



## ADAPTATION FUND

AFB/PPRC.37/Inf.9  
16 March 2026

---

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

## PROPOSAL FOR MOROCCO



ADAPTATION FUND

## ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regular-sized Project Concept

**Country/Region:** Morocco

**Project Title:** Strengthening the Resilience of Oasis Ecosystems and Enhancing the Adaptive Capacities of the Draa Basin Communities to Climate Change

**Thematic Focal Area:** Water Management, Agriculture

**Implementing Entity:** Agricultural Development Agency (ADA)

**Executing Entities:** Office Régional de Mise en Valeur Agricole de Ouarzazate (ORMVAO)

**AF Project ID:** AF00000432

**IE Project ID:**

**Requested Financing from Adaptation Fund (US Dollars):** 20,000,000

**Reviewer and contact person:** Alexandra Munoz

**Co-reviewer(s):** Lystra Fletcher-Paul / Estefanía Jiménez

**IE Contact Person:**

### Technical Summary

The project “Strengthening the Resilience of Oasis Ecosystems and Enhancing the Adaptive Capacities of the Draa Basin Communities to Climate Change” aims to strengthen the climate resilience and adaptation capacity of oasis ecosystems and local communities in the face of climate change impacts. This will be done through the four components below:

Component 1: Strengthening the adaptive capacity and resilience of the oasis ecosystem (USD 12,140,000),

Component 2: Enhancing the resilience of pastoral ecosystems and livelihoods (USD 2,400,000),

Component 3: Strengthening community resilience and diversifying socio-economic activities (USD 1,663,894),

Component 4: Strengthening adaptive management and replication through effective knowledge generation, sharing, and learning (USD 515,000).

Requested financing overview:

Project/Programme Execution Cost: USD 1,714,286

Total Project/Programme Cost: USD 18,433,180

Implementing Fee: USD 1,566,820

	<p>Financing Requested: USD 20,000,000</p> <p>The proposal includes a request for a project formulation grant and/or project formulation assistance grant of USD 150,000.</p> <p>The initial technical review raises several issues, such as the need to strengthen the adaptation rational, project's cost-effectiveness, amendment to the results framework alignment, strengthening sustainability, including critical ESP requirements such as consultation information and an Initial Gender Assessment, as is discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review.</p>
Date:	January 5, 2026

Review Criteria	Questions	First Technical Review Comments January 5, 2026
Country Eligibility	1. Is the country party to the Kyoto Protocol, and/or the Paris Agreement?	<b>Yes.</b>
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	<b>Yes.</b> Morocco is considered as a "climate hotspot," highly exposed to the impacts of climate change, leading to persistent droughts in semi-desert plains and floods in coastal plains.
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	<b>Yes.</b> As per the Endorsement letter dated February 14 <sup>th</sup> , 2025.
	2. Does the length of the proposal amount to no more than Fifty pages for the project/programme concept, including its annexes?	<b>No.</b> The concept note is 55 pages including its annexes.  <b>CR1:</b> Kindly adjust the concept note to a maximum of 50 pages, including all annexes.  <b>CR2:</b> Please include titles for all tables in the concept note to facilitate easier reference during the Technical Reviews.

	<p>3. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?</p>	<p><b>Yes.</b>  <b>However, additional information is required.</b></p> <p>The concept note (pp 15 – 22) outlines, for each component, the related outcomes, outputs, and activities. It also includes a table linking concrete adaptation actions to the climate risks/stressors addressed and the expected adaptation benefits or resilience outcomes. However, additional details are needed.</p> <p><b>CR4:</b> Please provide more details about each output (for example: who would be involved, only governmental actors or also additional stakeholders), including statistics where possible.</p> <p><b>CR5:</b> Kindly revise the Theory of Change (ToC) to explicitly link the outputs and outcomes to the overall objective of the proposed project.</p> <p><b>CR6:</b> Please include a diagram of the ToC. This information should be presented under Part II.A. This should contain at least:</p> <ul style="list-style-type: none"> <li>- activities as well as the outputs</li> <li>- risks and assumptions made</li> </ul> <p><b>CR7:</b> Please clarify whether the project consists of three or four components. In the “Project/Programme Objectives” section (page 12) and Part II.A (page 15), three components are listed, whereas in the Table of “Project/Programme Components and Financing”, there appears to be a fourth component that encompasses knowledge-related actions as well as appears in page 22 and Table 4.</p>
--	--	---

	<p>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 and Gender Policy of the Fund?</p>	<p><b>Yes.</b>  <b>However, additional information is required.</b></p> <p>Part II B (pages 22 to 24) of the concept note identifies the direct and indirect beneficiaries, and outlines some of the project's economic, social, and environmental benefits, impact on gender-sensitive development, and the alignment with the Adaptation Fund Policy. However, it does not provide specific and quantifiable information nor an Initial Gender Assessment.</p> <p><b>CAR1:</b> Please provide more details about the economic, social, and environmental benefits with specific and quantifiable data where possible. Kindly expand specifically on what and how these benefits will be achieved.</p> <p><b>CAR2:</b> Kindly provide specific information on the expected beneficiaries (direct and indirect) for: (i) economic benefits; (ii) social benefits, and (iii) environmental benefits, and the (iv) overall project. The information must be disaggregated by gender and age, where possible. Specify whether marginalized and vulnerable groups and indigenous communities have been identified in the project area, and if so, specify how the project benefits those groups.</p> <p><b>CR8:</b> Kindly explain how the project will ensure the equitable distribution of benefits.</p> <p><b>CAR3:</b> Kindly include the Initial Gender Assessment of the project which is referenced on page 23. The information provided should include at least:</p> <ul style="list-style-type: none"> <li>• qualitative and quantitative data for gender roles, activities, needs, and available opportunities and</li> </ul>
--	---	---

		challenges or risks for men and women in the areas of intervention and at the national level.
	5. Is the project / programme cost effective?	<p><b>Unsure.</b></p> <p>Part II C (pages 24 to 25) of the concept note provides a broad statement of the project cost-effectiveness, without information on the specific components. It does not specify clearly the scope and approach, nor method for the calculation. It is not possible to demonstrate the cost-effectiveness of the selected activities.</p> <p><b>CR9:</b> Kindly provide a robust justification for the cost-effectiveness of the project and selected measures, including scope, approach, and estimates of the evaluation where possible.</p> <p><b>CR10:</b> Kindly explain the methodology used to calculate direct and indirect beneficiaries, including disaggregation by gender and other vulnerable groups.</p>
	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?	<p><b>Yes.</b> <b>However, adjustments are required.</b></p> <p>The project identifies relevant adaptation-related plans and strategies in Part II.D (pages 26 – 28), including the National Drinking Water Supply and Irrigation Programme, the Morocco Forest Strategy and the Generation Green 2020-2030 Strategy. In addition, it identifies the link between the NAP and NDC with the project's general objective.</p> <p><b>CR11:</b> Kindly provide a more comprehensive table listing, ensuring the following:</p>

		<ul style="list-style-type: none"> <li>(i) Specific name of the plan/strategy and years of implementation (including the link to the document as hyperlink in the strategy name),</li> <li>(ii) Main objective of the identified strategy,</li> <li>(iii) Explain the relevance to the proposed project, including its alignment with the existing plan or strategy. A suggested structure is: <i>'The proposed project is aligned with [Plan XX], under [Specific Action XX], contributing to [Outcome XX].'</i></li> </ul> <p><b>CR12:</b> Please include any other sectoral plan/strategy related to the proposed project, including the ones related to water, agriculture or food security, health, and biodiversity.</p>
	<p>7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?</p>	<p><b>Unsure.</b></p> <p>The concept note identifies several national regulations related to water, soil protection, sustainable development of palm groves, among others, and how they are relevant to the proposed project as described in Part II.E (pages 28 – 30), However, more specific information is required for compliance.</p> <p><b>CAR4:</b> Kindly ensure that, for <u>each identified standard</u>, Table 2 include the following information:</p> <ul style="list-style-type: none"> <li>(i) The <b>scope and relevance</b> should be described specifically. For example, instead of stating “Ensures preservation of agricultural soils and prevention of erosion,” please clarify whether these are minimum requirements or standards for each type of preservation.</li> <li>(ii) How it <b>relates to the proposed project</b> should be specified, clearly identifying the outputs that</li> </ul>

		<p>will be required to ensure compliance with the identified standard.</p> <p>(iii) The <b>project's compliance status</b>. In the case that compliance is required, please include the <u>steps needed</u> to comply with it.</p> <p>In addition, please ensure the table listing is comprehensive.</p>
	<p>8. Is there duplication of project / programme with other funding sources?</p>	<p><b>Yes.</b> <b>However, additional information is required.</b></p> <p>Part II.F (pages 30 – 32) shows a table listing of all relevant projects with a description of them, potential synergies, and a justification for no duplication. The listing described four projects: (i) Climate changes adaptation project in oasis zones; (ii) Revitalising Oasis Agro-ecosystems through a Sustainable, Integrated and Landscape Approach in the Draa-Tafilalet Region; (iii) Sustainable management of oasis ecosystems in Morocco project; and (iv) Development Project of Saffron and Date Palm in the region of Draa Tafilalet and Souss-Massa. However, lessons learned are not included and synergies could be expanded.</p> <p><b>CR13:</b> Kindly include, for each project identified in Table 13, the following:</p> <ul style="list-style-type: none"> <li>(i) Lessons learned</li> <li>(ii) Expand on the synergies with the proposed project.</li> </ul> <p>Please ensure the table listing is comprehensive.</p>
	<p>9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?</p>	<p><b>Unsure.</b></p> <p>The proposed project describes a fourth component that encompasses all knowledge and learning activities;</p>

		<p>however, it is not clear whether this actually constitutes a separate component.</p> <p><b>CR14:</b> Kindly clarify if learning and knowledge management activities correspond to component 4. <i>Please see CR7.</i></p> <p><b>CR15:</b> Kindly include details to respond to:</p> <ul style="list-style-type: none"> <li>• More details of the specific activities, including the institutions involved, and main goals. For example, the policy briefs will be about what subject, or the demonstration sites will be focused on what matter.</li> <li>• who will be responsible for tracking the experiences gained, how this will be done, and when the tracking will take place (the arrangements needed).</li> <li>• how the knowledge generated will be sustained after the project concludes.</li> </ul>
	<p>10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?</p>	<p><b>Yes,</b></p> <p><b>However, additional information is required.</b></p> <p>Initial consultations were conducted through workshops in Draa Valley. The consultative process has included local authorities, local population, and stakeholders. However, concrete information about the workshops conducted, including gender considerations, is not provided in the concept note.</p> <p><b>CR16:</b> Kindly provide details on the workshops conducted in Part II.H, (pages 33 – 34) Table 4, as follows:</p> <ul style="list-style-type: none"> <li>• Indicate the composition of the participants who attended each workshop (disaggregated by gender), with some background information, to</li> </ul>

		<p>verify if marginalized and vulnerable groups have been consulted.</p> <ul style="list-style-type: none"> <li>• If so, explain how their concerns were addressed in the project design, emphasizing whether gender considerations were incorporated.</li> <li>• Identify any community groups or leaders involved in high-level planning, or those forming part of the main stakeholder group, to demonstrate that the implementation of the proposed project is participatory in nature</li> <li>• Specify which representatives participated in each stakeholder consultation, including the women's organizations mentioned on page 33.</li> </ul>
	<p>11. Is the requested financing justified on the basis of full cost of adaptation reasoning?</p>	<p><b>Unsure.</b></p> <p>Part II Section I (pages 35 to 36) of the concept note provides a broad explanation on the full cost of adaptation reasoning, providing scenarios with and without the AF funding for components 1 and 2. However, it does not provide information about additional funding, and how outputs and outcomes of the project will be secured.</p> <p><b>CR17:</b> Please clarify at Part II.J how the resources requested from the Adaptation Fund, through the outcomes and activities proposed, will be able to effectively deliver on its objectives, for each component of the proposed project.</p> <p><b>CR18:</b> Kindly clarify whether the project requires co-financing, and if so, how <i>all</i> outputs and outcomes will be achieved regardless of that.</p>
	<p>12. Is the project / program aligned with AF's results framework?</p>	<p><b>Yes.</b> <b>However additional information is required.</b></p>

		<p>Part III A (pages 45 – 47) presents the table showing the alignment of the Project Objectives and Outcomes with the AF Results Framework. However, there are inconsistencies between this table and the Project Components and Financing Table. In the latter table there are 4 Outcomes associated with each of the Components, while in the Alignment Table only has three outcomes.</p> <p><b>CAR5:</b> Please ensure the following information is included in the table at Part III.A:</p> <ul style="list-style-type: none"> <li>• All output and outcomes indicators are SMART.</li> <li>• Please ensure consistency between the Expected Outcomes of the project and the Outcomes in the Adaptation Fund Strategic Results Framework as outlined in the <a href="#">updated AF Results Framework</a> (nov 2025).</li> </ul>
	<p>13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?</p>	<p><b>Yes.</b> <b>However, additional information is requested.</b></p> <p>Part II J (pages 36 – 38) indicates that the project seeks to sustain its benefits through the involvement of existing institutions (at the central and local levels) and agreements/contracts with stakeholders. However, there is no mention of regulations and resources, and therefore, it is not clear how the project will be sustained in the long run, nor if replication and scaling up will be able to achieve.</p> <p><b>CR19:</b> Kindly identify the adaptation benefits that can be sustained after this project ends and explain if this can be replicated and/or scale up.</p> <p><b>CR20:</b> Kindly explain the arrangements (for example, financial, social, regulatory, institutional, economic, environmental) to achieve on the sustainability and</p>

		<p>maintenance of the project. For example, at the institutional level for component 1, the proposal stated: “<i>Community-based natural resource management committees embedded in municipal development plans</i>”. Is there any agreement previously signed to ensure this?</p>
	<p>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?</p>	<p><b>No.</b>  Part II K (pages 39 – 44) of the proposal has identified all potential risks and impacts, but they are not substantiated. For the concept note, the ESP overview should start by identifying potential risks, even if the project aims not to affect issues related to the principles. The Initial Gender Assessment is not included, and the proposal do not elaborate on the gender-specific context in the Draa oases.</p> <p><b>CAR6:</b> Please review the Table of <i>Environmental and Social Principles</i> and ensure the following:</p> <ul style="list-style-type: none"> <li>• Describe all potential impacts (direct, indirect, transboundary and cumulative) and risks that could result from the project.</li> <li>• Identify the magnitude of the risks and impacts. Risk should describe as: “There is a risk ....” and should be accompanied by mitigation plans. For more information, please visit AF’s ESP guidance: <a href="https://www.adaptation-fund.org/wp-content/uploads/2016/07/ESP-Guidance_Revised-in-June-2016_Guidance-document-for-Implementing-Entities-on-compliance-with-the-Adaptation-Fund-Environmental-and-Social-Policy.pdf">https://www.adaptation-fund.org/wp-content/uploads/2016/07/ESP-Guidance_Revised-in-June-2016_Guidance-document-for-Implementing-Entities-on-compliance-with-the-Adaptation-Fund-Environmental-and-Social-Policy.pdf</a></li> <li>• Kindly leave a check mark in the second column ‘<b>No further assessment required for compliance</b>’ if no further assessment and leave blank if an assessment is to be conducted. No text should be included in the second column.</li> </ul>

		<ul style="list-style-type: none"> <li>Align the titles of the columns to the template accordingly.</li> <li>Please note that principles 1, 4 and 6 always apply.</li> </ul> <p><b>CAR7:</b> Please include an Initial Gender Assessment. See CAR3.</p>
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	<p><b>Yes.</b> The balance remaining under Morocco's country cap is USD 30,030,000.</p>
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	<p><b>Yes.</b> As per information provided in Table of Project/Programme Components and Financing, IE costs are 8.5% (USD 1,566,820) of the Total Project/Programme Budget. In addition, numbers are rounded to whole figures and are consistent throughout the proposed project.</p> <p>Regarding the PFG, it requests an amount of USD 150,000 and clarifies that it will be executed by the ORMVAO. It also includes an IE fee of USD 11,000 (7.3%).</p>
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	<p><b>Yes.</b> As per information provided in Table of Project/Programme Components and Financing, Execution costs are 9.3% (USD 1,714,286) of the Total Project/Programme Budget. In addition, numbers are rounded to whole figures and are consistent throughout the proposed project.</p>
Eligibility of IE	1. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	<p><b>Yes.</b> ADA is an accredited NIE. Accreditation Expiration Date: 9 September 2029.</p>
Implementation Arrangements	1. Is there adequate arrangement for project / programme management, in compliance with the Gender Policy of the Fund?	n/a at concept stage

	2. Are there measures for financial and project/programme risk management?	n/a at concept stage
	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy and Gender Policy of the Fund?	n/a at concept stage
	4. Is a budget on the Implementing Entity Management Fee use included?	n/a at concept stage
	5. Is an explanation and a breakdown of the execution costs included?	n/a at concept stage
	6. Is a detailed budget including budget notes included?	n/a at concept stage
	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?	n/a at concept stage
	8. Does the M&E Framework include a breakdown of how implementing entity IE fees will be utilized in the supervision of the M&E function?	n/a at concept stage
	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?	n/a at concept stage
	10. Is a disbursement schedule with time-bound milestones included?	n/a at concept stage



ADAPTATION FUND

## CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

### PART I: PROJECT/PROGRAMME INFORMATION

**Title of Project/Programme:** Strengthening the Resilience of Oasis Ecosystems and Enhancing the Adaptive Capacities of the Draa Basin Communities to Climate Change

**Country:** Morocco

**Thematic Focal Area:** Water Management, Agriculture

**Type of Implementing Entity:** National Implementing Entity

**Implementing Entity:** Agricultural Development Agency (ADA)

**Executing Entities:** Office Régional de Mise en Valeur Agricole de Ouarzazate (ORMVAO)

**Amount of Financing Requested:** 20,000,000 (in U.S Dollars Equivalent)

**Project Formulation Grant Request (available to NIEs only):** Yes  No

**Amount of Requested financing for PFG:** 150 000 (in U.S Dollars Equivalent)

**Letter of Endorsement (LOE) signed:** 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 concept has been submitted before

This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: 1/6/2025

**Please note that concept note documents should not exceed 50 pages, including annexes.**

## Project/Programme Background and Context:

*Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic, social, development and environmental context in which the project would operate.*

Morocco is considered as a "climate hotspot," highly exposed to the effects and impacts of climate change. The country has experienced pronounced warming trends since the 1960s, with an average observed increase of 0.2°C per decade, exceeding the global average. Nine of the ten warmest years on record in Morocco have occurred in the last two decades. Precipitation has followed a general downward trend, with increasingly irregular patterns. These changes are expected to increase over the coming decades.

Morocco is one of the countries most affected by climate change (CC) and faces extreme weather events with wide temperature variations, leading to persistent droughts in semi-desert plains and floods in coastal plains. These events impact water availability, significantly affecting natural resources, ecosystems, and, above all, people's access to water, whether for drinking or for irrigating agricultural land (CNM-CCNUCC, 2021).

### **Warming trends**

Morocco's climatic data over the last quarter of a century shows that the country's climate is highly variable, with notable warming trends and rainfall deficits. Overall, the temperature in Morocco, across all seasons, has been increased by an average of +0.6 to +1.4°C, depending on the region, over the last 40 years. This increase has been particularly marked since the 1980s and 1990s, a period during which warming became more pronounced as droughts became more frequent.

Climate projections based on annual changes in precipitation and average temperatures according to the IPCC's optimistic scenario, RCP 2.6, as revealed in the IPCC's 5<sup>th</sup> report that:

- Average annual temperatures are projected to rise by 0.5 to 1°C by 2020 and by 1 to 1.5°C by 2050 and 2080, across entire country.
- This rise in average annual temperature will be even greater under the pessimistic RCP 8.5 scenario, reaching around 2100:
  - Between 5 and 7°C in the south-east of the Atlas Mountains,
  - Between 4 and 5°C in the Mediterranean regions, the Atlantic regions and the center of the country,
  - Between 3 and 4°C in the Saharan provinces.

The period from 2019 to 2022 was the driest since the 1960s, according to the Directorate General of Meteorology. In 2023, which was also marked by low rainfall, Morocco experienced five heat waves, including an absolute record of 50.4°C in Agadir in August.

### **Water shortages, drought and reduced snow cover**

Morocco is one of the most water-poor countries in the world and is rapidly approaching the absolute water shortage threshold of 500 m<sup>3</sup> per person per year.

According to a preliminary climate and environmental vulnerability assessment, based on a review of reports and analyses by the Intergovernmental Panel on Climate Change, the United Nations and the Moroccan government, the country is in a drought situation<sup>1</sup>, with a rainfall deficit of 32% since 2019 (MEE, 2023).

Morocco's total water resources are estimated at 22 billion cubic meters (m<sup>3</sup>), comprising 18 billion m<sup>3</sup> of surface water (on average for the available time series) and 4 billion m<sup>3</sup> of groundwater. Since the late 1970s, water inflows from surface water have decreased, from an annual average of 22 billion m<sup>3</sup> between 1945 and 1978 to an annual average of 15 billion m<sup>3</sup> between 1979 and 2018. Between 1960 and 2020, the per capita availability of renewable water resources fell from 2,560 m<sup>3</sup> to around 620 m<sup>3</sup> per person per year, placing Morocco in a situation of structural water stress (less

<sup>1</sup>In its 5th report, the IPCC emphasized that, for all time horizons, there is a downward trend in annual cumulative rainfall, varying between 10 and 20% and reaching 30% in the Saharan provinces by 2100.

than 1,000 m<sup>3</sup>), and rapidly approaching the absolute shortage threshold of 500 m<sup>3</sup> per person per year. As a result, pressure on groundwater has increased considerably, reaching a level of overexploitation estimated at almost 30%, especially during dry years. The challenge of water scarcity is compounded by deteriorating water quality effecting both groundwater and surface water.

