere strictly to national standards, emphasizing the use of improved local species exclusively. The project ensures no inclusion of species listed as endangered by the IUCN. Social and environmental screening is conducted for activities under component 2 to uphold these principles.

The risk of habitat degradation or loss, negative impacts on local biodiversity, and unintended ecological consequences is low. The project area has not been found to contain UNESCO biosphere reserves or RAMSAR sites applicable to this ESP. The project will also not be introducing invasive species, the only species will be indigenous to the project area, and the project area also does not contain any species red listed by the IUCN. To prevent the loss of biodiversity, the project will: encourage the use of local and indigenous plant varieties, promote crop rotation, protect forests and wetlands that are crucial habitats for endangered species, and prohibit the introduction of exotic species.

Principle 11: Climate Change

The project is designed to have a minimal impact on climate change, with no significant greenhouse gas emissions or activities that contribute to climate change such as energy production, large-scale agriculture, or waste management. It aims to operate in a climate-neutral manner while enhancing smallholder adaptive capacity. The project will support investments in irrigation, water harvesting, and climate advisories to address erratic rainfall. To manage flood risks, it will provide tailored flood advice and standards for flood-proof infrastructure. For pest control, it will promote Good Agricultural Practices (GAP), Integrated Pest Management (IPM), pest-tolerant varieties, crop diversification, and pheromone traps. In response to drought and heatwaves, the project will encourage climate-smart agriculture, shade nets, drought-resistant crops, and water management practices.

Principle 12: Pollution Prevention and Resource Efficiency

The project poses minimal risks regarding resource efficiency or pollution related to water, land, and fertilizer use; thus, no additional assessment is necessary. It will incorporate reafforestation, solar energy, construction of earth and sand dams, groundwater extraction, and support for livestock production. Expected environmental benefits include improved integrated water management and climate change adaptation, enhanced access to water, and reduced inefficiencies in water management. The project will map both surface and underground water availability to develop hydrological models and establish a natural resource monitoring network. These initiatives will contribute to a Regional Resource Management Plan aimed at increasing resource efficiency.

The project will enhance surveillance, monitoring, and control of crop diseases and pests. Additional measures include strategically locating micro-enterprises away from residential and commercial areas; minimizing the use of chemicals and hazardous materials; implementing water management systems that capture and dispose of wastewater at designated points; segregating solid waste and monitoring banned or hazardous substances; promoting renewable energy technologies; and encouraging the use of organic fertilizers and biocides.

Principal 13: Public Health

The project is designed to have no negative impacts on public health and aims to address existing issues such as guinea worm disease, which is aggravated by shared water sources between humans and animals. To mitigate this, the project will introduce separate, safe water sources for humans and animals. Its primary objectives include providing multipurpose water points and eliminating open defecation, which will improve health outcomes and enhance livelihoods. By ensuring access to clean water and promoting better nutrition practices, the project is expected to positively transform the community's well-being and living conditions.

The project acknowledges potential risks of waterborne and communicable diseases such as guinea worm, malaria, and cholera, as well as minor risks of exacerbating gender-based violence. To mitigate these risks, the project will implement several measures: promote safe work practices through Standard Operating Procedures, training, and awareness; enforce the use of personal protective equipment (PPE); provide first-aid boxes and basic training; list local village doctors for emergency contact; encourage regular workplace cleaning; and raise awareness about gender-based violence and reporting procedures. To prevent water contamination, the project will ensure safe distances between latrines and water sources, between livestock sheds and kitchens, promote hygienic practices like handwashing, and take corrective action if contamination occurs. Additionally, WASH (Water, Sanitation, and Hygiene) activities will be incorporated to further enhance health and safety.

Principle 14: Physical and Cultural Heritage

There is low risk of damage to or destruction of heritage sites, loss of cultural heritage, and conflicts with local communities over heritage conservation. There is low risk that the project will impose adverse impacts on the physical and cultural heritage. Both Angola and Namibia are signatories to the UNESCO World Heritage Convention. Angola accepted the

UNESCO World Heritage Convention on November 7, 1991[47], and Namibia on April 6, 2000[48] and consultations confirm that the project area does not encompass any cultural heritage sites, nor is it listed as a UNESCO World Heritage site. Therefore, the project is designed to proceed without posing any threat to the physical or cultural heritage of the region. Any relevant risk will be addressed as follows:
Project activities respect and protect physical and cultural heritage sites. Traditional and local knowledge will be understood and enhanced with scientific information for environmental management and food security and nutrition. Any physical cultural heritage present on the project sites will be identified together with the local stakeholders and potential negative impacts are avoided during design of concrete adaptation actions at the sites.

Principle 15: Land and Soil Conservation
The project is designed to ensure minimal impact on land and soil conservation, incorporating measures to mitigate any potential environmental risks. It is expected to not only avoid adverse effects but also contribute positively to land, soil, and water conservation efforts. Potential risks include soil degradation, loss of agricultural productivity, and negative impacts on local ecosystems if not properly managed.