Morocco is experiencing increasingly recurrent and severe droughts. The country has faced more than forty years of various types of droughts, accompanied by excessive temperature variations, marking the last century. Morocco is heading for a sixth consecutive year of drought. The period from 2019 to 2022 was the driest since the 1960s, according to the Directorate General of Meteorology. In 2023, also marked by low rainfall, Morocco experienced five heat waves, including an absolute record of 50.4°C in Agadir in August.

At the same time, Morocco will also see a reduction in snow cover as a result of climate change. The amount of snow in the mountains will be significantly reduced, resulting in less water stored in the form of snow to feed the springs. According to the latest IPCC assessment report, by 2100 Morocco can expect a 15% or even 20% reduction in precipitation, which will double the amount of available water.

## **Flooding**

Paradoxically, there will be a very significant increase in stormy rainfall. Due to its geographical location, high variability of rainfall and its topography, Morocco will experience extreme precipitation events leading to flooding, landslides and a large amount of sediment carried down rivers. This will further silt up dams and cause massive destruction various roads and rail infrastructures. Between 2000 and 2021, twenty major flooding events were recorded, causing average direct losses estimated at \$450 million per year.

Morocco has developed a disaster risk management (DRM) system based on innovative mechanisms, particularly the *Fonds de lutte contre les effets des catastrophes naturelles* (FLCN). It was initially created to finance post-disaster reconstruction, then transformed into a mechanism that co-finances investments in disaster risk reduction and preparedness at local level.

## **Policies for a resilient, low-carbon transition**

Water scarcity could affect almost every aspect of Morocco's future socio-economic development. The increasing frequency and severity of droughts are already major sources of macroeconomic volatility and pose a threat to national food security. Looking ahead, reduced water availability and lower agricultural yields due to climate change could potentially reduce GDP by up to 6.5%.

**Rain-fed agriculture** is particularly vulnerable to droughts and water shortages: Despite accounting for 80% of the country's cultivated area and employing most farm workers, climate-induced changes in water availability and crop yields could potentially contribute to the rural exodus of 1.9 million Moroccans (equivalent to 5.4% of the total population) by 2050.

**The deployment of large-scale hydraulic infrastructures<sup>2</sup>** has been a key factor in Morocco's recent development. This infrastructure has enabled a shift towards more productive crops and nearly doubled real agricultural value added over the past two decades. Morocco has introduced an ambitious water investment plan for the period 2020-2050, known as the "Plan National de l'Eau (PNE)", aimed at bridging the gap between water supply and demand.

The drip irrigation target to manage water resources optimally. The situation of the oases of southern Morocco is dramatic, as it is facing a dire situation, exacerbating desertification effects. This results in the degradation, eventual loss, and abandonment of productive ecosystems that play significant social, ecological, and economic roles in the region. In oasis area, water management is a must to be followed to preserve resources. This became even more critical during a period of drought, which reveals the weaknesses in the current nationwide system. The oases are therefore not only the first to bear the brunt of climate change but also represent the country's final frontier against desertification.

---

<sup>2</sup> Since the late 1960s, the Kingdom has built more than 140 large dams, increasing its total water mobilization capacity tenfold (from 2 to nearly 19.1 billion m<sup>3</sup>). It has also developed drip irrigation.

## Vulnerability of oasis ecosystems to climate change

Oases are unique socio-agro-ecological systems that have evolved over centuries in arid and desert environments. Traditionally defined as intensively cultivated zones in hyper-arid settings (Lacoste, 1985), they serve as vital hubs of biodiversity, food production, cultural heritage, and climate resilience. According to the FAO (2020), oases provide essential economic, ecological, social, and cultural services across the drylands of the world.

In Morocco, these ecosystems are concentrated in the arid zone one of the four major ecological regions of the country including areas such as the Anti-Atlas Dir, the Drâa Valley, Ziz, Dades, Tafilalet, and Figuig. Together, Moroccan oases span approximately 48,000 hectares, representing 15% of the national territory, and support more than 1.7 million inhabitants. Despite accounting for only 1.5% of the country's Utilized Agricultural Area (UAA), oasis zones represent 5.9% of total farms, with population densities in some areas exceeding 700 inhabitants per square kilometer.

Environmental diagnostics carried out as part of the Communal Development Plans (CDP)<sup>3</sup> for the oasis areas have identified several factors responsible for the deterioration of the oasis environments. These include climatic factors linked to recurrent droughts and the increasing scarcity of water resources.

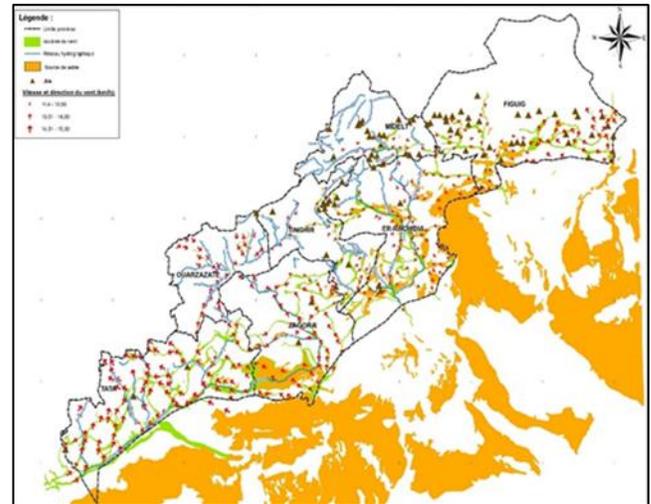


Figure 1: Map of Oasis Areas and Pastoral Systems in Morocco, showing the spatial distribution of oases, hydrological networks, and pastoral mobility routes<sup>4</sup>.

### Temperature and rainfall

Oases are arid areas, characterized by high continental temperatures in summer and very low temperatures in winter, often accompanied by dry winds that create a substantial gap between rainfall and evaporation. The climate in Moroccan oases is continental, with high temperatures between June and September and high evapotranspiration in summer.

Due to their geographical location oasis areas are subject to considerable temperature variation, with extremely hot summers averaging around 42°C. During the hottest months, temperatures frequently exceed 40°C, making the climate very arid and difficult to bear without proper acclimatization Winters are cold, with an average temperature around -0.5°C. The difference in temperature between summer and winter is significant, reflecting the thermal amplitude typical of desert climates.

**On average, the region receives less than 80 mm of rainfall per year**, highlighting its scarcity. Rainfall is not only limited, but also irregular, both temporally and spatially. Nevertheless, certain valleys have microclimates characterized by reduced aridity attributed to the presence of vegetation and the shelter provided by high relief in these valleys.

The region is characterized by periods of highly unpredictable and sometimes severe flooding, which can cause considerable damage These events result from localized episodes of rain and storms, becoming more frequent as one moves from east to west. The construction of reservoir dams such as Mansour Addahbi on the Oued Drâa and Hassan Addakhil on the Oued Ziz has reduced the risk of these floods and has enabled the main palm groves of the Drâa and Tafilalet to be supplied regularly. However, it has also severely limited the recharging of groundwater, particularly affecting water tables along riverbeds and low-lying areas.

While temperatures remain relatively stable from year to year, rainfall shows significant irregularity with high inter-annual variability. The inevitability of floods and droughts has left its mark on people's minds. Farmers live with the expectation of a beneficent rainfall while simultaneously fearing the disruptive impacts of floods and droughts.

<sup>3</sup> In particular, the PCDs of the Ferkla commune, the Akka commune and the Assrir commune.

<sup>4</sup> (Source: Adapted from Haut-Commissariat au Plan, Morocco and regional hydrological data.)

## **Wind**

The oasis zones are influenced by two types of winds: continental winds from the east and south-east, which are hot and dry, and which have a drying and burning effect on the vegetation as they contribute to increasing evapotranspiration. W-NW oceanic winds from the Atlantic and Mediterranean coasts. These winds are generally moderated by the Atlas walls and foothills.

The power of the winds increases the evaporative capacity of the atmosphere and activates the transport of sand, which threatens valuable sites (Ksour, roads, farmland, irrigation infrastructure, etc.). This situation gives the area the following overall characteristics: an arid climate and poor soils; intense Saharan influences including wind erosion, sandstorms, drought and desertification; insufficient underground water resources, with high rates of evaporation and evapotranspiration; a remarkable diversity of flora and fauna, characterized by a dominance of endemic species.

## **Vegetation**

The region features plant formations adapted to semi-desert and Saharan conditions, such as fruticose, acacias (*Acacia raddiana*), esparto grass and forest species such as juniper and thuja. Oases, primarily dominated by date palms, form microsystems favorable to various crops and livestock. Sparse vegetation cover accentuates soil degradation, wind erosion and the formation of various dune types.

## **Livestock**

Livestock is a backbone of oasis livelihoods in Morocco's arid and semi-arid belts, but climate change is eroding that foundation. Recurrent and longer droughts, rising temperatures, and fewer wet days shrink forage availability and surface water, forcing herders to extend grazing ranges, concentrate herds near scarce water points, and face more conflicts over access, patterns observed across southern and eastern Morocco's pastoral zones. These stresses reduce mobility options (a key resilience strategy), depress productivity through heat and feeding stress, and heighten rangeland degradation risks, undermining household incomes and food security. Recent analyses and country submissions report multi-year drought conditions and increasing extremes in oasis areas; sector studies for Morocco and the wider NENA region document how drought and warming intensify livestock vulnerability, while IPCC assessments note that impacts on Moroccan pastoralists hinge on drought exposure and mobility constraints. Together, the evidence points to a clear adaptation need: secure water points, protect/restore rangelands, and support governance that preserves pastoral mobility<sup>5, 6, 7</sup>.

## **Water resources**

The region is drained by 5 major wadis: from west to east, the Drâa, the Rheriss and Maïder, the Ziz and the Guir. With a surface area of 115,563 km<sup>2</sup> and an average flow rate of 25 m<sup>3</sup> /s, this region accounts for only around 4% of Morocco's surface water resources and only 5.7% of its total resources. 93% of the resources are mobilized, which means that the hydraulic system in place is operating at full capacity and that the existing balance between population growth and resource use.

<sup>5</sup> [https://unfccc.int/sites/default/files/resource/Morocco\\_Submission\\_TC4.pdf](https://unfccc.int/sites/default/files/resource/Morocco_Submission_TC4.pdf)

<sup>6</sup> <https://documents1.worldbank.org/curated/en/353801538414553978/pdf/130404-WP-P159851-Morocco-WEB.pdf>

<sup>7</sup> [https://menadrought.iwmi.org/wp-content/uploads/sites/44/2020/08/BaselineMorocco\\_MENAdrought\\_final.pdf](https://menadrought.iwmi.org/wp-content/uploads/sites/44/2020/08/BaselineMorocco_MENAdrought_final.pdf)

Uncontrolled population growth or the implementation of large-scale irrigation projects could jeopardize this fragile balance. Out of the 1102 million m<sup>3</sup> mobilized in the oasis area, 98% is allocated to agriculture (covering 75% of needs) and the rest is reserved for drinking water. Given the scarcity of resources and the difficulty of mobilizing additional supplies, water-saving techniques, particularly in agriculture, need to be implemented as soon as possible, making water conservation a strategic objective for safeguarding oasis areas.

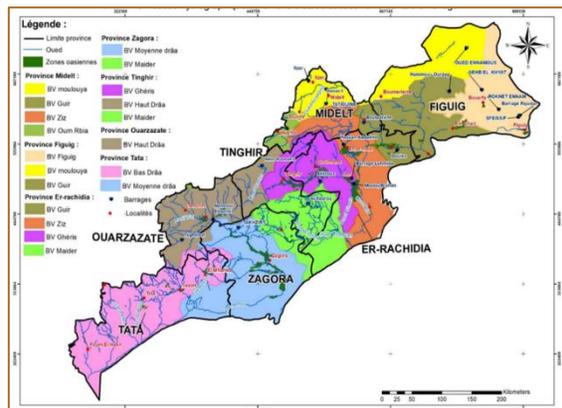


Figure 2: Oasis Zones and Hydrological Basins in Southeastern Morocco

## Irrigation system and agricultural production

The survival of oasis areas depends on the mobilization of water in different ways, traditionally associated with ancestral know-how and complex forms of social organization. This is done either by diverting water from rivers or by pumping groundwater. Water is also mobilized by draining groundwater located upstream of the oasis using underground galleries known as khetaras. The Moroccan oasis is distinguished by the uniqueness and attractiveness of its natural landscape, formed by the small family farms that make up most of the ancient oases.

The production system in oases is essentially based on crops and livestock. There are generally three types of crop in oasis areas: Date palms, fruit trees and underlying crops including fodder crops, which are of great interest in these farming systems, vegetables and cereals. Fodder crops, notably alfalfa, barley and maize, in the oases help to improve the structure and fertility of the soil and increase income. Livestock farming is renowned for the very high prolificacy of sheep and goat breeds. Recently, a number of activities have developed alongside phoeniculture, including beekeeping, camel farming and Saharan eco-tourism.

**Oasis agriculture is exposed to the threat of deterioration.** A study notes that the combination of predicted changes in temperature and rainfall over the time horizons selected (2015, 2045 and 2075) would result in a significant increase in crop irrigation water requirements (+8% for Ouarzazate and +2% for Zagora). It also recognizes that the water needs satisfaction index (WSI) will be more affected in terms of cultivated land in the oases. Crops such as alfalfa, palm trees, fruit trees and summer crops will suffer the most in terms of water balance.

The oases are located in the south and south-west of Morocco covering around 29% of the country. Six per cent of the population live in oases. Because of their biological, cultural and architectural diversity, these oases offer exceptionally rich and varied landscapes, perform numerous environmental functions and provide a multitude of social, ecological and economic goods and services.

**Two-thirds of Morocco's oases have disappeared over the last century.**<sup>8</sup> The main obstacles to the sustainable development of oases are: (i) unsustainable land and agricultural management practices, including intensive monoculture; (ii) water scarcity and unregulated water management, including unregulated digging of artisanal wells and overexploitation of groundwater ; (iii) limited institutional capacity to implement nature-based and geo-dependent oasis management systems and to use participatory methods for integrated oasis management planning; (iv) overexploitation of existing natural resources; and (v) climate change.

<sup>8</sup>ANDZOA. 2016. "COP22: Presentation of the Sustainable Oasis Initiative by the Minister of Agriculture." <http://andzoa.ma/fr/2016/11/15/cop22-presentation-de-linitiative-oasis-durables-par-m-le-ministre-de-lagriculture/>

In 2021, the poverty rate among oasis dwellers was 16%, compared with a national average of 9%. The oasis population is vulnerable to climate change. This population is currently immersed in a vicious cycle combining ecological degradation and impoverishment.

In recent years, the oases have undergone profound changes in their characteristics, with **a drop in groundwater levels** (on average between -15 and -20 m) and **a fall in date production** (around 34%). But what is most striking is the population trend, which has increased by half in twenty years, against an economic backdrop that is tending to deteriorate, leading to an urban exodus, particularly among young people.

Projections for the oasis zones suggest that climate change will have a major **impact on their water resources**. In Zagora area, the threshold of water stress would be reached between 2040 and 2050 and in Ouarzazate, the threshold of water shortage would be reached between 2030 and 2050. The water availability indicator will continue to rise, resulting in a high level of water stress. Drinking water requirements in the oasis zone are also set to increase from 50% to almost 130% in 2030 and from 67% to almost 380% in 2050, due to population growth. Climate change would thus exacerbate the **deterioration of the water situation** in the oases. The result would be overexploitation of the aquifers, a fall in their piezometric levels, increased costs and a fall in the flow of springs and khetaras, or even they're drying up. If this were to happen, the oases would disappear in the long term. If confirmed, this disappearance of one of Morocco's most important heritages would have serious social, economic and environmental consequences.

Climate change is expected to exacerbate the risk of fires and diseases (notably Bayoud disease, which destroyed 10 million palm trees in a century)<sup>9</sup>.

**Although palm grove fires** are much less deadly than most other natural disasters, they are no less dangerous and have a real economic and environmental impact, given the importance of the date palm in the survival of the oasis ecosystem and in maintaining its population. Each fire attacks an average of 0.6 ha and affects 75 date palms: For example, 35,905 date palms were burnt in the province of Tata in 2018 as a result of 30 fires, giving an average of 1,197 palms burnt per fire (a figure well above the average), bearing in mind that 19,500 palms were affected by a single fire in the Aguerd oasis on 09/07/2018 over an area of 65 ha, not to mention the damage caused to infrastructure and the resources mobilized to extinguish the fire.

## Project area

The project's area includes the oasis ecosystems belonging to the ORMVAO's action zone, which encompasses the greater part of the Draa hydraulic basin (the Upper Draa and Middle Draa sub-basins) and the upstream part of the Maider sub-basin within the Ziz-Ghris basin.

---

<sup>9</sup>Bouhlali EDT, Derouich M, Ben-Amar H, Meziani R, and Essarioui A. 2020. "Exploring the potential use of bioactive plant products in the management of *Fusarium oxysporum* f. sp. *albedinis*: the causal agent of Bayoud disease on date palm (*Phoenix dactylifera* L.)". *Beni-Suef University Journal of Basic and Applied Sciences*. 9(1) : 1-9.

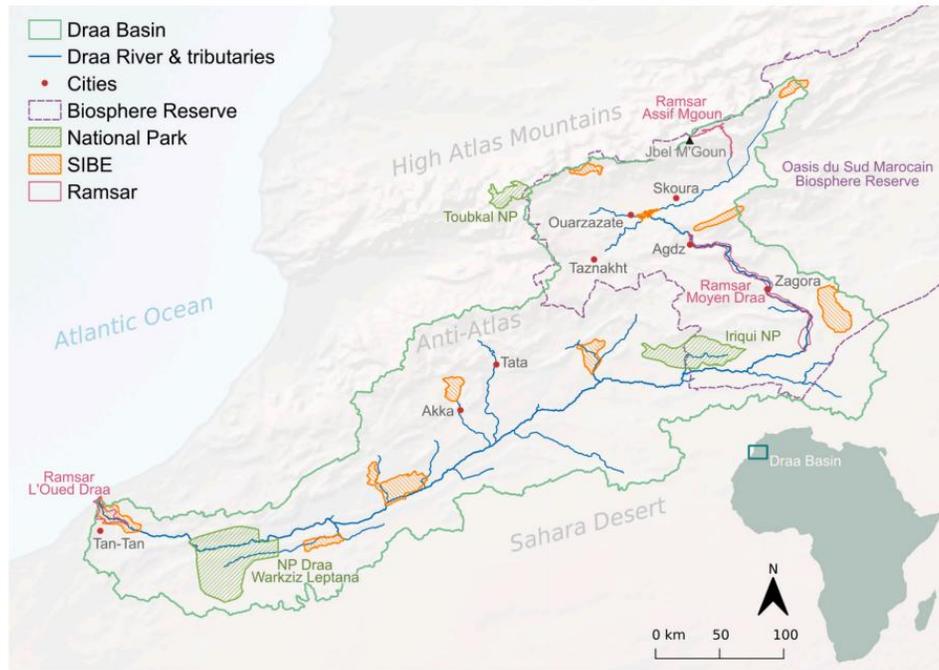


Figure 3: Map showing the Draa Bassin, cities and main protected areas (UNEP-WCMC and IUCN, 2025)

The oases of the Draa basin are very fragile ecosystems and are currently facing severe constraints due to climate change, aggravated by demographic pressure. The target population is among those most affected by the effects of "CC" climate change in Morocco. The Draa oases are very fragile ecosystems and are currently facing multiple obstacles and risks due to the combined impacts of climate change and human factors. The area is made up of the upper Draa and Middle Draa zones, encompassing 3 provinces (the province of Ouarzazate, the province of Zagora and part of the province of Tinghir). The main constraints and obstacles observed and identified include Water stress and scarcity, groundwater salinity, flooding and violent floods, soil degradation and erosion, degradation of palm groves, agricultural and social infrastructure, forests, rangelands and silting of dams.

**Water stress:** the water situation is very alarming due to the combined effect of climate change and management methods based on excessive use of this scarce resource. Excessive pumping of groundwater in the Skoura, Nkob, Tazarine, Taghbalte, Fezouata and Ouhmidi palm groves has led to a drop in the water table and the drying up of certain khetaras.

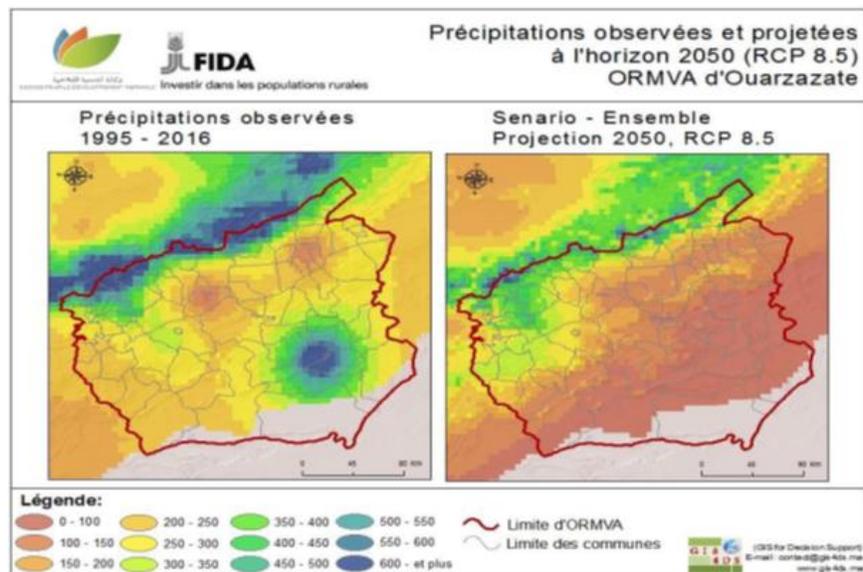


Figure 4: Observed and projected precipitation map for 2050, RCP 8.5

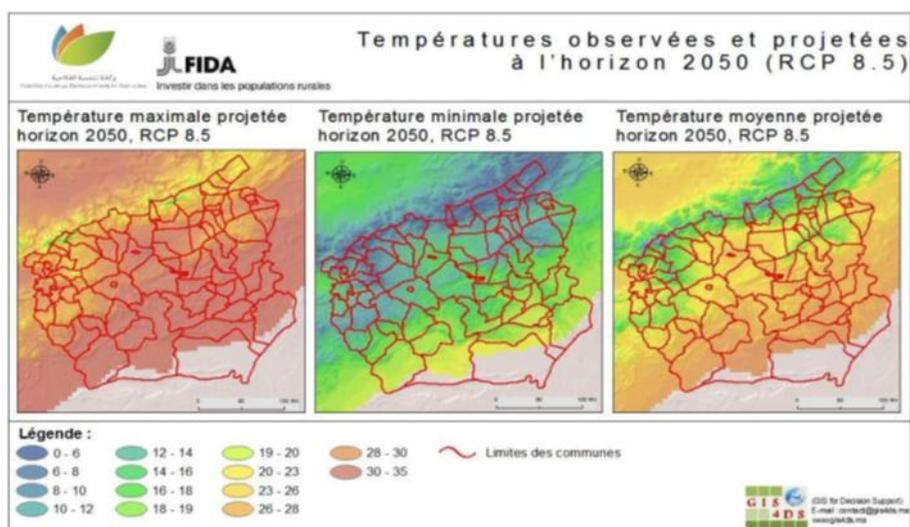


Figure 5: Map of observed and projected temperatures to 2050, RCP 8.5

**Water salinity:** the problem of salinity affects the palm groves of Skoura, Tazarine, Taghbalte, Ktaoua and M'Hamid. This constraint, combined with the inadequacy of water resources, amplifies the problem of water stress and, as a result, reduces the productivity of the palm groves and weakens the availability of domestic water.

**Flooding, high water and erosion:** These phenomena have become frequent, strong and unpredictable, causing considerable damage to the palm groves of Skoura, Tarmigte, Mezguita, Tinzouline, Ternata, Fezouata, Tazarine, Taghbalte and Ouhmidi, to farmland (undermining of banks) and hydro-agricultural structures (undermining of banks and silting up of irrigation canals and dams), as well as destroying infrastructure (tracks, roads, Etc.) and pose a serious threat to the oasis population.

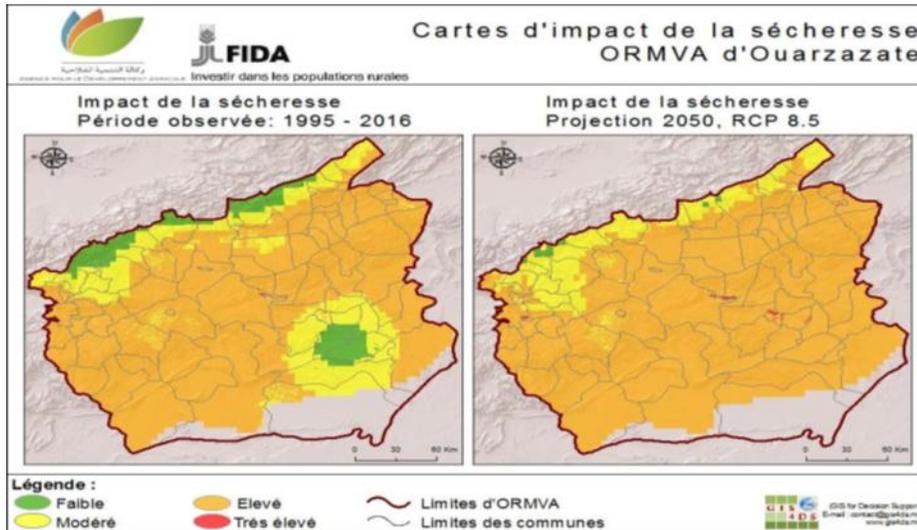


Figure 6: Drought impact map in Ouarzazate ORMVA area

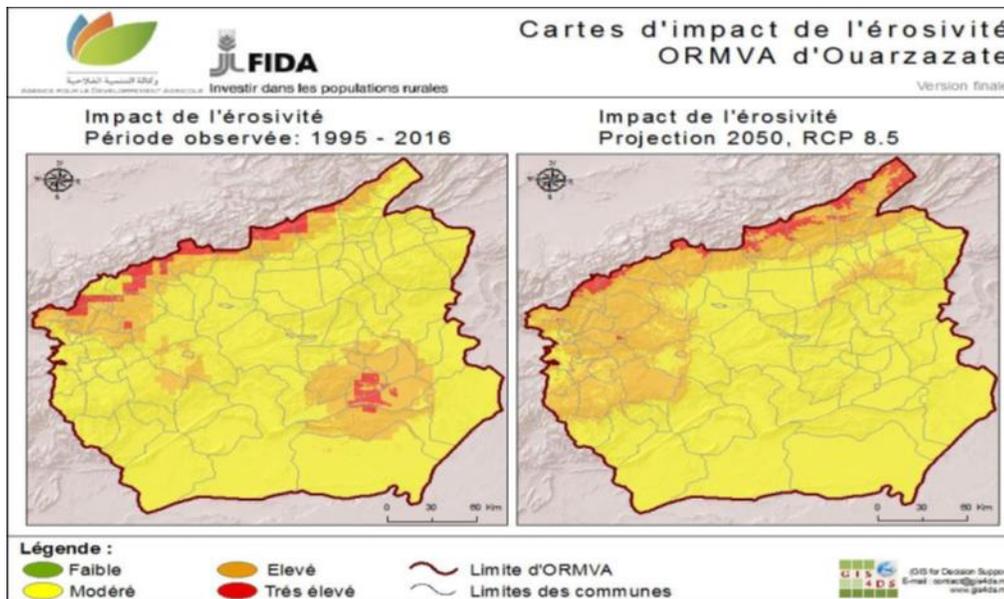


Figure 7: Erosivity impact map of the Ouarzazate ORMVA area

**Degradation of forests and rangelands:** the over-exploitation of forests for firewood, combined with the effects of climate change, is accentuating the phenomena of desertification and the silting up of dams. This phenomenon has been observed in mountainous areas upstream of the Oued Dades, Mgoun, Ouarzazate and Oued El Hajjaj, and in the vicinity of the Fezouata palm grove (Drâa Valley).

Spatial and temporal changes in rainfall patterns, desertification, the irrational exploitation of spontaneous MAPs and changes in the use of grazing land have also contributed to a significant deterioration in biodiversity. Observation and studies carried out on the dynamics and floristic richness of these ecosystems have shown a clear decline in the range and abundance of certain pastoral species native to the area, such as sagebrush, Alfa and Acacia.

**Degradation of palm groves:** In addition to water shortages, palm groves are increasingly being abandoned due to the spread of diseases and pests. Bayoud disease, caused by the soil-borne fungus *Fusarium oxysporum* f. sp. *albedinis*, remains the most serious threat, having destroyed more than two-thirds of the date palms in the project area. All traditional palm groves in the Draa Valley, Maïder, Skoura, Tarmigt, Ghassate, and Ouhmidi are considered potentially affected. Unfortunately, the most prized varieties, Majhoul, Bouffegous, Bouskri, and Jihel, are also the most susceptible.

The primary factor contributing to disease spread is the use of communal canal irrigation in older groves. As the pathogen can persist in the soil and move between palm roots via wet, interconnected soils, these communal irrigation systems inadvertently facilitate its rapid spread<sup>10</sup>. In contrast, newer plantations utilizing localized (drip) irrigation and individually managed root zones have remained free from Bayoud, underscoring the protective role of targeted water management.

Climate change further compounds this problem by increasing thermal stress and heat-induced vulnerability of palms, potentially accelerating the pathogen's growth cycle and reducing the trees' natural defenses. The disease symptoms appear quicker under water stress conditions and *Fusarium oxysporum* f.sp. can persist in conditions up to 28°C<sup>11,12</sup>. Although direct local studies are limited, global modeling indicates an increased risk of *Fusarium* outbreaks under future warming, especially in regions highly conducive to palm cultivation<sup>13</sup>.

The proposed project will integrate key control strategies recommended<sup>14</sup> for contaminated areas, including the adoption of localized irrigation systems to reduce waterborne pathogen spread (Activity 3.2.1), rehabilitation of degraded khattaras and seguias with improved water management infrastructure (Activity 1.1.3 and Activity 3.2.2), and targeted removal of infected trees (Activity 1.2.1). In parallel, it will promote the planting of resistant varieties in new or rehabilitated plots (Activities 3.1.1) and provide capacity-building for farmers on disease prevention, resistant cultivar selection, and improved agronomic practices (Activities 3.2.1–3.2.4).

### **Women at the heart of oasis ecosystems**

In oasis areas, women are particularly exposed to the consequences of climate change (desertification, arid climate, water shortages, etc.). The effects of dwindling natural resources and environmental stress affect oasis women more than men. Indeed, the already established inequality and unequal access to production factors (water, land, capital, etc.) are exacerbated by the difficulties associated with climate change. To cope with these disruptions, women are learning and developing new skills and strategies to adapt to their oasis environment.

Around 1.1 million women live in oases, representing 51% of the total oasis population. A significant 61% of these women live in rural areas, while the remaining 39% live in urban areas. Forty-seven per cent of oasis women are illiterate. In contrast, 89% of oasis girls (aged between 7 and 12) have access to primary education. The employment rate for oasis women is just 14.4%, which is more an indication that the household, agricultural and livestock work they do is undervalued than their actual contribution. Of the active population, only 17% (96,633 women) are engaged in working life. Oasis women face many obstacles to achieving higher social status, including the cultural rules of oasis society, high illiteracy rates, limited access to education, restricted land rights and limited access to the means of agricultural production, including financial resources. They are also excluded from decision-making, both within the home and in the public sphere, and are under-represented in paid employment.

---

10 <https://www.laboasis.org/date-palm-diseases/>

11 Ghaemi A, Rahimi A, Banihashemi Z (2011) Effects of water Stress and *Fusarium oxysporum* f. sp. lycopersici on growth (leaf area, plant height, shoot dry matter) and shoot nitrogen content of Tomatoes Under Greenhouse Conditions. Iran. Agricultural Research 29: 51-62.

12 Saremi H (2000) Plant Diseases Caused by *Fusarium* Species. Jihad Daneshgahi 4: 160.

13 Shabani F, Kumar L (2013) Risk Levels of Invasive *Fusarium oxysporum* f. sp. in Areas Suitable for Date Palm (*Phoenix dactylifera*) Cultivation under Various Climate Change Projections. PLoS ONE 8(12): e83404. doi:10.1371/journal.pone.0083404

14 Youssef El Hilali Alaoui et al 2024 IOP Conf. Ser.: Earth Environ. Sci. 1398 012001

## Project/Programme Objectives:

*List the main objectives of the project/programme.*

### General and Specific Objectives

The overall objective of the project is to strengthen the climate resilience and adaptation capacity of oasis ecosystems and local communities in the face of climate change impacts. To achieve the overall objective, the project aims to: (i) enhance water resource management and the adaptive capacity of the hydrological sector, (ii) promote soil and water conservation through nature-based solutions, (iii) improve early warning systems and community capacities for wildfire prevention and response, (iv) develop climate-resilient oasis agriculture while fostering green entrepreneurship around oasis-based value chains, (v) diversify livelihoods and income sources, particularly for women and young people.

These objectives were identified through a participatory and inclusive process, involving local stakeholders, with a view to addressing the systemic interactions between people, water, agriculture, and ecosystems in oasis regions.

The total cost of the proposed project is estimated at USD20,000,000. The project is structured around three integrated components designed to address the key climate vulnerabilities of oasis ecosystems and strengthen the resilience of local communities:

- 1- **Strengthening the adaptive capacity and resilience of the oasis ecosystem**, focusing on integrated water resource management, soil and biodiversity conservation, and wildfire prevention;
- 2- **Enhancing the resilience of pastoral ecosystems and livelihoods** – through nature-based solutions, improved livestock infrastructure, and sustainable land management;
- 3- **Strengthening community resilience and diversifying socio-economic activities**– with a focus on resilient oasis agriculture, green entrepreneurship, and the empowerment of women and youth.

The **Agence pour le Développement Agricole (ADA)** is the **Implementing Entity (IE)**, accredited by the Adaptation Fund to provide fiduciary oversight and ensure alignment with Fund requirements. The **Office Régional de la Mise en Valeur Agricole d'Ouarzazate (ORMVAO)** serves as the **Executing Entity (EE)** responsible for the day-to-day implementation and coordination of activities at the regional and local levels.

A diverse set of stakeholders will be engaged throughout project implementation to ensure cross-sectoral coordination, ownership, and sustainability of outcomes. These include:

- **Agence Nationale pour le Développement des Zones Oasiennes et de l'Arganier (ANDZOA)<sup>15</sup>**: mandated to ensure the protection and integrated development of oasis ecosystems and Argan groves; also the recipient of a prior Adaptation Fund-supported project<sup>16</sup> ;
- **Agence du Bassin Hydraulique de Draa Oued Noun - Délégation de Draa (ABH-Draa)**: responsible for regional water planning and management, contributing to water governance and hydrological resilience;
- **The High Commission for Water and Forests, and Desertification Control – Provincial Directorates of Ouarzazate and Zagora**: oversees forest and watershed management, including fire prevention and reforestation efforts;
- **Ministry of Tourism, Crafts, Air Transport, and Social Economy – Provincial Delegation**: supports the promotion of climate-resilient tourism and value addition for local craft products, especially led by women and youth.
- **Civil Protection Services**: ensure emergency preparedness, early warning, and rapid response, particularly for fire and flood events;
- **Local Authorities**: facilitate local governance, administrative coordination and alignment with local development plans;
- **Agricultural Water User Associations (AUEA)**: represent farmers in participatory water management and are key partners in

<sup>15</sup> National Agency for the Development of Oasis Areas and the Argan Tree

<sup>16</sup> This is the project to adapt to climate change in oasis zones -PACCZO

the operation and maintenance of collective irrigation systems.

- **Provincial Directorate of Agriculture (DPA):** falls under the Ministry of Agriculture, Maritime Fisheries, Rural Development, and Water and Forests, and supervises and provides technical support for maintenance at the provincial level.

Project implementation will follow a collaborative and contractual approach involving all key stakeholders in the target area. This approach is designed to foster synergies among existing initiatives, optimize the use of available resources, and ensure the sustainability and long-term impact of project interventions.

### Theory of Change

The proposed adaptation project is underpinned by the theory of change that, **IF** oasis areas in Draa basin, vulnerable to climate change impacts are endowed with resilient means and adaptive capacities, **THEN** these areas and the communities living within them will reduce their exposure to climate risks and hazards, strengthen their resilience, improve their living conditions, protect and restore their ecosystems and biodiversity. This change is achievable **BECAUSE** specific and tailored actions will have been implemented and nature-based approaches will have been adopted, combined with an effective management of adaptation financing, to address climate-related challenges such as increasing drought frequency and water scarcity, climate-induced reduction in water access, flash floods, erosion of agricultural land, desertification, land degradation, biodiversity loss, declining soil fertility and water resources, economic vulnerability due to climate shocks, socio-economic vulnerability, lack of livelihood alternatives, and weak local governance of natural resources.

Oasis ecosystems are currently managed primarily for short-term agricultural output, with limited integration of climate risks. Water and natural resource management remains largely reactive, fragmented, and reliant on conventional infrastructure. Vulnerable communities, particularly women and youth, have limited decision-making authority and few opportunities for diversified, climate-resilient livelihoods. The proposed project introduces a paradigm shift by moving from reactive to proactive ecosystem-based management. It fosters a transformational change in how oasis ecosystems are managed and how vulnerable communities interact with them. By transitioning from conventional, fragmented adaptation approaches to an integrated, participatory, ecosystem-based model, the project empowers communities, especially women and youth to enhance climate resilience while diversifying their livelihoods. This approach establishes a scalable and replicable model for climate resilience in arid and semi-arid regions.

### Project/Programme Components and Financing:

*Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.*

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
Component 1: Strengthening the adaptive capacity and resilience of the oasis ecosystem	1.1. Improved access to water and strengthened hydrological resilience	1. Strengthened resilience of oasis ecosystems to climate hazards through integrated natural resource management and enhanced wildfire prevention	10,570,000
	1.2. Reduced vulnerability of oasis ecosystems to wildfire risks		1,390,000
	1.3. Strengthened local capacities for wildfire prevention and response		180,000
Component 2: Enhancing the resilience of pastoral ecosystems and livelihoods	2.1. Improved access to water and livestock infrastructure for pastoral communities	2. Enhanced resilience of ecosystems and pastoral livelihoods	1,200,000

	2.2. Enhanced conservation of biodiversity and promotion of environmental initiatives through the sustainable use of local aromatic and medicinal plants	through sustainable rangeland management and the implementation of nature-based solutions	1,200,000
Component 3: Strengthening community resilience and diversifying socio-economic activities	3.1. Increased support for organic oasis farming to combat climate change	3. Strengthened resilient oasis agriculture and economic empowerment of local communities	350,000
	3.2. Strengthened capacities of farmers and local organizations for resilient agriculture		933,894
	3.3. Strengthened agricultural employment and innovative entrepreneurship among youth and women		380,000
4. Strengthening adaptive management and replication through effective knowledge generation, sharing, and learning	4.1. Operational Knowledge Management system sharing knowledge products for decision-making and replication	4. Enhanced knowledge management and learning for informed decisions, adaptive management, and replication of good practices.	165,000
	4.2. Stakeholders engaged in continuous learning and adaptive management		350,000
5. Project/Programme Activities cost			16,718,894
6. Project/Programme Execution cost			1,714,286
7. Total Project/Programme Cost			18,433,180
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			1,566,820
<b>Amount of Financing Requested</b>			<b>20,000,000</b>

## Projected Calendar:

*Indicate the dates of the following milestones for the proposed project/programme*

Milestones	Expected Dates
Start of Project/Programme Implementation	June 2026
Mid-term Review (if planned)	June 2028
Project/Programme Closing	June 2030
Terminal Evaluation	December 2030

## PART II: PROJECT / PROGRAMME JUSTIFICATION

### A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

The overall objective of the proposed project is **to strengthen the resilience and adaptive capacity of oasis ecosystems and vulnerable communities to the impacts of climate change**. The project comprises three interrelated and complementary components that together form an integrated and ecosystem-based adaptation strategy tailored to the specific vulnerabilities of oasis regions: **(i) Strengthening the adaptive capacity and resilience of oasis ecosystems; (ii) Enhancing the resilience of pastoral ecosystems and livelihoods; (iii) Diversifying climate-resilient livelihoods and promoting inclusive socio-economic development**.

The project adopts an **ecosystem-based approach**, grounded in integrated and participatory management of natural resources. This approach considers both the biophysical integrity of the oasis ecosystem and the socio-economic well-being of local populations, particularly women and youth, who are central to the system's sustainability and the most exposed to climate risks.

Building on this approach, the project will implement a set of concrete, context-specific adaptation activities that respond directly to the identified climate risks and vulnerabilities of oasis regions. These interventions are designed to strengthen both ecosystem integrity and community resilience by promoting sustainable natural resource management, nature-based solutions, disaster risk reduction, and diversified livelihoods. The table below provides an overview of the main adaptation activities, the climate stressors they address, and their expected contributions to enhancing climate resilience across the targeted areas.

Concrete Adaptation Action	Climate Risk / Stressor Addressed	Expected Adaptation Benefit / Resilience Outcome
Rehabilitation and development of traditional water infrastructure (khettaras, seguias, recharge thresholds)	Increasing drought frequency and water scarcity	Improved water availability and irrigation efficiency; enhanced hydrological resilience
Installation of solar-powered boreholes	Climate-induced reduction in water access	Sustainable and energy-efficient access to water resources during drought periods
Construction of masonry/gabion walls to protect oasis land and infrastructure	Flash floods, erosion of agricultural land	Reduced physical vulnerability of agricultural areas; protection of key ecosystem assets
Establishment of early warning systems and emergency water points for fire response	Increased frequency and severity of wildfires	Enhanced disaster preparedness and reduced damage to palm groves and natural assets
Promotion of nature-based solutions (re-vegetation, use of aromatic/medicinal plants)	Desertification, land degradation, biodiversity loss	Restoration of degraded land; improved ecosystem services and biodiversity conservation
Promotion of organic and water-efficient farming techniques	Declining soil fertility and water resources	Enhanced agricultural resilience and productivity under climate stress
Strengthening agricultural value chains and market access	Economic vulnerability due to climate shocks	Increased economic resilience and income stability for farmers
Support to women- and youth-led green entrepreneurship and income diversification	Socio-economic vulnerability, lack of livelihood alternatives	Empowered vulnerable groups; diversified livelihoods and improved adaptive capacity
Capacity building of AUEAs and community groups in climate-resilient resource governance	Weak local governance of natural resources	Strengthened local ownership and sustainability of adaptation measures

Together, these interventions are designed to develop and scale up a tailored model of climate adaptation for oasis ecosystems. By addressing the structural drivers of vulnerability—such as water scarcity, land degradation, and socioeconomic exclusion, they aim to establish sustainable and replicable pathways toward enhanced resilience, improved food and water security, and inclusive economic empowerment, particularly for women and young people.