Climate change is expected to worsen soil degradation in the Kunene basin, leading to increased soil erosion, reduced soil organic matter, and diminished soil health. The project's design includes comprehensive measures to mitigate these environmental risks. Additionally, the project is committed to promoting land, soil, and water conservation practices. These efforts are aimed at contributing positively to environmental sustainability while avoiding any adverse effects on land and soil conservation.

To address the risks of declining soil health, land degradation, and deforestation, the project will implement several mitigation measures:

- *Soil Health*: Encourage crop diversification, balanced fertilizer application, the use of bio-fertilizers or organic fertilizers, and conservation agriculture practices such as mulching. Additionally, plantation of leguminous varieties for nitrogen fixation will be promoted.

- *Land Degradation*: Use soil from existing borrow pits, plant grass, or use temporary fencing to regenerate vegetation, and incorporate residues from leguminous crops into the soil. Rangelands will be rehabilitated by planting drought-resistant, nitrogen-fixing fodder crops and nutrient-dense trees like moringa.

- *Deforestation*: Raise awareness to discourage cutting of mature trees and protect buffer zones along rivers. Promote agroforestry through technical training and encourage the use of energy-saving stoves. Additionally, the project will support afforestation, reforestation, and agroforestry efforts both in public forests and on farmlands.

Annex 12. Labor Rights & Safety Compliance Checklist

Angola and Namibia

This checklist should be filled out by the site supervisor or designated labor rights focal point, with support from workers when possible.
If any item is marked "No", actions must be taken immediately to correct the issue.
Keep copies of completed checklists as part of project records.
Review with community members and relevant contractors regularly.

Note: Section 5 should be completed in projects involving semi-nomadic, seasonal, or cross-border communities. Supervisors are encouraged to consult community liaisons and local leaders during completion.

1. Employment Conditions
Check Question

[47] List of World Heritage Sites in Angola - Wikipedia
[48] List of World Heritage Sites in Namibia - Wikipedia

☐ Yes ☐ No Do all workers have a simple written contract (or clear verbal agreement) that covers pay, work hours, and conditions?
☐ Yes ☐ No Are all workers aged 18 or older?
☐ Yes ☐ No Are all workers participating freely and not under any pressure or coercion?
☐ Yes ☐ No Are men and women paid equally for the same type of work?
☐ Yes ☐ No Are hiring and pay practices free of discrimination (e.g., gender, disability, ethnicity)?
☐ Yes ☐ No Do workers know who to speak to if they have a problem or complaint?

2. Health and Safety

Check Question
☐ Yes ☐ No Do all workers have and use protective equipment (helmets, gloves, boots, etc.)?
☐ Yes ☐ No Are tools and equipment safe and in good condition?
☐ Yes ☐ No Are dangerous areas (like holes or lose ground) clearly marked or blocked?
☐ Yes ☐ No Is their basic fire safety equipment available on site (e.g., extinguisher, sand bucket)?
☐ Yes ☐ No Is a first aid kit available and easy to access?
☐ Yes ☐ No Have workers received basic safety training or instructions?

3. Fair Pay and Working Time

Check Question
☐ Yes ☐ No Are work hours reasonable, with regular rest breaks and no forced overtime?
☐ Yes ☐ No Are workers paid fairly and on time (daily, weekly, or monthly as agreed)?
☐ Yes ☐ No Do workers receive a wage slip or verbal confirmation of pay received?
☐ Yes ☐ No Are women's contributions fully counted and paid like others?

4. Reporting and Oversight

Check Question
☐ Yes ☐ No Is there a clear way for workers to make suggestions or complaints (such as a contact person or message box)?
☐ Yes ☐ No Does a supervisor check working conditions and worker treatment regularly (at least weekly)?
☐ Yes ☐ No Are safety instructions or reminders posted or explained on site?
☐ Yes ☐ No Are worker representatives or community leaders involved in oversight or decision-making about work practices?

5. Special Considerations for Mobile and Cross-Border Communities

☐ Yes ☐ No Have tribal leaders or traditional authorities been consulted about labor roles and project participation?
☐ Yes ☐ No Are there any workers lacking formal ID or citizenship documents, and have their right to work been addressed fairly?
☐ Yes ☐ No Is there a clear, culturally appropriate way for mobile workers to raise concerns (e.g., through community liaisons or mobile phones)?
☐ Yes ☐ No Are important instructions and documents translated and/or explained verbally in local languages?
☐ Yes ☐ No Have project staff been informed about key customs or seasonal migration cycles in the area?
☐ Yes ☐ No Are workers treated equally regardless of which side of the border they come from?
☐ Yes ☐ No Is the work schedule flexible enough to respect traditional livelihoods like herding or dry-season agriculture