The project is structured around three mutually reinforcing components, which together aim to address the main climate vulnerabilities affecting oasis ecosystems and the livelihoods of the communities that depend on them. Each component contributes to building long-term resilience through ecosystem-based adaptation, sustainable resource management, and inclusive socio-economic development.

### **Component 1: Strengthening the adaptive capacity and resilience of the oasis ecosystems**

This component aims to strengthen the ecological and infrastructural resilience of oasis systems, which are increasingly threatened by the impacts of climate change, including recurrent droughts, flash floods, and wildfires. The intervention adopts an ecosystem-based approach, emphasizing integrated natural resource management, risk prevention, and the active participation of local communities.

The component is designed to contribute to **Outcome 1: Improved access to water and strengthened hydrological resilience in oasis areas**. To achieve this, it focuses on three key outputs:

- Output 1.1: Improved access to water and strengthened hydrological resilience
- Output 1.2: Reduced vulnerability of oasis ecosystems to wildfire risks
- Output 1.3: Strengthened local capacities for wildfire prevention and response

Together, these outputs aim to enhance water security, reduce environmental vulnerability, and empower local stakeholders to adapt to and mitigate the effects of climate hazards.

#### **- Output 1.1: Improved access to water and strengthened hydrological resilience**

To address growing water scarcity and strengthen water security, the project will rehabilitate and develop water mobilization infrastructure and aquifer recharge systems. Key activities include:

- Build 4 new diversion weirs and reinforce 6 existing ones in the Draa Valley, to improve water capture and distribution (Activity 1.1.1)
- Install 30 solar-powered boreholes to support the irrigation of palm groves and reduce dependence on surface water during drought periods (Activity 1.1.2)
- Restore degraded khetaras and seguias, and construct rainwater harvesting and aquifer recharge structures in vulnerable areas (Blida and Tansifte) (Activity 1.1.3). This gravity-based system is more environmentally friendly and allows for more efficient groundwater use.
- Construct additional recharge thresholds to strengthen groundwater availability (Activity 1.1.4)
- Build 15 km of flood protection walls (masonry or gabion) to safeguard agricultural land and irrigation infrastructure (Activity 1.1.5).

The rehabilitation of traditional khetaras and diversion weirs is a strategic response to declining precipitation, more frequent and prolonged droughts, and rising temperatures, which accelerate evaporation, reduce groundwater recharge, and intensify water stress. These changes have led to the deterioration of traditional irrigation infrastructure, threatening the water security of communities. Siltation of weirs and extreme events (flash floods, torrential runoff) further degrade soils and water systems.

Site selection will be undertaken in consultation with the Water Basin Agency (ABH) and Agricultural Water Users Associations (AUEA) to ensure technical relevance and community ownership. The measures will secure reliable access to water for domestic, agricultural, and pastoral use, alleviate pressure on groundwater resources, prevent

desertification, and stabilize oasis agricultural systems. The interventions will directly benefit an estimated 180,000 people (approximately 40% women and 20% youth).

Implemented in close coordination with local and regional authorities, water user associations, and community-based cooperatives, this output will contribute to strengthening institutional capacities, promoting inclusive water governance, and enhancing community resilience. The approach will deliver tangible, scalable adaptation results, reinforcing both ecosystem integrity and local livelihoods.

#### - **Output 1.2: Reduced vulnerability of oasis ecosystems to wildfire risks**

To address the increasing frequency and severity of wildfires, exacerbated by prolonged droughts, land degradation, and the accumulation of combustible biomass, the project will implement a package of early prevention and firefighting preparedness measures. These interventions are critical for safeguarding palm groves, protecting biodiversity, and maintaining the socio-economic functions of oasis ecosystems:

- Clear and maintain 100,000 date palm clusters across the six main palm groves in the Draa Valley to reduce flammable biomass (Activity 1.2.1) by removing plant debris and dried fronds, thereby improving the health and fire resistance of palm trees.
- Establish emergency water points (wells, hydrants, and posts) for wildfire response, particularly during dry seasons (Activity 1.2.2) to ensure a readily available and accessible water supply for firefighting, especially during the driest months.
- Pilot implementation of an early warning and alert system for fire risk management (Activity 1.2.3) to anticipate fire risk and coordinate timely response actions.

Oasis ecosystems are highly susceptible to wildfire outbreaks due to climate change-induced increases in temperature and prolonged droughts, which create ideal conditions for fire ignition and spread. The accumulation of dead palm fronds and organic debris, combined with limited firefighting infrastructure, heightens the vulnerability of these areas. In addition, reduced access within palm groves delays emergency response, increasing the likelihood of severe damage to both ecosystems and livelihoods.

This output will involve close collaboration with Civil Protection Services, Local Authorities, and Agricultural Water Users Associations (AUEA). Debris currently obstruct access paths within the palm groves, hindering movement. Clearing and improving these paths will facilitate the rapid deployment of emergency teams and the evacuation of residents when necessary. Strategic placement of water points will ensure operational efficiency during firefighting. The feasibility study and pilot early warning system will provide a foundation for scaling up fire prevention measures across other oasis regions.

The interventions will significantly reduce the risk of fire outbreaks and their spread, protecting both natural and socio-economic assets. By improving the health and resilience of palm groves, this output will safeguard agricultural productivity, preserve biodiversity, and secure the livelihoods of thousands of people dependent on oasis resources.

#### - **Output 1.3: Strengthened local capacities for wildfire prevention and response**

To ensure sustainability, effectiveness, and local ownership of wildfire risk management, the project will build strong community-based preparedness systems and foster inclusive awareness campaigns. This will enable communities to act swiftly and effectively when faced with climate change-driven fire risks, protecting both lives and ecosystems. Key activities include:

- Distribute 30 fire management kits to enable first-response teams in targeted areas (Activity 1.3.1)
- Organization of 30 community training and awareness sessions on wildfire risks and natural resource management, accompanied by the installation of 120 preventive signage in high-risk zones (Activity 1.3.2).

The increasing frequency, intensity, and unpredictability of wildfires in oasis regions are driven by prolonged droughts, rising temperatures, declining soil moisture, and ongoing ecosystem degradation. These conditions demand proactive, locally led solutions that integrate both modern tools and traditional knowledge to reduce risks and strengthen adaptation.

The project will deploy **integrated, community-based early warning and surveillance systems (EWS)** combining modern technologies—such as thermal sensors, drones, satellite imagery, and automated alerts, with indigenous knowledge and traditional fire management practices. The EWS will provide continuous fire-risk monitoring, real-time alerts via multiple channels (SMS, local radio, sirens), and clear, community-agreed protocols for emergency response.

To ensure strong ownership, over **600 community volunteers** will be mobilized and trained, and **local firefighting brigades** will be established in coordination with **Civil Protection Services, Forestry Departments, and local authorities**. Special attention will be given to women's and youth participation, ensuring inclusive and gender-responsive risk management.

These interventions will significantly enhance local capacity to prevent, detect, and respond to wildfires, protecting approximately 40,000 people living in high-risk zones. Beyond emergency preparedness, this output will contribute to climate adaptation by preventing irreversible losses, safeguarding biodiversity, and preserving critical ecosystem services. It will also strengthen community resilience through participatory governance and ecosystem-based risk reduction.

## **Component 2: Enhancing the resilience of pastoral ecosystems and livelihoods**

This component focuses on strengthening the ecological and socio-economic resilience of pastoral systems in oasis regions, which are increasingly threatened by climate change impacts such as prolonged droughts, overgrazing, land degradation, and biodiversity loss. The intervention aims to secure and sustainably manage grazing resources, promote climate-resilient livestock practices, and diversify pastoral livelihoods.

The approach combines ecosystem restoration with livelihood diversification to reduce vulnerability while enhancing the adaptive capacity of pastoral communities. It emphasizes the restoration of degraded rangelands, the development of water and fodder infrastructure for livestock, and the promotion of nature-based solutions such as the cultivation and valorization of drought-resistant medicinal and aromatic plants. These interventions will be implemented in close collaboration with pastoral associations, local cooperatives, and municipal authorities to ensure ownership and sustainability. The component contributes directly to **Outcome 2: Enhanced resilience of ecosystems and pastoral livelihoods through sustainable rangeland management and the implementation of nature-based solutions**, through two interlinked outputs: Output 2.1: Improved access to water and livestock infrastructure for pastoral communities. Output 2.2: Promotion of environmental initiatives and biodiversity conservation through the sustainable use of local aromatic and medicinal plants. Together, these outputs will help secure the ecological balance of pastoral ecosystems, reduce the risk of livelihood collapse due to climate shocks, and empower vulnerable groups, particularly women and youth, to access sustainable economic opportunities. **Output 2.1: Improved access to water and livestock infrastructure for pastoral communities.** To address the increasing water scarcity and infrastructure deficits affecting pastoral systems in oasis regions, the project will develop and rehabilitate climate-resilient facilities that secure year-round access to water and improve animal welfare. These measures will directly support pastoral livelihoods while reducing pressure on fragile grazing ecosystems. Key activities include:

- Create or rehabilitate 20 solar-powered water points (boreholes, wells, or small-scale pumping systems) (Activity 2.1.1) to ensure a sustainable and energy-efficient water supply for pastoral use.
- Construction of 10 livestock shelters (Activity 2.1.2) to protect animals from extreme heat and adverse weather conditions, reducing mortality and productivity losses.

Pastoral communities in oasis areas are facing a combination of climate-induced stressors, including recurrent droughts, declining groundwater levels, and reduced surface water availability. These changes are compounded by rising temperatures that accelerate evaporation, leading to seasonal water shortages for both livestock and domestic use. The lack of adequate shade, shelter, and fodder storage further increases livestock vulnerability during heatwaves and drought periods. Without timely intervention, these trends threaten the sustainability of pastoral production systems and the socio-economic wellbeing of dependent households. Site selection will be conducted jointly with the Water Basin Agency (ABH), local pastoral associations, and municipal authorities to ensure technical feasibility, community ownership, and equitable access. Designs will integrate solar energy systems to minimize operational costs and greenhouse gas emissions. Training will be provided to community members on the maintenance of water points and infrastructure, ensuring long-term sustainability. The interventions

will: (i) Provide a reliable, climate-resilient water supply for livestock in drought-prone areas ; (ii) Improve animal health and productivity by reducing heat stress and dehydration; (iii) Reduce competition over scarce water resources, mitigating conflict between user groups and (iv) Strengthen the adaptive capacity of at least **15,000 pastoralists**, including women engaged in small-scale livestock production. **Output 2.2: Promotion of environmental initiatives and biodiversity conservation through the sustainable use of local aromatic and medicinal plants.** This output aims to restore degraded oasis and rangeland ecosystems, enhance biodiversity, and diversify local livelihoods by promoting the sustainable cultivation, harvesting, and commercialization of drought-tolerant aromatic and medicinal plants. By integrating ecosystem restoration with value chain development, the intervention addresses both ecological and socio-economic vulnerabilities in pastoral and oasis landscapes. Key activities include:

- Implement land restoration and anti-sand encroachment measures over 1,000 hectares<sup>17</sup> in downstream palm groves to reduce sedimentation in irrigation canals and protect agricultural land from desertification (Activity 2.2.1).
- Promotion of the cultivation, processing, and marketing of local aromatic and medicinal plants (e.g., thyme, rosemary, lavender, artemisia) adapted to the climatic conditions of upstream palm groves. This will include establishing nurseries, providing seedlings, and training on sustainable harvesting techniques (Activity 2.2.2).

Climate change in oasis regions is causing prolonged droughts, land degradation, and biodiversity loss, leading to the decline of native plant species and the ecosystems they support. Traditional aromatic and medicinal plants, adapted to arid conditions, are increasingly threatened by overharvesting, unsustainable land use, and climate-induced habitat loss. Their degradation undermines local ecological resilience and deprives communities, particularly women, of important livelihood sources. Sustainable cultivation and valorization of these species can simultaneously restore ecosystem functions, conserve biodiversity, and create climate-resilient income streams.

Activities will be coordinated with the **High Commission for Water, Forests, and Desertification Control, local cooperatives, and women's associations** to ensure alignment with biodiversity conservation plans and market demand. Participatory training programs will build local capacity in climate-smart cultivation practices, processing methods, and quality control for value-added products. Business support will be provided for cooperative-led commercialization, including packaging, certification, and market linkages.

The expected benefits are (i) the restoration of degraded lands, improving soil stability and reducing erosion; the conservation of native plant species and associated biodiversity; (iii) the increased adaptive capacity of communities through sustainable, climate-resilient livelihoods; (iv) the empowerment of women and youth through active participation in plant cultivation and value chain enterprises and (v) strengthened local knowledge systems for biodiversity management and climate adaptation.

### **Component 3: Diversifying climate-resilient livelihoods and promoting inclusive socio-economic development**

This component targets the socio-economic drivers of vulnerability in oasis regions by promoting sustainable, climate-resilient livelihoods and empowering vulnerable groups, particularly women and youth, to participate in and benefit from green economic opportunities. It combines support for climate-smart agriculture, value chain strengthening, and entrepreneurship development to create diversified income sources that are resilient to climate shocks. The approach integrates **skills development, business incubation, and market access facilitation** with climate-resilient production systems. By enhancing both the adaptive capacity of households and the resilience of local economies, this component helps reduce dependency on climate-sensitive activities while ensuring that socio-economic development does not compromise the ecological integrity of oasis ecosystems. The component contributes to **Outcome 3: Strengthened resilient oasis agriculture and economic empowerment of local communities** through three interlinked outputs:

---

<sup>17</sup> Oasis farms in Morocco remain very small in scale—approximately 0.5 hectares per producer—and are often highly fragmented, which significantly influences agricultural productivity, resource access, and management practices., [https://agritrop.cirad.fr/609734/1/Defis\\_perspectives\\_pastoralisme\\_ovin\\_20240603.pdf](https://agritrop.cirad.fr/609734/1/Defis_perspectives_pastoralisme_ovin_20240603.pdf)

- Output 3.1: Increased support for the development of organic and climate-resilient oasis agriculture.
- Output 3.2: Strengthened capacities of farmers and local organizations for climate-resilient agricultural practices and resource governance.
- Output 3.3: Promotion of agricultural employment and innovative entrepreneurship among young people and women.

Together, these outputs will strengthen value chains, improve market integration, and build inclusive local economies that can adapt to climate variability while generating equitable and sustainable benefits.

### **Output 3.1: Increased support for the development of organic and climate-resilient oasis agriculture**

The output 3.1 aims to promote sustainable, climate-smart agricultural practices in oasis systems, with a focus on organic production, water efficiency, and agroecological diversification. By enhancing productivity while preserving ecosystem functions, it will contribute to both climate adaptation and long-term food security in vulnerable oasis communities. Key activities are related to:

- Promotion of organic date palm cultivation as part of an agroecological diversification strategy, including training on organic farming techniques, compost production, and integrated pest management (Activity 3.1.1).
- Support for the creation of income-generating projects within oasis agricultural value chains, such as processing, packaging, and marketing of high-value organic products (Activity 3.1.2).
- Develop of oasis product value chains (Activity 3.1.3), including: improvement of marketing channels for local products as an economic resilience strategy (Activity 3.1.3.a); and valorization and certification of local products to enhance market competitiveness and secure higher incomes for producers (Activity 3.1.3.b).

Oasis agriculture faces multiple climate threats, including rising temperatures, reduced water availability, soil degradation. Traditional farming methods, which rely heavily on water-intensive and chemically dependent practices, are increasingly unsustainable in the face of prolonged droughts and declining groundwater resources. Transitioning to organic and climate-resilient practices will not only conserve water and soil health but also improve farmers' adaptive capacity and access to premium markets.

Activities will be implemented in collaboration with farmer cooperatives, women's associations, and Agricultural Chambers to ensure local ownership. Organic certification processes will be supported where feasible, and linkages will be established with national and international markets. Training programs will integrate climate-resilient practices, efficient irrigation techniques, and biodiversity-friendly production methods. Expected benefits are : (i) Increased adoption of organic and climate-smart agricultural practices in oasis systems; (ii) Improved water-use efficiency and soil health, reducing climate vulnerability; (iii) Enhanced market access and higher incomes for smallholder farmers through value addition and product certification; (iv) Empowerment of women and youth through active participation in value chains; and (v) Strengthened resilience of local agricultural systems against droughts and climate variability.

### **Output 3.2: Strengthened capacities of farmers and local organizations for climate-resilient agricultural practices and resource governance**

This output focuses on building the technical, organizational, and governance capacities of farmers and their representative organizations to adopt and sustain climate-resilient agricultural practices. It also aims to strengthen community-based governance systems for the equitable and sustainable management of natural resources in oasis areas. Key activities include:

- Train farmers in water-efficient farming techniques, including drip irrigation, mulching, crop rotation, and soil moisture conservation methods (Activity 3.2.1).
- Provide technical and organizational support to professional agricultural organizations (cooperatives, economic interest groups) to strengthen local governance and service delivery (Activity 3.2.2).
- Organize training sessions specifically for women and youth to strengthen their adaptive capacities, encourage their active participation in agricultural value chains, and promote gender equality in resource governance (Activity 3.2.3).
- Facilitate knowledge exchange and peer-to-peer learning on adaptation and resilience between local producers, cooperatives, and institutions (Activity 3.2.4).

Climate change impacts, such as prolonged droughts, erratic rainfall, and extreme temperatures—are reducing agricultural productivity in oasis regions. Farmers often lack technical know-how, financial resources, and institutional support to adapt their practices to these new conditions. At the same time, weak governance of water and land resources can lead to overuse, inequitable access, and further environmental degradation. Building capacities in climate-smart production and participatory resource management is essential to sustaining agricultural systems and protecting the natural resource base.

Training modules will be co-designed with **agricultural extension services, local cooperatives, and research institutions** to ensure technical relevance and adaptability to local contexts. Farmer Field Schools and demonstration plots will be established to promote hands-on learning and showcase best practices. Special measures will ensure the inclusion of women and youth, such as flexible training schedules and targeted mentorship programs.

The expected benefits are : (i) Improved technical capacity of farmers to implement and maintain climate-resilient agricultural practices; (ii) Stronger, better-governed farmer organizations capable of supporting members in climate adaptation; (iii) Greater inclusion of women and youth in decision-making and productive activities; (iv) Enhanced collaboration and knowledge sharing among producers, improving the collective adaptive capacity of the community; and (v) More sustainable and equitable management of water and land resources in oasis regions.

### **Output 3.3: Promotion of agricultural employment and innovative entrepreneurship among young people and women**

This output seeks to create new, climate-resilient economic opportunities in the agricultural sector by supporting youth and women to engage in innovative, sustainable, and market-oriented activities. It aims to reduce unemployment, diversify livelihoods, and foster a new generation of entrepreneurs who integrate climate adaptation into their business models. Key activities include:

- Support innovative ideas and business projects that benefit women, particularly in processing, packaging, and marketing of agricultural products, as well as in climate-smart services such as solar-powered irrigation and sustainable input supply (Activity 3.3.1).
- Promote agricultural occupations and self-employment among young people and women through targeted vocational training, apprenticeships, and start-up support packages (Activity 3.3.2).

In oasis regions, limited job opportunities, especially for women and youth, combined with climate-related challenges such as water scarcity, soil degradation, and declining agricultural productivity, exacerbate poverty and migration pressures. Supporting climate-smart entrepreneurship in agriculture and related value chains can simultaneously strengthen adaptive capacity, boost household incomes, and enhance the resilience of local economies.

Partnerships will be developed with vocational training centers, microfinance institutions, entrepreneurship incubators, and market actors to ensure that trainees can transition from skills development to actual business creation. Selection criteria for supported initiatives will include innovation potential, environmental sustainability, and contribution to climate adaptation. Mentorship programs will link aspiring entrepreneurs with experienced business leaders and technical experts.

The project will create new climate-resilient jobs in the agricultural sector and related value chains, with a strong focus on women and youth, who will represent at least 40% and 30% of beneficiaries respectively. It will strengthen the adaptive capacity of households by diversifying and sustaining income sources through the promotion of sustainable agriculture, value addition to high-value products (dates, medicinal and aromatic plants, Acacia gum, seeds, and honey), and climate-smart services such as solar-powered irrigation.

Over 3,000 individuals will benefit from targeted training in business development, financial management, marketing, climate risk management, and sustainable resource use, while at least 150 cooperatives, micro, and small enterprises will be created or strengthened. Beneficiaries will also receive coaching, technical assistance, and improved access to microfinance to transform skills into viable businesses.

By fostering green entrepreneurship in both agricultural and non-agricultural sectors, such as natural cosmetics, the project will reduce youth unemployment, increase household incomes, and enhance community resilience. This integrated approach will empower marginalized groups to take a leading role in climate adaptation strategies while building a robust local ecosystem for inclusive, climate-resilient economic development.

## **Component 4: Strengthening adaptive management and replication through effective knowledge generation, sharing, and learning**

This component aims to institutionalize a robust Monitoring, Evaluation, and Knowledge Management (MEKM) system that supports evidence-based decision-making, adaptive management, and the replication of successful approaches beyond the project's lifespan. By systematically generating, analyzing, and sharing relevant knowledge products, the component ensures that lessons learned and best practices are embedded into project implementation, inform policy dialogue, and guide future investments.

The approach combines operational systems for capturing and managing data with interactive learning processes and targeted dissemination strategies. Stakeholders at all levels—from national authorities to local communities—will have access to timely, relevant, and actionable information that enhances transparency, accountability, and long-term impact.

The component contributes to **Outcome 4: Enhanced knowledge management and learning for informed decisions, adaptive management, and replication of good practices** through two interlinked outputs:

### **Output 4.1: Operational Knowledge Management system sharing knowledge products for decision-making and replication**

This output focuses on establishing a fully functional MEKM framework, including data collection, analysis, and reporting protocols. Activities will include:

- Developing and operationalizing the MEKM framework (Activity 4.1.1)
- Producing policy briefs, technical reports, and progress/impact reports for national authorities, the ADA, and partners (Activity 4.1.2)
- Maintaining a digital repository of project outputs—such as reports, training materials, and case studies—accessible to all stakeholders (Activity 4.1.3)

### **Output 4.2: Stakeholders engaged in continuous learning and adaptive management**

This output ensures that knowledge is not only produced but actively used to improve practices and outcomes.

Activities will include:

- Organizing annual reflection workshops to validate findings, identify gaps, and integrate lessons learned into ongoing activities (Activity 4.2.1)
- Facilitating peer-to-peer learning exchanges among communities on good practices in water management, fire prevention, and livelihood diversification (Activity 4.2.2)
- Sharing knowledge through community meetings, media releases, and online platforms to promote replication at national and regional levels (Activity 4.2.3)aaBy creating strong linkages between data, dialogue, and decision-making, this component will enhance the project's adaptive capacity, strengthen stakeholder ownership, and maximize the potential for scaling up successful practices.

## **B. Describe how the project/programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.**

The project will directly benefit 250,000 direct beneficiaries and will indirectly reach 1,100,000 indirect beneficiaries<sup>18</sup> in the oasis ecosystems of the Draa region, with women and youth representing 40% and 20% of direct beneficiaries, respectively. Most of the beneficiaries are poor smallholder farmers and pastoralists, whose livelihoods are highly vulnerable to climate change. By focusing on the most exposed groups, including women and youth, the project will ensure equitable benefits, inclusive participation, and enhanced adaptive capacity.

### **▪ Economic benefits**

<sup>18</sup> According to Morocco's latest census (2024), the average household size is 4.4 persons (<https://www.hcp.ma/file/242227/>)

Economically, the interventions will diversify and stabilize household incomes through the promotion of climate-resilient agriculture, and the valorization of date palm by-products and aromatic/medicinal plants. In Morocco overall, annual flood-related losses are estimated at approximately \$450 million. While this includes multiple regions, it underscores the vulnerability to water-related disasters<sup>19</sup>. Sections of the Middle Draa Valley face drying riverbeds, forcing communities to abandon subsistence crops like corn, alfalfa, and vegetables<sup>20</sup>. Rehabilitation of traditional irrigation infrastructure such as khetaras and seguias, the installation of solar-powered boreholes, and the adoption of organic and water-efficient farming techniques will **reduce water-related costs, improve yields, and increase resilience to drought**. Green jobs will be created both during **infrastructure works and in the long term through strengthened value chains and women- and youth-led green enterprises, in line with Fund Outcome 6 and Output 6.2.1 on livelihood diversification under climate change scenarios**.

- **Social co-benefits**

Socially, the project will strengthen local governance of natural resources through the training of Agricultural Water Users Associations (AUEAs) and cooperatives, ensuring participatory decision-making and sustainable management. Improved access roads, wildfire emergency water points, and drinking water supply systems will enhance public safety and quality of life. Support for traditional agricultural practices will help preserve the cultural heritage of oasis communities while fostering social cohesion, directly contributing to Fund Outcome 4 and Output 1.2 on adequate risk reduction systems.

- **Environmental co-benefits:**

Environmentally, the project will improve water security through aquifer recharge and efficient irrigation, increasing water use efficiency by 30%. Soil conservation and dune stabilization over 1,000 ha will protect 5,000 ha of palm groves, while measures to regulate flood velocity will reduce soil losses, preserving fertile land and reducing downstream sedimentation. Biodiversity-friendly management of rangelands and the cultivation of drought-resistant aromatic and medicinal plants will restore degraded land and enhance ecosystem services. Fire prevention measures, including community-based early warning systems, will reduce the risk of irreversible biodiversity loss, **aligning with Fund Outcome 5 and Output 5.1 on strengthening natural resource assets**.

- **Compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund**

Gender equality is integrated throughout the project cycle, informed by **a preliminary gender analysis conducted during the concept design phase. At least 40% of beneficiaries will be women, with targeted training, market access facilitation, and leadership opportunities, while 20% of participants will be youth engaged in entrepreneurship, vocational training, and governance roles**. This is consistent with the Adaptation Fund's Gender Policy and Action Plan.

All activities will comply with the Environmental and Social Policy (ESP) of the Adaptation Fund. Environmental and social risk screening has been carried out at concept stage, and during implementation, activities with moderate to substantial risks will be subject to Environmental and Social Impact Assessments (ESIAs) and proportionate management plans (**refers to part II, section E**). Stakeholder representatives will be engaged throughout implementation and monitoring, supported by a transparent grievance redress mechanism. By integrating indigenous practices, aligning with regional development plans, and embedding awareness-raising on sustainable water use, fire prevention, and nature-based solutions, the project will ensure long-term sustainability while avoiding or mitigating any adverse impacts.

Through this integrated approach, the project will deliver measurable contributions to the Fund's key results: **Outcome 4 on strengthening adaptive capacity in relevant development sectors, Outcome 5 on protecting ecosystem services, and Outcome 6 on enhancing climate-resilient livelihoods**. The combination of concrete adaptation

<sup>19</sup> [https://rosaluxna.org/publications/the-water-challenge-in-morocco-a-growing-crisis/?utm\\_source=chatgpt.com#\\_ftn5](https://rosaluxna.org/publications/the-water-challenge-in-morocco-a-growing-crisis/?utm_source=chatgpt.com#_ftn5)

<sup>20</sup> <https://www.jadaliyya.com/Details/43606>

actions, such as rehabilitating traditional water infrastructure, promoting organic farming, supporting women- and youth-led entrepreneurship, and implementing community-based early warning systems, will translate into tangible economic, social, and environmental benefits, directly improving resilience, food security, and socio-economic empowerment in the Draa's oasis and pastoral systems.

#### ▪ **Avoiding or mitigating negative impacts**

The following measures will ensure that project activities are implemented in a manner that avoids or mitigates adverse social or environmental impacts.

- In terms of compliance with environmental and social policies (ESP), during the formulation phase of this project concept note, a screening of environmental and social risks was carried out, in accordance with the principles of the Adaptation Fund. During the implementation of the project, each activity presenting moderate to substantial risks will be subject to an environmental and social impact assessment. Environmental and social risk management plans, proportional to the assessed risks, will be developed at the project formulation stage.
- As far as stakeholder consultation and participation are concerned, representatives of the beneficiary community are involved in the design of the project. They will be closely involved during the project implementation and monitoring phase. Similarly, an accessible and lucid complaints management and feedback mechanism will be put in place to record, process and respond to stakeholders' complaints and claims.
- With regard to the alignment and collaboration of government structures, the project's objectives have been integrated into regional, provincial and local development plans.
- In terms of specific measures, the results of component 1 involve the sustainable mobilization of water resources, rainwater harvesting and groundwater recharge. In addition, water and soil conservation actions are planned using good ancestral practices. Component 2 aims to promote the diversity of local crops and aromatic plants, as well as enhancing the value of local products and those made from acacia radiana.
- The gender aspects are strongly integrated in the concept note and will be fully developed during the formulation of the project with a detailed action plan to achieve the objectives detailed above.
- Cross-cutting actions will be planned to ensure monitoring and surveillance as well as training and awareness-raising on the various themes and issues addressed by the project, i.e. water-saving cultivation practices, fire prevention, pre- and post-creation training, etc.

### **C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.**

The adaptation benefits of the project are designed to be sustained beyond its implementation phase through a combination of local empowerment, institutional capacity building, and the use of low-maintenance, climate-resilient technologies. The proposed project seeks to ensure optimal use of Adaptation Fund resources by targeting high-impact, locally relevant measures identified through inclusive, participatory consultations. These measures directly address the drivers of vulnerability in oasis and pastoral ecosystems, delivering long-term adaptation benefits while remaining cost-efficient.

The project's USD 20,000,000 investment will reach approximately 250,000 direct and 1,100,000 indirect beneficiaries, about USD 80 per direct beneficiary. This compares favorably with the Climate Change Adaptation Project in Oasis Zones (PACC-ZO)<sup>21</sup>, funded by the Adaptation Fund, which costs USD 65 per direct beneficiary<sup>22</sup>. While slightly higher, the proposed project covers a broader geographic area, integrates both oasis and pastoral systems, and incorporates fire prevention, nature-based solutions, and livelihood diversification, features not all present in the PACC-ZO.

Key interventions, rehabilitation of khetaras, construction of solar-powered boreholes, and diversion weirs, are proven to deliver sustained access to water for irrigation, livestock, and domestic use. These infrastructures are adapted to harsh oasis conditions, require low maintenance, and will be managed by trained local associations, reducing long-term dependency on external support.

<sup>21</sup> [https://fifspubprd.azureedge.net/afdocuments/project/9/9\\_Final\\_AFB\\_PPRC\\_16\\_12-Proposal-for-Morocco\\_0.pdf](https://fifspubprd.azureedge.net/afdocuments/project/9/9_Final_AFB_PPRC_16_12-Proposal-for-Morocco_0.pdf)

<sup>22</sup> [https://fifspubprd.azureedge.net/afdocuments/project/9/PACCZO\\_Report%20phase%202\\_Final%20edition\\_English%20version.pdf](https://fifspubprd.azureedge.net/afdocuments/project/9/PACCZO_Report%20phase%202_Final%20edition_English%20version.pdf)

The proposed project prioritizes cost-effective, sustainable interventions over less efficient alternatives. For example, the use of solar-powered boreholes and rehabilitation of existing wells is significantly more economical than drilling new deep boreholes or relying on water trucking. Empirical evidence from Ghana shows that rehabilitating boreholes can yield a cost–benefit ratio of 2.8, and drilling new ones can reach 4.5, highlighting strong economic returns and reduced operating costs over time<sup>23</sup>. Studies in Morocco show that the cost of pumping 1 m<sup>3</sup> of water is on average **33 % lower** in Sidi El Aidi and **61 % lower** in Fquih Ben Salah compared to LPG-powered systems, with a positive net present value for solar investments<sup>24</sup>

Similarly, gabion or masonry retaining walls are more suitable and economical than conventional concrete structures, especially in arid, remote environments. Gabion walls offer superior drainage, adapt to shifting soils, require minimal foundations, and have lower construction and maintenance costs due to the use of local materials. In contrast, concrete walls demand deep foundations, suffer from thermal cracking in hot climates, and involve higher labor and material costs<sup>25</sup>.

Alternatives such as water trucking or reliance on diesel-powered pumps were rejected due to high operating costs, energy dependence, GHG potential emissions and low community ownership. The selected measures, rehabilitated khetaras, solar-powered boreholes, and gabion flood protection, offer greater durability, community-led management, and lower life-cycle costs.

Moreover, community preparedness and climate risk management will also be strengthened. The establishment of community-based early warning and surveillance systems (EWS), combined with the training of over 600 local fire response volunteers, will significantly improve the ability of vulnerable communities to prevent and respond to climate-induced disasters such as wildfires. These systems will continue to operate through community ownership and local institutional engagement.

Furthermore, to ensure the long-term sustainability of its outcomes, the project is anchored in a robust institutional, financial, social, and environmental framework. Institutional sustainability will be secured through the strong engagement of regional and communal authorities at every stage of the project. These actors will be supported in integrating climate adaptation priorities into territorial planning and budgetary processes.

On the financial front, special provisions will target women and youth entrepreneurs, enabling them to invest in climate-resilient livelihoods and maintain project benefits beyond its lifespan. These mechanisms, coupled with capacity building in financial management and market access, will empower local groups to generate revenues for the upkeep of infrastructures (e.g., water systems, fire prevention equipment) and reinvest in sustainable land and resource management practices.

Social sustainability will be ensured through inclusive and participatory processes, with a strong emphasis on empowering women and youth. Mechanisms such as setting gender quotas (20%) in community-based groups—fire response brigades, water user associations, and local planning committees will guarantee women’s active participation in decision-making and implementation. These groups will receive targeted training and be assigned clear roles and responsibilities, ensuring local ownership and continuity of actions after project completion. By promoting nature-based solutions and sustainable land management practices, the project will not only address immediate climate vulnerabilities but also enhance long-term ecosystem resilience, reduce land degradation, and conserve biodiversity.

---

<sup>23</sup> Cha S, Cho Y, Kim SJ, Lee Y, Choi S, Asuming P, Kim Y, Jin Y. Cost-benefit analysis of water source improvements through borehole drilling or rehabilitation: an empirical study based on a cluster randomized controlled trial in the Volta Region, Ghana. *Glob Health Action*. 2018;11(1):1523303. doi: 10.1080/16549716.2018.1523303. PMID: 30270794; PMCID: PMC7011988.

<sup>24</sup> <https://edepot.wur.nl/572884>

<sup>25</sup> <https://www.hitechgabion.com/blog/gabion-wall-44/gabion-walls-vs-concrete-walls-for-desert-climates-197>

**D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programmes of action, or other relevant instruments, where they exist.**

Over the past two decades, Morocco has taken steps to combat climate change, and adaptation has been identified as a key priority for Morocco.

Thus, the current project is designed within the policy frameworks adopted by Morocco in terms of climate change adaptation. According to the Climate Action Tracker (CAT), Morocco's climate objectives and policies are considered "almost sufficient"<sup>26</sup> and the targets set as part of its unconditional commitment correspond to its fair contribution under the Paris Agreement. Oases are among the priorities of the Moroccan government. The sustainable development of oases is enshrined in the National Sustainable Development Strategy (NSSD)-2030 and in the various sectoral strategies and action plans. Preserving the oasis ecosystem is one of the Moroccan government's priorities. To this end, the Agence Nationale pour le Développement des Zones Oasiennes et de l'Arganier (ANDZOA) (National Agency for the Development of Oasis and Argan Zones) was created in 2010 with the mission of coordinating and steering sectoral policies and improving the living conditions of oasis populations by promoting integrated and sustainable oasis management, with a focus on water resource management, agriculture and ecotourism. In 2023, a new strategy for the development of the oasis and argan zones by 2030 was drawn up, based on three strategic guidelines: (i) Increasing the resilience of territories and ecosystems to climate change; (ii) Improving the social well-being of people in rural and urban areas; (iii) Diversify the region's economy to make it more competitive and focus on high value-added sectors. According to the Morocco's New Development Model (2021), the Commission calls for the consolidation of efforts in favour of agricultural development by fully integrating sustainability constraints. It recommends a rapid transition to crops that are resilient to climate hazards and have high added value, as well as structural responses focused on: (i) optimising water use, in particular by prioritising irrigation for crops that ensure national food security and ensuring that export crops make efficient use of water; and (ii) rationalising agricultural energy consumption through greater penetration of renewable energies, particularly through the expansion of solar energy use for water pumping. The proposed project is therefore aligned with the national strategies priorities, plans, legislation and aspirations of Morocco's government in link with sustainable development of the oases.

Table 1 shows the link between the project and the identified-related plans and strategies.

**Table 1: Link between the project and the identified-related plans and strategies**

<b>Identified adaptation-related plans and strategies</b>	<b>Description and link with the designed project</b>
National Strategic Adaptation Plan (PNSA) (2020-2030) <sup>27</sup>	PNSA provides a roadmap for 2020-2030, with a concerted and inclusive framework to support adaptation planning and priority actions to make the population and the territory more resilient to climate change. The proposed project is aligned with the PNSA through its strategic objectives 3 (Prevent and reduce the impacts of climate risks on security, health, economic, social, and cultural systems, as well as on public and private assets and the population as a whole, in the context of climate change); strategic objective 4 (Strengthen the resilience of natural resources and ecosystems to climate change through approaches that combine ecosystem preservation with support for sustainable livelihoods); strategic objective 5 (Enhance the resilience of the most vulnerable economic sectors to climate change).

<sup>26</sup> This rating indicates that Morocco's climate policies and commitments are almost in line with the 1.5°C temperature limit set by the Paris Agreement and could achieve this compliance with moderate improvements.

<sup>27</sup> Ministère de la Transition Énergétique et du Développement Durable, Département du Développement Durable (2022). Plan national Stratégic d'Adaptation (PNSA-2030), 90 P.

Identified adaptation-related plans and strategies	Description and link with the designed project
National Strategy for Natural Risk Management (2020-2030) <sup>28</sup>	The National Strategy for Natural Risk Management sets out a comprehensive approach to disaster and climate-related risk management. The vision behind this strategy is to reduce vulnerability and strengthen the resilience of populations and territories to natural disasters in order to ensure sustainable development. Its mission was to contribute, through a participatory approach, to the protection of lives and property from the effects of natural disasters. Thus, the proposed project will contribute to the prevention of climate-related risks and enhancement of resilience through activities such as (i) protecting agricultural land and irrigation infrastructure against floods, (ii) creating emergency water points (wells, fire hydrants, standpipes) for managing drought-related fires, and (iii) promoting the use of fire-fighting kits for first-response interventions at the local level.
Revised Nationally Determined Contribution (NDC) <sup>29</sup>	Morocco has revised its Nationally Determined Contribution (NDC) with an improved mitigation target. This revised NDC intensifies action by strengthening its objectives in the four sectors covered by the 2016 NDC (agriculture, water, fisheries and aquaculture, and forestry) and adds other sectors and territories: sensitive areas (coastline, mountains and oases), urban and rural planning and health. The NDC targets a 45.5% reduction in greenhouse gas emissions by 2030 compared with the reference scenario (under the revised NDC, 18.3% of this target is unconditional, and the remaining 27.2% is conditional on obtaining international aid), representing an overall increase of 3.5 percentage points in its mitigation target compared with the 2016 NDC. The total cost of the mitigation actions included in the NDC is estimated at USD 38.8 billion, of which USD 21.5 billion is for conditional actions, and the implementation of this NDC requires significant investments. Therefore, the implementation of the proposed adaptation project, with a total cost of USD 17,465,270, will contribute to the achievement of the new NDC through financial, technological, and logistical resources, as well as human capacity building.
National Drinking Water Supply and Irrigation Programme (PNAEPI) (2020-2027)	PNAEPI aims to ensure sustainable access to drinking water and irrigation throughout the country, particularly in the face of water stress challenges. The program is structured around the following main pillars: (i) improving water supply, (ii) managing demand and enhancing water use efficiency, (iii) strengthening drinking water supply in rural areas, (iv) promoting the reuse of treated wastewater, and (v) communication and awareness-raising. The current adaptation project will contribute to achieving the objectives of the PNAEPI through Output 1.1 (Improved access to water and strengthened hydrological resilience) and Output 2.1 (Improved access to water and livestock infrastructure for pastoral communities), thereby enabling Morocco to address the significant challenges of water stress affecting its territory.
Morocco Forest Strategy (2020-2030)	The objective of this strategy is to make the forestry sector more competitive and sustainable through an inclusive and wealth-creating management model that places local communities at the heart of forest management. The Morocco Forest Strategy (2020-2030) is in line with the proposed project with its orientation 5 such as protection of the biodiversity.
"Generation Green 2020-2030" strategy	The "Generation Green 2020-2030" Strategy is based on two main pillars: prioritising the human element and sustaining the development momentum of the agricultural sector. The proposed project is consistent with this strategy through its second pillar such as: the development and consolidation of agricultural production sectors, the improvement of marketing and distribution conditions for agricultural products, the structuring and modernization of distribution chains, the promotion of quality, digitalization, innovation

<sup>28</sup> Ministère de l'intérieur (2021). Stratégie Nationale 2020 - 2030 de Gestion des Risques des Catastrophes Naturelles

<sup>29</sup> Contribution Déterminée Au Niveau National -Actualisée (2021). <https://unfccc.int/NDCREG>

Identified adaptation-related plans and strategies	Description and link with the designed project
	and Green-Tech, as well as the development of sustainable and climate-resilient agriculture. This is reflected through activity 2.2.2. (Promotion of local aromatic and medicinal crops and plants adapted to the climatic conditions of upstream oases); Activity 3.1.1. (Promotion of organic farming as an agroecological diversification strategy); Activity 3.3.1. (Support for innovative ideas and projects that benefit women); activity 3.3.2. (Promotion of agricultural occupations and self-employment among young people and women); activity 3.1.3. (Development of the value chain for oasis products : improvement of marketing channels to strengthen economic resilience; valorization and labeling of local products to strengthen livelihoods in the face of climate hazards)
National Climate Plan 2020-2030 (PCN 2030)	The PCN 2030 was developed to promote sustainable and climate-resilient development. It based on five pillars: (i) establishing stronger climate governance; (ii) building resilience to climate risks; iii) accelerating the transition to a low-carbon economy; (iv) including territories in the climate dynamic; and (v) building human, technological and financial capacities. The proposed adaptation project is aligned with the pillar ii (building resilience to climate risks); and pillar v (building human, technological and financial capacities)

**E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.**

Morocco has a clear and comprehensive legal framework. Since the late 1980s, numerous laws and administrative provisions have been promulgated by the competent administrative authorities and covering a wide range of topics related to environmental protection and improvement, sanitation, classification and management of solid waste, disposal methods, the conservation of protected areas and historical monuments and sites, inscriptions, artworks and antiquities. Accordingly, the project has been developed to ensure full compliance with national technical standards and the applicable legal framework in Morocco, and the Environmental and Social Policy of the Adaptation Fund. All project activities, from selection to implementation, will be governed by Moroccan legislation and regulations, particularly those relating to infrastructure development, environmental protection, agriculture, water resources management, and organization of the communes.

The adaptation project activities such as the construction of weirs, installation of boreholes, establishment of solar-powered water points, construction of masonry or gabion walls (to protect agricultural land and irrigation infrastructure from flooding), rehabilitation of degraded khettaras, and construction of rainwater harvesting structures, and cleaning and maintenance of date palm clumps to reduce fire vulnerability, will comply with national norms and standards, under Law 12-03 on Environmental Impact Assessments, Law no. 49-17 on Environmental Assessment, Law n°01-06 on the sustainable development of palm groves and the protection of the date palm (*Phoenix dactylifera*), and related legislation, which control environmental impact assessment, ecosystems restoration, and the protection of date palms in Morocco.

Environmental screening will be conducted for all project interventions, and where applicable, ESMPs/ESMFs will be formulated and validated by the relevant authorities.

The project will be implemented in adequation with the Adaptation Fund’s Environmental and Social Policy (ESP), to ensure that project activities do not lead to maladaptation.

Furthermore, the project will integrate regular monitoring, participatory audits, and consultations with national stakeholders into its environmental and social management framework to maintain compliance and address emerging risks effectively.

Throughout its implementation, the project will adopt a gender-responsive and inclusive approach, safeguard vulnerable populations, value indigenous knowledge, and respect human rights standards.

The main texts and regulations of the general legal framework relevant to the Project's activities are presented in Table 2.

**Table 2: Relevant standard / policy /framework for the Project**

<b>Standard / Policy/Framework</b>	<b>Scope and Relevance to the Project</b>	<b>Compliance Approach</b>
Framework Law n°99-12 on the National Charter for the Environment and Sustainable Development	Establishes the overarching principles for environmental protection, sustainable development, and climate resilience, applicable to all project activities.	Integrate the charter's principles into project design, ensuring sustainability, biodiversity conservation, and low-carbon development pathways.
Law 12-03 on Environmental Impact Assessments and Law 49-17 on Environmental Assessment	Applies to all development projects with potential environmental impacts, including water infrastructure, flood protection, and land restoration	All relevant activities (e.g. rehabilitation of khetaras, construction of gabion/masonry walls, solar-powered boreholes) will undergo environmental screening. ESMF will be prepared and validated by the relevant authorities
Law n°36-15 on Water	Regulates the protection, use, and allocation of water resources, relevant to khetaras rehabilitation, borehole drilling, and rainwater harvesting systems.	Rehabilitation of water infrastructure, construction of recharge thresholds, and installation of solar-powered boreholes will be designed in line with basin agency requirements and receive formal authorization. Adoption of water-efficient technologies and practices in all interventions.
Dahir 1-69-170 on Soil Protection and Restoration	Ensures preservation of agricultural soils and prevention of erosion.	Integrate soil conservation measures into design, including floods and erosion control structures (gabions, masonry walls) and land restoration techniques.
Law 01-06 on Sustainable Development of Palm Groves and Protection of Date Palm ( <i>Phoenix dactylifera</i> )	Protects palm groves, regulates interventions affecting date palms and promotes their sustainable management.	All palm grove fire prevention measures (cleaning/maintenance of date palm clusters) will comply with technical standards and be coordinated with relevant agricultural authorities
Labour Code (Law n°65-99) and Occupational Safety and Health Conventions (Act n°16-12; Act n°18-12)	Defines labour rights, occupational safety standards, and worker compensation obligations.	Enforce OSH measures on worksites; provide Personal Protective Equipment (PPE); ensure accident insurance coverage for workers involved in project activities (e.g. construction of weirs, installation of solar-powered boreholes, construction of flood protection walls)
Organic Law 113-14 on Communes	Decentralises local governance and assigns responsibilities for infrastructure planning and approvals.	Engage municipal councils in co-design and validation of infrastructure; secure local authorisations prior to implementation.
Dahir of 1914 on the Public Domain	Governs the use, protection, and occupation of public land	Obtain occupation permits from relevant authorities before commencing works on public land (e.g. construction of gabion/masonry walls)
Law n°22-07 on Protected Areas	Ensures the protection of biodiversity and ecosystems within designated conservation zones, and provides a framework for their conservation, restoration, and sustainable use	Conduct biodiversity screenings; avoid interventions that negatively affect protected areas; and Nature-based solutions (revegetation with native aromatic/medicinal plants) will follow NBSAP priorities and receive validation from forestry/environmental authorities.
Framework Law n°97-13 on the Rights of Persons with Disabilities	Promotes accessibility and inclusion in public infrastructure and services.	Design all facilities and infrastructure to be accessible to persons with disabilities.

Standard / Policy/Framework	Scope and Relevance to the Project	Compliance Approach
Law n°103-13 on Combating Violence Against Women	Establishes measures to prevent gender-based violence, promote gender equality, empower youth, and protect vulnerable groups	Integrate GBV prevention protocols into community engagement and livelihood programs. Women- and youth-led entrepreneurship, capacity building, and livelihood diversification initiatives will adopt gender-sensitive approaches aligned with national strategies.
Law n°09-21 on Social Protection	Expands social protection coverage for vulnerable populations.	Link project-generated employment and training opportunities with national social protection programmes.
Disaster Risk Management Framework	Establishes early warning systems, emergency preparedness, and disaster response protocols.	The pilot wildfire early warning system and emergency water points will be developed in coordination with the national Civil Protection Directorate.
National Building Code & Local Construction Bylaws	Governs structural design and safety for public infrastructure.	Climate-resilient infrastructure (e.g., gabion walls, fire emergency points) will adhere to national building codes and be approved by municipal engineering services.
Adaptation Fund Environmental and Social Policy (ESP)	Establishes 15 principles covering human rights, gender equality, biodiversity, indigenous rights, and environmental protection	All project activities have been screened in accordance with the Environmental and Social Policy (ESP), and identified risks will be addressed through the implementation of the Environmental and Social Management Plan (ESMF)

**F. Describe if there is duplication of project/programme with other funding sources, if any.**

The project will help to strengthen the dynamics of integrated territorial development in the oases and will complement actions already undertaken, completed or planned (i) by the Moroccan Government as part of the Regional Agricultural Plan drawn up as part of the new Agricultural Strategy for 2030 "Generation Green", particularly the programme for the Draa basin, (ii) projects financed within the framework of multilateral or bilateral cooperation.

The proposed adaptation project does not duplicate existing initiatives financed by other sources; rather, it complements and reinforces ongoing and planned climate adaptation efforts in Morocco.

**Table 3: Project duplication with other funding sources**

Climate changes adaptation project in oasis zones – PACC-ZO (2015-2020)	
Description and objectives	The PACC-ZO project, financed by the Adaptation Fund, aimed to improve the adaptability of populations in Oasis areas to the impacts of climate change. The project specifically focused on improving the adaptive capacity of the water sector, diversifying livelihoods, and enhancing the living conditions of populations vulnerable to climate change in the targeted areas. It also sought to strengthen ecosystem resilience to climate change and variability, raise awareness among all stakeholders through effective knowledge management and sharing, and build the capacities of participants in designing and implementing adaptation measures. The PACC-ZO project mainly covers two areas such as the Intermediate Gheris Basin and the Maïder Basin.

Complementarity and synergy	By focusing on strengthening the ecological and socio-economic resilience of pastoral systems in oasis regions, promoting the cultivation, processing, and marketing of local aromatic and medicinal plants, and fostering sustainable, climate-resilient livelihoods while empowering vulnerable groups, particularly women and youth, this proposed project will complement the interventions implemented under PACC-ZO. Together, both projects are complementary to enhance the resilience and adaptive capacity of oasis ecosystems and vulnerable communities to the impacts of climate change in Morocco
Duplication	There is no duplication, because PACCO-ZO has been implemented in the Intermediate Gheris Basin and the Maïder Basin, whereas the proposed adaptation project will be carried out in the Draa Basin.
<b>Revitalising Oasis Agro-ecosystems through a Sustainable, Integrated and Landscape Approach in the Draâ-Tafilalet Region (OASIL) (2017-2021)</b>	
Description and objectives	OASIL financed by the Global Environment Facility (GEF) and co-financed by the FAO and the Moroccan Government, the project aimed to improve oasis agroecosystems to make them more productive, resilient, and sustainable, while supporting local livelihoods in Morocco's Draa-Tafilalet region. OASIL intends to achieve this objective working along 4 components such as: (i) Component 1 -Policy dialogue (Support policy dialogue at the national and regional levels on the sustainable management); (ii) Component 2 - Planning and monitoring (Improvement of Natural Resource Management and Sustainable Production Intensification planning and monitoring systems at regional and local level of oasis agro-ecosystems); (iii) Component 3 - Pilot demonstration (Sustainable and integrated oasis agro-ecosystem management and investment plans are implemented in pilot oasis ecosystems in at least 2 sub-drainage basins); and (iv) Component 4 - Monitoring, evaluation and knowledge management.
Complementarity and synergy	OASIL strengthened the resilience of local communities, promoted the sustainable management of water, land, and biodiversity, enhanced the protection of vital oasis ecosystems, fostered the sustainability of oasis agro-systems, and diversified livelihoods through an integrated landscape approach based on multi-level, multi-sectoral, and multi-stakeholder participation. The proposed project will build on the actions undertaken by OASIL to strengthen ecosystem integrity and community resilience by promoting sustainable natural resource management, nature-based solutions, disaster risk reduction. The proposed adaptation project will equally promote local aromatic and medicinal crops adapted to the climatic conditions of upstream palm groves, promote organic date farming as an agroecological diversification strategy, and develop the oasis product value chain to enhance productivity and ensure food security in the targeted areas.
Duplication	No duplication. Although both projects (OASIL and the proposed project) target the Drâa region, the proposed adaptation project will operate specifically in the Drâa Basin and focus on different localities for its interventions.
<b>Sustainable management of oasis ecosystems in Morocco project (2024-2026)</b>	
Description and objectives	The project is financed by the World Bank and aims to strengthen the sustainable oasis ecosystems management for climate resilience in Aoufouss and Akka and develop a national standard for integrated oasis management. This project has three components such as: (i) Institutional Strengthening and Sharing of Innovative Oasis Knowledge, has the following sub-components; (ii) Restoration of Oasis Ecosystems and Livelihoods; and (iii) Project Management will support project management, communication, monitoring, and implementation at the national and regional levels.
Complementarity and synergy	The “Sustainable management of oasis ecosystems in Morocco project” Supported capacity building for locally led climate action, development of a gender strategy for ANDZOA, and of strengthening risk management systems; development of national guidelines for preparing gender and climate-sensitive Integrated Local Development Plan; and development and dissemination of a national framework for integrated Oasis management. It also promotes innovative solutions geoinformatics platform, restoration of Oasis landscapes and ecosystem services, improves and enhances the economic, social, and environmental sustainability of the livelihoods of vulnerable groups. The proposed project will supplement activities undertaken in the “Sustainable management of oasis ecosystems in Morocco project” to strengthen the resilience and adaptive

	capacity of oasis ecosystems and vulnerable communities to the impacts of climate change in the project areas by promoting organic farming, improving marketing channels. It will also work to valorize and label local products, support innovative ideas and projects benefiting women. Both Projects are complementary to improve the living conditions of populations and foster good health of the oasis ecosystems.
Duplication	There is no duplication. Only the activities in Akka is situated in Drâa basin, while Aoufouss are not. In addition, the interventions of the proposed project will be carried out in localities different from those of Akka.
<b>Development Project of Saffron and Date Palm in the region of Draa Tafilalet and Souss-Massa (2013-2019)</b>	
Description and objectives	This project was financed by Belgium and aimed to (i) Develop and enhance the value of the saffron sector in a more equitable and sustainable way in the Taliouine Circle and in the Taznakht area; and (ii) Develop and enhance the value of the date sector in a more equitable and sustainable way in the ORMVAO's area of action. It also sought to improve the income of rural families through increased production and productivity, improved product quality and value, and advantageous access to markets. The project covered 4 provinces, namely: Taroudant Province (Souss-Massa Region); Ouarzazate Province, Tinghir Province and Zagora Province (Drâa-Tafilalet Region).
Complementarity and synergy	The proposed adaptation project will reinforce the “Development Project of Saffron and Date Palm in the region of Draa Tafilalet and Souss-Massa” project interventions in the Drâa basin, common to the two projects. Nature-based, reduced vulnerability of oasis ecosystems to wildfire risks, increased support for organic oasis farming to climate change promoted by the proposed project will supplement interventions supported by the “Development Project of Saffron and Date Palm in the region of Draa Tafilalet and Souss-Massa” project to build resilience of vulnerable communities in Drâa basin.
Duplication	No duplication, because the proposed project will support the improvement of the resilience of pastoral ecosystems and livestock herders' livelihood by building new diversion weirs and reinforce existing ones, installing solar-powered boreholes to support the irrigation of palm groves and reduce dependence on surface water during drought periods, building 15 km of flood protection walls (masonry or gabion) to safeguard agricultural land and irrigation infrastructure. In addition, the proposed project will operate in localities different from those of the “Development Project of Saffron and Date Palm in the region of Draa Tafilalet and Souss-Massa” project.

## G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Knowledge management is essential to learning and the project cycle. The project will implement targeted actions to capture, manage, and share information. Overseen by the Project Management Unit (PMU) and led by the M&E Officer in collaboration with stakeholders, the Monitoring, Evaluation, and Knowledge Management system will: (i) generate, analyze, and share policy briefs, technical reports to inform adaptive management and guide project decisions; (ii) provide timely progress and impact reports to national authorities, Implementing Entity ADA and partners.

Learning and Knowledge Management activities will include:

- annual reflection workshops to validate findings, identify gaps, and integrate lessons into ongoing activities.
- Peer-to-peer learning exchanges among communities to share good practices in water management, fire prevention, and livelihood diversification.
- A digital repository housing reports, training materials, and case studies, accessible to all stakeholders.

Public dissemination through community meetings, media releases, and online platforms will ensure knowledge products reach decision-makers and practitioners, promoting replication of successful approaches beyond the project's lifespan.

## **H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.**

The idea for this project emerged from a comprehensive participatory diagnostic process initiated by the National Agency for the Development of Oasis and Argan Tree Areas, in close coordination with the decentralized services of the Ministry of Agriculture and Maritime Fisheries, local authorities, and a broad range of local stakeholders. These include development associations, cooperatives, and second-tier professional organizations active within the targeted intervention zones. This inclusive, participatory approach has been instrumental in identifying priority needs, ensuring that proposed actions are context-specific, and fostering local ownership. It constitutes a cornerstone for the effective implementation and long-term sustainability of the project's adaptation measures.

The methodology adopted was participatory, inclusive, and tailored to the local context. It encompassed: (i) open community workshops to foster collective dialogue; (ii) focus group discussions with women, youth, civil society organizations (CSOs), and local leaders; (iii) the collection of both individual and collective inputs; and (iv) qualitative assessments of local needs and practical recommendations for climate adaptation.

civil society representatives, women's associations, and youth groups, thereby ensuring broad-based participation, strong local ownership, and the integration of diverse perspectives into project design.

The initial stakeholder engagement began with targeted consultations led by the Ouarzazate Regional Office for Agricultural Development (ORMVAO) in collaboration with beneficiary communities, technical partners, and civil society actors. These discussions were informed by a thorough analysis of existing constraints and by recommendations from previous programmes, which served as the foundation for defining project objectives, expected results, and preliminary activities.

The second phase was field consultations that was undertaken from 11 to 14 June 2024, covering the six palm groves of the Draa Valley to assess ecosystem and socio-economic constraints. Two formal meetings with ORMVAO management that included consultation and orientation meeting and feedback and fine-tuning meeting to validate and refine proposed interventions based on stakeholder inputs. The one-site prospection enabled: (i) identification of general and site-specific constraints linked to drought, soil erosion, salinity, silting, and irrigation inefficiencies; (ii) direct engagement with farmers, cooperatives, and community representatives to incorporate local knowledge and priorities into the design of adaptation actions. The participatory identification of priority actions is summarized in the following table.

**Table 4: participatory identification of priority actions**

Steps	Description	Key outcomes
Participatory Identification of Priority Actions	<p>Through a participatory and consensus-based process, stakeholders jointly identified and validated a set of priority interventions under four main components:</p> <ul style="list-style-type: none"> <li>- C1 - Strengthening the adaptive capacity and resilience of the oasis ecosystem: Improving water resource management, restoring soils, preventing fires, combating dune encroachment, and rehabilitating key infrastructure.</li> <li>- C2 - Enhancing the resilience of pastoral ecosystems and livelihoods: strengthening the ecological and socio-economic resilience of pastoral systems in oasis regions, which are increasingly threatened by climate change impacts such as prolonged droughts, overgrazing, land degradation, and biodiversity loss</li> <li>- C3 - Diversifying climate-resilient livelihoods and promoting inclusive socio-economic development: promoting sustainable, climate-resilient livelihoods and empowering vulnerable groups, particularly women and youth, to participate in and benefit from green economic opportunities</li> <li>- C4 - Strengthening adaptive management and replication through effective knowledge generation, sharing, and learning: Institutionalizing a robust Monitoring, Evaluation, and Knowledge Management (MEKM) system that supports evidence-based decision-making, adaptive management, and the replication of successful approaches beyond the project's lifespan</li> </ul>	<ul style="list-style-type: none"> <li>- Four main components clearly defined and agreed upon.</li> <li>- Interventions grounded in local realities and technical assessments.</li> <li>- Strong stakeholder ownership of proposed measures.</li> </ul> <p>Priorities raised by communities:</p> <ul style="list-style-type: none"> <li>- Training farmers in the various techniques available for water-saving irrigation and maximizing the use of this vital resource;</li> <li>- Improving marketing channels for oasis agricultural products;</li> <li>- Promoting organic products especially dates, for future national and global market value.</li> <li>- Labelling and developing the market for local products, particularly "Tahlaoute" date syrup;</li> <li>- By-products from the oases can be recycled as compost, animal feed or materials to combat water evaporation in the field, to save water.</li> <li>- The second strand of actions for this component relates more to the development of entrepreneurship around oasis trades and the empowerment of rural women and young people through the following: <ul style="list-style-type: none"> <li>- Support for initiatives to create income-generating projects and organization of training and capacity-building sessions for women and young people.</li> <li>- Support and capacity building for a professional agricultural organization.</li> <li>- Promoting agricultural trades and encouraging self-employment among rural women and young people (e.g. creating marketing showcases for agricultural and craft products);</li> <li>- Support for guest infrastructures, ecolodges, and catering centers as part of the development of agro-ecotourism;</li> <li>- Capacity building for tourist guides and escorts.</li> <li>- Support and financial backing for the implementation of innovative project ideas for the benefit of rural women.</li> </ul> </li> </ul>
Validation and Alignment	<p>The process concluded with a final feedback session, consolidating technical findings and community perspectives. This ensured that proposed actions were consistent with community priorities, regional development plans, and ORMVAO's strategic objectives, while maintaining complementarity with existing initiatives.</p>	<ul style="list-style-type: none"> <li>- Alignment with local, regional, and institutional strategies.</li> <li>- Avoidance of duplication with other programmes.</li> <li>- Optimisation of resources and synergies with ongoing interventions.</li> </ul>

## I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

According to the IPCC's 4<sup>ème</sup> climate assessment report, many countries have stressed that the major challenge for the future is the need for international support for the implementation of their National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs).

In terms of mitigation, Morocco has set a target of reducing its GHG emissions about 45.5% by 2030, through support from the international community. Morocco has also committed an unconditional target of reducing GHG emissions by 18%. The overall target of 45.5% requires an investment estimated at around US\$50 billion between 2010 and 2030:

The conditional target requires the mobilization of an investment estimated at US\$24 billion and is conditioned by access to new sources of financing and additional support, compared to that received in recent years.

For the period 2020-2030, Morocco has estimated that the cost of implementing adaptation programs in the water, forestry and agriculture sectors, which are the sectors most vulnerable to climate change, requires more than 35 billion US dollars. Morocco's Green Investment Plan focuses on an urgent need that concerns approximately 2.5 billion USD.

Morocco's oases in general, and those in the project area (Draa Valley) in particular, are being heavily impacted by the effects of climate change. Indeed, the degradation of Moroccan palm groves has accelerated sharply over the last 10 years, with the loss of almost 2/3 of their palm trees and a third of their production. The factors causing the oases degradation include :

- Water scarcity, conditioned upstream by the persistence of recurrent droughts and amplified if situ by certain failures in hydro-agricultural and water supply systems.
- The advance of silting, to the detriment of roads, farmland and the efficiency of water circulation networks (clogging).
- The shortage of human and financial resources available to operators and local players concerned about the sustainable development of their area.

The constraints have contributed to an erosion of the livelihoods of the most vulnerable populations and to an acceleration in the abusive extraction of natural resources, which will logically significantly increase the costs of inaction in the short and medium term.

Maintaining the ecosystem services of oases and their economies is crucial and requires major investment. Public action currently remains the only lever for mitigating the risks of an irreversible situation with regard to safeguarding these ecosystems and the many formal and informal jobs linked to them, particularly in the agriculture and ecotourism sectors.

### **Component 1: Strengthening the adaptive capacity and resilience of the oasis ecosystem**

#### **Trend scenario**

The survival of oasis areas depends on the mobilization of water using various techniques. On average, the region receives less than **80 mm of rainfall per year**. 98% is used for agriculture (75% of needs are met). Climate change is expected to exacerbate the risk of fire and disease (notably Bayoud disease, which destroyed 10 million palm trees in a century). Similarly, in the project area, extreme events such as droughts and floods are already common and are expected to become more frequent, reducing soil moisture, accelerating desertification, negatively impacting agricultural productivity and exerting additional pressure on limited groundwater resources.

#### **Scenario with the Project**

Component 1 of the project aims to support activities to adapt and improve the water balance through the sustainable use of conventional water, rainwater harvesting and groundwater recharge. The project will also support activities to combat flood damage, which threatens agricultural land and water infrastructures, as well as concrete actions to prevent fires.

The budget allocated by the AF will enable the financing of the full costs of concrete adaptation measures by improving the

efficiency and sustainability of groundwater catchment and irrigation, as well as the sustainable intensification of agricultural production, namely:

- (i) the construction and reinforcement of 10 diversion weirs, (ii) the construction of 20 community boreholes to meet the population's needs for drinking water, irrigation water and livestock watering, (iii) the rehabilitation of traditional hydraulic structures (khetaras) in association with rainwater collection structures.
- (iv) the construction of 4 flood control weirs and (v) the protection of 15 km of traditional palm groves.
- (vi) Cleaning date palms to reduce flammable biomass and minimize the risk of fires spreading, (vii) Building access roads inside oases to enable emergency teams to intervene quickly and effectively in the event of a fire, (viii) Installing wells, hydrants and fire hydrants that are permanently accessible, (x) distributing 30 fire-fighting kits to the population to ensure immediate, preventive intervention as soon as a fire breaks out, and lastly (xi) raising public awareness of fire risks and preventive measures, the rational use of natural resources and collective responsibility for preserving our oases.

## **Component 2: Strengthening community resilience and diversifying socio-economic activities**

### **Trend scenario**

In 2021, the poverty rate among the inhabitants of the oases was 16%, compared to a national average of 9%. The oasis population is vulnerable to climate change. This population is currently trapped in a vicious cycle combining ecological degradation and impoverishment.

In the project area, the economic activities that contribute most to the livelihoods of the population (including arboriculture, livestock farming, tourism, crafts and energy) depend on the continuity of the essential functions fulfilled by the oases in the face of the effects of climate change and other threats.

Without urgent investment in strengthening climate-sensitive livelihood activities, the repercussions of the acute and chronic impacts of climate change will severely affect the ability of vulnerable communities in the oasis to secure their livelihoods. These problems are exacerbated by limited access to financing and other sources of income, particularly for women, youth, the elderly and people with disabilities.

### **Scenario with the FA Project**

To address this situation, component 2 of the FA project will fund the full costs of adaptation to diversify more climate-resilient livelihood activities and catalyze income generation by prioritizing vulnerable groups.

The project actions proposed under component 2 will help to develop more climate-resilient livelihoods in the Draa oases. The logic is to target actions that will have a positive impact on the most vulnerable populations by promoting the products, knowledge and heritage characteristic of oasis environments.

Indeed, activities such as disseminating good practices, building the capacities of professional organizations and project leaders, promoting organic farming, labeling local products and improving their marketing will (i) increase the added value of the targeted agricultural products and value chains, (ii) improve competitiveness and productivity and (iii) improve the incomes of vulnerable groups, particularly women and youth. Economic diversification will focus on non-agricultural activities (ecotourism, crafts, etc.) that are less sensitive to the effects of the climate.

## **J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project/programme.**

From the outset, the project has embedded sustainability at its core, combining financial, institutional, social, economic, regulatory, technical, and environmental measures to sustain and enhance benefits beyond implementation. This integrated approach secures lasting results through strong institutional, technical, environmental, financial, and social foundations.

## **Strengthened resilience of oasis ecosystems to climate hazards through integrated natural resource management and enhanced wildfire prevention (Outcome 1)**

The project enhances oasis ecosystem resilience through integrated natural resource management and wildfire prevention. Interventions include improved water mobilization, rehabilitation of traditional irrigation systems, and protection of farmland and infrastructure to reduce vulnerability to droughts and floods. Wildfire risks are addressed via community engagement, training, and locally managed response tools.

Sustainability is ensured through:

- Institutional: Community-based natural resource management committees embedded in municipal development plans.
- Financial: Dedicated municipal budget lines and local maintenance funds financed by water user fees and revenues from sustainable oasis products.
- Regulatory: An operating contract modeled on the Feija agreement<sup>30</sup>, establishing a participatory governance framework among water users, local authorities, and stakeholders for coordinated management of surface and groundwater resources.
- Technical and Environmental: Promotion of sustainable irrigation practices to prevent overexploitation, combined with ongoing capacity building in adaptive management and wildfire prevention.

This integrated mechanism ensures continuous ecosystem stewardship, promotes efficient water use, and safeguards agricultural productivity under changing climate conditions.

## **Enhanced resilience of ecosystems and pastoral livelihoods through sustainable rangeland management and the implementation of nature-based solutions (Outcome 2)**

The project strengthens pastoral and farming systems by improving water security, protecting livestock, and promoting climate-adapted production. Key measures include installing solar-powered water points, upgrading livestock shelters, enhancing soil and irrigation management, and cultivating locally adapted crops and medicinal plants. These actions curb land degradation, increase productivity, and diversify household incomes.

Sustainability is ensured through:

- Institutional: Community-led management of water points and rangelands, integrated into local governance frameworks.
- Financial: Locally generated revenues and user fees to maintain infrastructure and support rangeland stewardship.
- Technical and Social: Capacity building for herder cooperatives and farmer groups in adaptive practices and resource management.
- Collaborative Governance: Platforms for herders and farmers to negotiate water allocations, maintain healthy rangelands, and coordinate adaptation actions during droughts and climate shocks.

This approach embeds long-term ecosystem health and livelihood resilience within community institutions, ensuring that nature-based solutions remain functional and beneficial beyond the project's lifespan.

## **Strengthened resilient oasis agriculture and economic empowerment of local communities**

The project promotes resilient oasis agriculture and boosts community economic empowerment by supporting diversified, climate-smart income-generating activities. Interventions include organic farming, value chain development for oasis products, improved marketing channels, and product labeling to enhance productivity and market access. These measures enable farmers to secure sustainable income despite climatic variability. Capacity-building initiatives—such as training on water-efficient farming techniques and targeted sessions for women and youth—foster long-term adaptive skills and inclusive participation in agricultural

---

<sup>30</sup> <https://www.abhdon.ma/article/contrat%20nappe%20feija%20zagora>

livelihoods. Sustainability is further reinforced through locally led innovative projects, particularly those benefiting women and young people, stimulating entrepreneurship and self-employment. Institutional sustainability is anchored in the Draa Basin Groundwater Contract, which promotes equitable access to irrigation water, ensures integration of governance mechanisms into local water management and municipal plans, and institutionalizes participatory decision-making between water users, local authorities, and other stakeholders. By combining income diversification, technical capacity development, community-led initiatives, and strengthened market linkages with robust financial, institutional, social, regulatory, and environmental measures, the project secures long-term agricultural productivity, economic resilience, and adaptive capacity in the Draa Basin beyond the project's lifespan.

### **Sustained Adaptation Benefits and Replication Potential**

The project ensures long-term adaptation benefits by embedding robust financial, institutional, social, and environmental measures while strengthening local capacities and promoting knowledge sharing on adaptation and resilience.

- **Resilient Oasis Ecosystems:** Water mobilization, irrigation rehabilitation, and wildfire prevention are sustained through trained community-based committees integrated into municipal plans. Knowledge on sustainable water and land management is transferred through ongoing local training programs, enabling replication in other oasis and arid areas.
- **Sustainable Pastoral Livelihoods:** Solar-powered water points, rangeland restoration, and climate-adapted agriculture are maintained by local cooperatives trained in adaptive management. Peer-to-peer exchanges between communities ensure that these practices spread to other pastoral zones.
- **Climate-Resilient Oasis Agriculture** Farmers, especially women and youth, receive training in organic farming, water-efficient practices, and market strategies. Locally led demonstration plots and farmer-to-farmer exchanges foster continuous knowledge transfer. The Feija-style groundwater contract ensures governance continuity, making replication in similar socio-economic contexts feasible.

By combining strengthened capacities, institutionalized knowledge-sharing mechanisms, resilient infrastructure, and inclusive governance, the project secures adaptation benefits that endure and can be scaled up across vulnerable regions.

Thus, the project embeds sustainability into its governance, financing, and capacity development strategies, ensuring that ecosystem services, climate-resilient livelihoods, and community empowerment continue to strengthen over time, even without external funding.

### **Institutional Sustainability**

- Stakeholders will be identified and empowered through agreements and contracts that clarify responsibilities and promote long-term engagement.
- The project will leverage existing institutions at both central and local levels for supervision and implementation, embedding results into official structures and ensuring continuity after project completion.

### **Environmental Sustainability**

- Interventions are designed for the specific climatic and ecological conditions of the project area, prioritizing sustainable water mobilization, rainwater harvesting, and water and soil conservation to address climate-related water scarcity.
- Fire protection and prevention measures, co-managed by communities, will safeguard oasis ecosystems, maintain biodiversity, and strengthen resilience to climate hazards.

### **Technical Sustainability**

- Activities are adapted to the oasis context, aligning with ancestral know-how while integrating modern, climate-smart techniques to ensure both relevance and durability.
- Continuous training, community demonstration sites, and knowledge exchange mechanisms will enable local actors to maintain and replicate practices over time.

**K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.**

The project is classified as **Category B** because its activities, such as the construction of small-scale infrastructure (dike rehabilitation, Seguia restoration, borehole installation), are expected to result in localized, temporary, and reversible environmental and social impacts. These impacts can be effectively managed through the implementation of standard mitigation measures. The following table provides a detailed review of the project's potential environmental and social risks, along with the mitigation measures planned to ensure full compliance with all relevant principles.

The following table reviews the potential environmental and social impacts:

<b>List of environmental and social principles</b>	<b>No conformity assessment required</b>	<b>Justification Potential risks / impacts - assessment required for compliance</b>
<b><i>Compliance with the law</i></b>	The project is in full compliance with Moroccan national laws and regulations, particularly those related to environmental protection, water resource management and citizens' rights.	Minor  All activities will be carried out in adherence to the national legal framework (see Part II, section E) and the project's own Environmental and Social Management Framework (ESMF).
<b><i>Access and equity</i></b>	The project's inclusive and participatory approach ensures all stakeholders, including marginalized communities, are involved. However, there is a minor risk of uneven distribution of benefits if not closely monitored.	Minor  The project management unit (UGP) will ensure a transparent and accessible communication strategy and continuous dialogue with the communities to guarantee equitable access to project benefits.
<b><i>Marginalised and vulnerable groups</i></b>	The project is specifically designed to benefit marginalized and vulnerable groups, with a particular focus on young people and women in the Draa oases. No negative impacts on these groups are anticipated.	Minor  Specific project components (e.g., green entrepreneurship, training) are tailored to the needs of these groups to enhance their resilience and economic empowerment.
<b><i>Human rights</i></b>	The project contributes positively to the human rights of vulnerable populations by improving access to clean water and food security, which are directly impacted by climate change.	Minor  N/A (Positive impact).
<b><i>Gender equality and women's empowerment</i></b>	While the project aims for positive gender outcomes, there is a risk that traditional social structures could limit women's full participation and access to project benefits. The initial gender assessment reveals that women in the Draa oases play a crucial, yet often unrecognized, role in agriculture and water management.	Minor  The project will implement a specific Gender Action Plan. It will promote women's leadership roles in local water management associations (AUEA) and ensure their direct participation in decision-making processes. Targeted trainings and entrepreneurship support will focus on sectors that empower women economically, such as the valorization of local products.

<b><i>Fundamental labour rights</i></b>	The project will ensure all labour rights, as defined by national law and international conventions, are respected. There is a minor risk of non-compliance by subcontractors.	Minor  Contractual clauses will be included for all service providers and contractors to ensure compliance with labour rights, including fair wages, safe working conditions, and non-discrimination.
<b><i>Indigenous peoples</i></b>	The project area does not host indigenous populations as defined by the Adaptation Fund.	Minor  Broad community support will be obtained. Serious documentation of stakeholder engagement will be done
<b><i>Involuntary relocation</i></b>	The project will not cause physical or economic displacement of communities.	Minor  No expropriation, relocation of people will be undertaken. However, if this occurs, a provision will be made for compensation.
<b><i>Protecting natural habitats</i></b>	The project is designed to enhance the integrity of oasis ecosystems. There is a minor risk of temporary disturbance during construction activities.	Medium  All construction activities will be confined to designated areas and will be monitored to minimize any temporary disturbance to local habitats. The overall impact is positive.
<b><i>Conservation of biological diversity</i></b>	The project contributes positively to local biodiversity by rehabilitating oasis ecosystems and promoting sustainable agricultural practices. No negative impacts are anticipated	(Positive impact)  Better management of water resources, protection of agricultural lands against water and wind erosion, protection and promotion of local crops and SMEs will contribute to the improvement of biodiversity conservation in oasis areas.
<b><i>Climate change</i></b>	The project's primary objective is to build climate resilience. The only minor negative impact is the temporary emission of greenhouse gases from construction machinery.	Minor  The project's positive impact on climate change adaptation far outweighs the minor temporary emissions during construction.
<b><i>Pollution prevention and resource efficiency</i></b>	There is a minor risk of pollution from construction waste, dust, and potential runoff affecting water quality.	Minor  A detailed waste management plan will be implemented. All construction activities will be monitored to prevent soil erosion and water contamination. Some minor risks could arise in: <ul style="list-style-type: none"> <li>- Modification in surface runoff, which could negatively impact the downstream areas of the interventions</li> <li>- Changes in the water quality of the wadis along the segments affected by the construction of infrastructure..</li> <li>- Potential pollution during the construction phase.</li> </ul> If necessary, mitigation measures will be taken (see table below). The project promotes water efficiency through improved irrigation techniques.

<b>Public health</b>	The project is expected to have a significant positive impact on public health by improving water access and sanitation. The risk of waterborne diseases will be reduced.	Positive impact. Improving water resource management will notably reduce the risk of waterborne diseases related to drinking water quality. Maintaining date palm clumps will reduce the risk of fire. Promoting organic and agro-ecological farming will reduce the use of pesticides and herbicides harmful to health.
<b>Physical and cultural heritage</b>	No impacts on cultural heritage sites are expected. The project contributes to the preservation of the traditional oasis landscape and its cultural heritage.	Minor. Sites to be selected will not be in a known or suspected cultural heritage area
<b>Land and soil conservation</b>	The project aims to combat land degradation through sustainable agricultural practices and soil conservation. Medium, temporary soil disturbance may occur during construction.	Medium Construction will be managed to minimize soil disturbance. The overall long-term impact on soil health is positive due to improved land management practices.  (Positive impact) Wall for combating water erosion and floods, and fighting against sand encroachment will ensure the long-term conservation of land and soil in these oases.

Indeed, it is clear that the impacts of this project are mostly temporary and/or localized, and of low severity.

The benefits, risks and mitigation measures are detailed in the following table:

	Positive spin-offs	Risks (Potential negative impacts)	Proposed mitigation and/or accompanying measures
<b>C1 Strengthening the adaptation and resilience of the oasis ecosystem</b>			
<b>S/C 1.1 Mobilisation of water resources and water and soil conservation</b>			
<b>1.1 Conventional water resources mobilised and groundwater recharge reinforced</b>	<ul style="list-style-type: none"> <li>Improving adaptive capacities for better management of water resources in oasis zones.</li> <li>Improving the efficiency of use of traditional hydraulic infrastructures (seguia, diversion and recharging sills, etc.).</li> <li>Helping to save the oases.</li> </ul>	<ul style="list-style-type: none"> <li>Risk associated with the social acceptability of the planned hydraulic developments.</li> <li>Infrastructure management and operation risk.</li> <li>Risk of non-compliance with E&amp;S requirements during the works phase.</li> </ul>	<ul style="list-style-type: none"> <li>Support for the participation of the populations concerned in the selection of locations for the planned hydraulic facilities.</li> <li>Consideration of management and operating methods.</li> <li>Strengthening the grievance mechanism.</li> <li>Integration of contractual clauses for compliance with E&amp;S requirements for all service providers involved).</li> <li>E&amp;S monitoring of works.</li> </ul>
<b>1.2 Reducing flood damage and protecting farmland</b>	<ul style="list-style-type: none"> <li>Protecting oases from damage caused by soil erosion.</li> <li>Improving water and soil conservation.</li> <li>Protection of arable land: perimeter protection (retaining walls, gabions, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>Risk of non-adherence and/or low participation by local people in the planned erosion control measures (poor anchoring could have a negative impact).</li> </ul>	<ul style="list-style-type: none"> <li>Support for an eco-design approach to erosion control.</li> <li>Integrated design of erosion control measures (Combining mechanical and biological actions to combat erosion).</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Appropriateness of the techniques proposed.</li> <li>▪ Risk of non-compliance with E&amp;S requirements during the works phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Raising awareness and training farmers to combat water erosion.</li> <li>▪ Integration of contractual clauses to ensure compliance with E&amp;S requirements and E&amp;S monitoring of works.</li> </ul>
	<b>S/C 1.2 Preventive fire-fighting management</b>		
<b>1.3. Palm groves maintained, developed and equipped</b>	<ul style="list-style-type: none"> <li>▪ Strengthening preventive risk management and fire-fighting measures.</li> <li>▪ Helping to protect oases from the risk of fire.</li> <li>▪ Improved accessibility to oasis areas, which will make them more attractive.</li> <li>▪ Connectivity improvement for local populations .</li> <li>▪ Access to social and economic services (health, schools, souks, etc.), particularly for women.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risks related to the social acceptability of access developments within oases (issues related to involuntary land acquisition for road infrastructure within palm groves, associated social conflicts, economic displacement, etc.).</li> <li>▪ Risk of neglecting E&amp;S aspects and their inadequate consideration during technical studies and/or preparing unsatisfactory (specific) environmental studies or not including appropriate E&amp;S requirements in the bidding documents (DAO) .</li> <li>▪ Risk of non-compliance with E&amp;S requirements during the works phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Support for prior consultations with the population concerned for access developments within the oases (</li> <li>▪ Amicable arrangement between beneficiaries).</li> <li>▪ Prioritising the choice of existing access points within oases.</li> <li>▪ Strengthening the grievance mechanism.</li> <li>▪ Use of solar lighting for access roads.</li> <li>▪ Consideration of how to maintain the trails.</li> <li>▪ Integration of contractual clauses for compliance with E&amp;S requirements for all contractors and E&amp;S monitoring of works.</li> </ul>
<b>1.4. Public awareness and involvement in fire-fighting</b>	<ul style="list-style-type: none"> <li>▪ Creation of water points (wells, hydrants and hydrants)</li> </ul>		
	<ul style="list-style-type: none"> <li>▪ Helping to save the oases.</li> </ul>		
	<b>S/C 1.3 Implementation of nature-based solutions</b>		
<b>1.5. Combating silting and promoting the use of acacia radiana</b>	<ul style="list-style-type: none"> <li>▪ Protecting oases from wind erosion.</li> <li>▪ Protection of farmland and waterworks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risks relating to the social acceptability of access developments within oases (issues relating to the involuntary acquisition of the land needed to build tracks within palm groves, related social conflicts, economic displacement, etc.).</li> <li>▪ Risk of neglecting E&amp;S aspects and taking little account of them when carrying out technical studies and/or preparing unsatisfactory (specific) environmental studies or not including appropriate E&amp;S requirements in the bidding documents (DAO).</li> <li>▪ Risk of non-compliance with E&amp;S requirements during the works phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Support for prior consultations with the population concerned for access developments within the oases (</li> <li>▪ Amicable arrangement between beneficiaries).</li> <li>▪ Prioritizing the choice of existing access points within oases.</li> <li>▪ Strengthening the grievance mechanism.</li> <li>▪ Use of solar lighting for access roads.</li> <li>▪ Consideration . of methods for the maintenance and upkeep of the constructed roads.</li> <li>▪ Integration of contractual clauses to ensure compliance with E&amp;S requirements for all contractors and E&amp;S monitoring of works</li> </ul>

<p><b>1.6. Safeguarding and supporting biodiversity</b></p>	<ul style="list-style-type: none"> <li>▪ Promoting local crops and aromatic and medicinal plants</li> <li>▪ Strengthening biodiversity</li> <li>▪ Diversifying sources of income for communities, while enhancing native biodiversity and strengthening food security.</li> <li>▪</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of non-adherence and/or low participation by beneficiaries.</li> <li>▪ Sustainability risk for selected projects.</li> <li>▪ Risk of not meeting the required hygiene quality standards.</li> <li>▪ Risk of non-compliance with E&amp;S requirements during the works phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Support for prior consultations with the population concerned about developments</li> <li>▪ Integration of contractual clauses to ensure compliance with E&amp;S requirements for all service providers;</li> </ul>
<p><b>C2. Strengthening community resilience and diversifying socio-economic activities</b></p>			
<p><b>S/C 2.1. Adding value to oasis products and disseminating good practice</b></p>			
<p><b>2.1. Promoting local and agricultural products</b></p>	<ul style="list-style-type: none"> <li>▪ Promoting good practice in sustainable water and soil management in oasis areas.</li> <li>▪ Enhancing the ecological potential of oasis areas, particularly high value-added forest species (acacia radiana)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of non-adherence and/or low participation by beneficiaries.</li> <li>▪ Sustainability risk for selected projects.</li> <li>▪ Risk of not meeting the required hygiene quality standards.</li> <li>▪ Risk of non-compliance with E&amp;S requirements during the works phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Support for prior consultations with the population concerned about developments</li> <li>▪ Integration of contractual clauses for compliance with E&amp;S requirements for all service providers.</li> </ul>
<p><b>2.2 Good practices disseminated</b></p>	<ul style="list-style-type: none"> <li>▪ By spreading good practice, oasis farmers can increase the added value of their products while ensuring environmental sustainability.</li> <li>▪ Special attention will be given to cultivation techniques that improve water management, reduce water losses and ensure sustainable agricultural production even under conditions of limited water resources.</li> <li>▪</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of non-adherence and/or low participation by beneficiaries.</li> <li>▪ Sustainability risk for selected projects.</li> <li>▪ Risk of not meeting the required hygiene quality standards.</li> <li>▪ Risk of non-compliance with E&amp;S requirements during the works phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Support for prior consultations with the population concerned about developments</li> <li>▪ Integration of contractual clauses for compliance with E&amp;S requirements for all service providers.</li> </ul>
<p><b>S/C 2.2. Strengthening entrepreneurship around oasis trades and supporting women's economic empowerment</b></p>			
<p><b>2.3. Entrepreneurship projects based on agricultural trades supported</b></p>	<ul style="list-style-type: none"> <li>▪ Positive impact on the most vulnerable sections of the population by promoting the products, knowledge and heritage characteristic of oasis environments.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of non-adherence and/or low participation of women.</li> <li>▪ Sustainability risk for selected projects.</li> <li>▪ Risk of not meeting the required hygiene quality standards.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consideration of project management and operating procedures.</li> <li>▪ Integration of contractual clauses for compliance with E&amp;S requirements for all service providers.</li> </ul>
<p><b>2.4 Innovative initiatives to empower women and young people supported</b></p>	<ul style="list-style-type: none"> <li>▪ Contribution to the economic empowerment of vulnerable categories, particularly young people and women in the oases..</li> <li>▪ Revitalization of local economic activity and diversification of income sources for women.</li> <li>▪ Contribution to the development of local products marketing and</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of non-compliance with E&amp;S requirements during the works phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ E&amp;S monitoring of works.</li> </ul>

	<p>the improvement of the marketing offer for oasis products.</p> <ul style="list-style-type: none"><li>▪ Restoring the traditional oasis landscape</li><li>▪ Contribution to the creation of employment opportunities in the project area.</li></ul>		
--	---	--	--

## PART III: IMPLEMENTATION ARRANGEMENTS

### A. Demonstrate how the project/programme aligns with the Results Framework of the Adaptation Fund

The general and specific objectives of the proposed project, as well as its expected results, are strongly aligned with several Adaptation Fund outcomes, **Outcome 1** (Reduced exposure to climate-related hazards and threats), **Outcome 4** (Increased adaptive capacity within relevant development sector services and infrastructure assets), **Outcome 5** (Increased ecosystem resilience in response to climate change and variability-induced stress), **Outcome 6** (Strengthened individual and community livelihood strategies in relation to climate change impacts), and **Outcome 8** (Viable innovations rolled out, scaled up, encouraged and/or accelerated)—and their corresponding outputs.

The table below maps the objectives and outcomes of the proposed project to the Fund’s respective outcomes, outputs, and indicators:

Project Objective(s) <sup>1</sup>	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Strengthen the adaptive capacity and resilience of oasis ecosystems	<ul style="list-style-type: none"> <li>- Number of climate-resilient water infrastructure assets constructed, rehabilitated, or operational</li> <li>- Number of hectares of oasis ecosystems and palm groves under improved risk reduction and climate-resilient management</li> <li>- Number of people (sex- and age-disaggregated) benefiting from improved access to water, wildfire risk reduction systems, and strengthened local adaptive capacities.</li> </ul>	Outcome 4: Increased adaptive capacity within relevant development sectors	4.1: Number of assets (physical as well as knowledge) created, developed, improved, or restored to improve resilience to climate change	19,485,000
Enhance the resilience of pastoral ecosystems and livelihoods	<ul style="list-style-type: none"> <li>- Number of climate-resilient pastoral infrastructure assets constructed or rehabilitated</li> <li>- Number of hectares of rangeland and oasis ecosystems restored or placed under sustainable biodiversity-friendly management</li> <li>- Number of people (sex- and age-disaggregated) benefiting from improved pastoral water access, livestock protection</li> </ul>		4.2: Number of natural resource assets created, developed, improved, or restored to improve resilience to climate change	

	infrastructure, and diversified climate-resilient livelihoods.			
Diversify climate-resilient livelihoods and promote inclusive socio-economic development.	<ul style="list-style-type: none"> <li>- Number of farmers and local organizations (sex- and age-disaggregated) adopting climate-resilient and organic agricultural practices</li> <li>- Number of climate-resilient agricultural value chains and enterprises (including women- and youth-led) created or strengthened</li> </ul>	Outcome 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability.	6.2.1: Type of income sources for households generated under climate change scenario.	
<b>Project Outcome(s)</b>	<b>Project Outcome Indicator(s)</b>	<b>Fund Output</b>	<b>Fund Output Indicator</b>	<b>Grant Amount (USD)</b>
Outcome 1. Improved access to water and strengthened hydrological resilience in oasis areas	<ul style="list-style-type: none"> <li>- Number of people covered by operational Wildfire prevention systems</li> <li>- Number of operational emergency water points</li> </ul>	Output 1.2: Targeted population groups covered by adequate risk reduction systems	1.2.1: Percentage of target population covered by adequate risk-reduction systems	12,140,000
	<ul style="list-style-type: none"> <li>- Number of traditional water infrastructure rehabilitated or constructed to provide water under climate variability and change</li> <li>- Number of operational solar-powered boreholes</li> </ul>	Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.2: Number of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	
Outcome 2. Enhanced resilience of ecosystems and pastoral livelihoods through sustainable rangeland management and the implementation of nature-based solutions	<ul style="list-style-type: none"> <li>- Number of hectares under biodiversity-friendly management.</li> <li>- Number of aromatic/medicinal plant species sustainably cultivated.</li> </ul>	Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability	5.1: Number of natural resource assets created, maintained, or improved to withstand conditions resulting from climate variability and change (by type and scale)	2,400,000

Outcome 3. Strengthened resilient oasis agriculture and economic empowerment of local communities	<ul style="list-style-type: none"> <li>- Number of solar-powered irrigation systems installed or operational</li> <li>- Number of innovative climate-smart enterprises and services established or strengthened</li> <li>- Percentage of supported enterprises adopting climate-smart practices</li> </ul>	Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled up and/or replicated	1,663,894
	<ul style="list-style-type: none"> <li>- Number of beneficiaries trained in climate-resilient livelihoods and entrepreneurship</li> <li>- Percentage increase in beneficiaries' income from diversified sources</li> <li>- Percentage reduction in household dependence on climate-sensitive activities</li> </ul>	Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.2.1: Type of income sources for households generated under climate change scenario.	

---

<sup>1</sup> The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

## **PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY**

### **A. Record of endorsement on behalf of the government**

*Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments as possible if a regional project/programme:*

ROYAUME DU MAROC

MINISTÈRE DE LA TRANSITION ÉNERGÉTIQUE  
ET DU DÉVELOPPEMENT DURABLE

Département du Développement Durable

DCDB



14 FEV. 2025

المملكة المغربية

- ⴰⵎⵓⵔⴰ ⵜⴰⵎⴰⵔⵉⵜ

وزارة الانتقال الطاقى والتنمية المستدامة

ⴰⵎⵓⵔⴰ ⵜⴰⵎⴰⵔⵉⵜ ⵜⴰⵎⴰⵔⵉⵜ ⵜⴰⵎⴰⵔⵉⵜ

قطاع التنمية المستدامة

ⵜⴰⵎⴰⵔⵉⵜ ⵜⴰⵎⴰⵔⵉⵜ ⵜⴰⵎⴰⵔⵉⵜ

م.ت.ب

000724

To : The Adaptation Fund Board  
c/o : Adaptation Fund Board Secretariat  
Email: [secretariat@adaptation-fund.org](mailto:secretariat@adaptation-fund.org)  
Fax : 2025223240/5

**Subject:** Endorsement for “Strengthening the Resilience of Oasis Ecosystems and Enhancing the Adaptive Capacities of the Draa Basin Communities to Climate Change”.

We would like to refer to the project “Strengthening the Resilience of Oasis Ecosystems and Enhancing the Adaptive Capacities of the Draa Basin Communities to Climate Change,” which is included in the funding proposal submitted by the Agency for Agricultural Development (ADA).

In our capacity as the Adaptation Fund Focal Point for Morocco, we acknowledge having reviewed the proposal and hereby endorse the proposed project as outlined in the Concept Note.

By conveying our endorsement, we wish to clarify that:

- The Government of Morocco certifies that the project is a national priority and has its full support.
- The project, as presented in the Concept Note, aligns with Morocco’s National Strategic Adaptation Plan.
- The project, as outlined in the Concept Note, complies with relevant national laws and regulations and adheres to the Adaptation Fund’s environmental and social safeguards.

We acknowledge that this letter will be made publicly available on the Adaptation Fund website.

Please accept our kind regards.

Mr Mohammed BARAOUI  
Director of Climate and Biodiversity

Directeur du Climat et  
de la Diversité Biologique

Mohammed BARAOUI

**B. Implementing Entity certification** Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

**A. Implementing Entity certification**

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

<p>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 (NDC 3.0, the National Adaptation Plan of Morocco, the Green Generation Strategy ...) and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund</u> and on the understanding that the implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p>	
<p><u>Implementing Entity Coordinator:</u></p> <p><b>Mr. El Mahdi ARRIFI</b>          General Director          Agency for Agricultural Development (ADA)          Ministry of Agriculture, Maritime Fisheries,          Rural Development and Water and Forests – Morocco</p> 	
<p>Date: 04<sup>th</sup> December 2025</p>	<p>Tel. and email: +2126-57-83-19-83  <a href="mailto:arrifi.elmahdi@ada.gov.ma">arrifi.elmahdi@ada.gov.ma</a></p>
<p><u>Project Contact Person:</u></p> <p>Ms Meryem ANDALOUSSI          Head of Environment Service          Tel. And Email: +2126-61-56-57-81  <a href="mailto:m.andalousi@ada.gov.ma">m.andalousi@ada.gov.ma</a> / <a href="mailto:meryem.andalousi@gmail.com">meryem.andalousi@gmail.com</a></p>	

<sup>6</sup>. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities



**Revised PFG Submission Form<sup>1</sup>**  
**Project Formulation Grant (PFG)**

**Submission Date:** 04<sup>th</sup> December 2025

**Adaptation Fund Project ID:**

**Country/ies:** Morocco

**Title of Project/Programme:** Strengthening the Resilience of Oasis Ecosystems and Enhancing the Adaptive Capacities of the Draa Basin Communities to Climate Change.

**Type of IE (NIE/RIE/MIE):** National Implementing Entity

**Implementing Entity:** Agricultural Development Agency (ADA)

**Executing Entity/ies:** Office Régional de Mise en Valeur Agricole de Ouarzazate (ORMVAO)

**A. Project Preparation Timeframe**

Start date of PFG	1st February 2026
Completion date of PFG	1st July 2026

**B. Proposed Project Preparation Activities (\$)**

List of Proposed Project Preparation Activities	Output of the PFG Activities	US\$ Amount	Budget note <sup>2</sup>
Project Feasibility study, including Technical feasibility study for all the project's activities	Feasibility study of the project	37,000	Covers a full feasibility assessment of the project, including technical feasibility for all proposed activities and overall project viability. This includes evaluating technical specifications, operational requirements, cost estimates, risk factors, and potential environmental and social implications. The study will validate design assumptions, assess infrastructure and technology options, and ensure alignment with national development priorities and Adaptation Fund requirements. Findings will confirm the project's practicality, scalability, and sustainability before implementation.

<sup>1</sup> As presented in AFB/PPRC.33/40 Annex I.

<sup>2</sup> The proposal should include a detailed budget with budget notes indicating the break-down of costs at the activity level. It should also include a budget on the Implementing Entity management fee use.

List of Proposed Project Preparation Activities	Output of the PFG Activities	USS Amount	Budget note <sup>2</sup>
			<p>Expertise Required:</p> <ul style="list-style-type: none"> <li>• Project Feasibility Specialist experienced in climate adaptation and infrastructure projects.</li> <li>• Technical Experts relevant to each component (e.g., water resource management, agriculture, pastoral systems, renewable energy).</li> <li>• Environmental and Social Safeguards Specialist to integrate risk mitigation measures.</li> <li>• Economist/Financial Analyst for cost-effectiveness and value-for-money analysis.</li> </ul> <p>Policy and Institutional Specialist to ensure alignment with regulatory frameworks and governance structures.</p>
Gender study and action plan (including consultation)	<p>Existing gender inequalities within the project's implementation area and sector are assessed to inform project design and ensure equitable access to benefits for men, women, and youth. The assessment also examines the roles of women and youth in post-harvest processing and supports the development of sex-disaggregated indicators. Based on these findings, a dedicated action plan is prepared to operationalize the project's social inclusion strategy and guarantee its effective implementation.</p>	23,000	<p>Funds will support a gender analysis to assess existing inequalities, roles of women and youth, and barriers to equitable access in the project area and sector. Activities include stakeholder consultations, development of sex-disaggregated indicators, and preparation of a Gender Action Plan to guide social inclusion and ensure compliance with the Adaptation Fund Gender Policy.</p> <p>Expertise Required:</p> <ul style="list-style-type: none"> <li>• Gender and Social Inclusion Specialist with experience in climate change and agriculture/livelihood projects.</li> <li>• Facilitators/Consultants skilled in participatory consultations with local communities, especially women and youth.</li> <li>• M&amp;E Expert to integrate gender-responsive indicators into the project results framework.</li> </ul>
Environment and Social Impact Assessment and Environmental as Social Management Framework (ESMF)	<p>The environmental and social risks and impacts associated with project implementation are systematically assessed, and an action plan is formulated to eliminate,</p>	28,000	<p>Covers the systematic assessment of environmental and social risks/impacts linked to project implementation, stakeholder consultations, and preparation of the ESMF.</p>

List of Proposed Project Preparation Activities	Output of the PFG Activities	USS Amount	Budget note <sup>2</sup>
(including consultation)	mitigate, and/or manage these risks. Findings from this assessment inform the development of the Environmental and Social Management Framework (ESMF) and the establishment of the project's compliance and grievance mechanisms. This process ensures full alignment of the project with the Environmental and Social Policy of the Adaptation Fund as well as with national environmental and social standards.		<p>Outputs include risk mitigation and management measures, a compliance framework, and grievance mechanisms, ensuring alignment with the Adaptation Fund's Environmental and Social Policy and national standards. Expertise Required:</p> <ul style="list-style-type: none"> <li>• Environmental Safeguards Specialist with experience in climate adaptation/agriculture projects.</li> <li>• Social Safeguards Specialist skilled in stakeholder engagement and conflict-sensitive approaches.</li> <li>• Legal/Policy Expert familiar with national environmental and social regulations.</li> <li>• Facilitators for community consultations to gather inclusive inputs.</li> </ul>
Stakeholder engagement (including consultation)	A stakeholder matrix for the project in Niger is developed and analysed to identify each stakeholder's capacities, level of influence, roles, and associated financial risks, along with the mitigation measures required. This analysis includes the categorisation of stakeholders and defines how, and at what levels, they should be engaged to ensure effective implementation and the long-term sustainability of the project beyond its closure.	23,000	<p>Funds the development and analysis of a stakeholder matrix for the project in Niger, mapping each stakeholder's capacities, influence, roles, and related financial risks, alongside mitigation measures. This includes stakeholder categorization and a tailored engagement strategy to ensure active participation during implementation and sustained involvement post-project for long-term sustainability. Expertise Required:</p> <ul style="list-style-type: none"> <li>• Stakeholder Engagement Specialist with experience in climate adaptation and rural development.</li> <li>• Social Development Expert skilled in participatory approaches and inclusivity (gender, youth, vulnerable groups).</li> <li>• Risk Analyst to assess and mitigate financial and operational risks tied to stakeholders.</li> </ul>

List of Proposed Project Preparation Activities	Output of the PFG Activities	US\$ Amount	Budget note <sup>2</sup>
			<ul style="list-style-type: none"> <li>Facilitators/Moderators for multi-level consultations and consensus building.</li> </ul>
Cost benefit analysis	<p>A comprehensive assessment report detailing current socio-economic conditions and livelihood patterns in the target areas is drafted, with an identification and documentation of key barriers to economic opportunities, productive assets, and access to essential services. Detailed mapping of institutional frameworks and value chain dynamics, including gender roles and cooperative structures is documented. And, quantified projections of anticipated changes in household income, employment levels, and resilience indicators known.</p> <p>Completed economic and financial sustainability analysis fully aligned with Green Climate Fund (GCF) requirements.</p>	28,000	<p>Funds a comprehensive assessment of current socio-economic conditions, livelihood systems, and barriers to economic opportunities in the target areas. This includes mapping productive assets, access to essential services, institutional frameworks, and value chain dynamics (with attention to gender roles and cooperative structures). The analysis will quantify expected changes in household income, employment, and resilience indicators, and produce a economic and financial sustainability assessment to guide long-term impact and scalability.</p> <p>Expertise Required:</p> <ul style="list-style-type: none"> <li>Socio-Economic Specialist experienced in rural development, livelihoods analysis, and gender-sensitive assessments.</li> <li>Financial/Economic Analyst with expertise in cost-benefit analysis, investment planning, and economic modelling.</li> <li>Institutional Development Expert for mapping governance and cooperative structures.</li> <li>Value Chain Specialist to assess market linkages, income diversification, and resilience pathways.</li> </ul>
IE fee (8.5%)	IE fees	11,000	
<b>Total Project Formulation Grant</b>		150 000	

Please describe below each of the PFG activities and provide justifications for their need and for the amount of funding required:

List of Activities	Justification	US\$ Amount	Budget Note	Expertise Required
Project Feasibility Study (including technical feasibility for all activities)	Essential to confirm project viability before implementation. Validates technical design, operational feasibility, and financial soundness. Ensures alignment with national development priorities and AF requirements. The amount covers multidisciplinary expertise, data collection, analysis, and stakeholder validation workshops.	40000	Conduct a full feasibility assessment covering all proposed activities, including technical specifications, operational requirements, cost estimates, risk analysis, and environmental/social implications. Validate design assumptions, assess infrastructure and technology options, and ensure alignment with national priorities and Adaptation Fund (AF) requirements. The study will confirm the project's practicality, scalability, and sustainability before implementation.	<ul style="list-style-type: none"> <li>• Project Feasibility Specialist (climate adaptation &amp; infrastructure)</li> <li>• Technical Experts (water resources, agriculture, pastoral systems, renewable energy)</li> <li>• Environmental &amp; Social Safeguards Specialist</li> <li>• Economist/Financial Analyst</li> <li>• Policy &amp; Institutional Specialist</li> </ul>
Gender Study & Action Plan (including consultations)	Required to comply with the Adaptation Fund Gender Policy. Addresses gender gaps, ensures women/youth empowerment, and integrates gender-responsive indicators into project design. The budget covers community consultations, data collection, and expert facilitation.	25000	Carry out a gender analysis to assess inequalities, roles of women and youth, and barriers to equitable access in the project area and sector. Activities include stakeholder consultations, development of sex-disaggregated indicators, and preparation of a Gender Action Plan to guide social inclusion and ensure compliance with the AF Gender Policy.	<ul style="list-style-type: none"> <li>• Gender &amp; Social Inclusion Specialist with climate/agriculture experience</li> <li>• Facilitators for participatory consultations</li> <li>• M&amp;E Expert for gender-responsive indicators</li> </ul>

<p>Environmental &amp; Social Impact Assessment (ESIA) and Environmental &amp; Social Management Framework (ESMF) (including consultations)</p>	<p>Ensures environmental and social safeguards compliance with AF policy and national standards. Identifies, mitigates, and manages project risks. Budget covers expert assessments, field consultations, and framework preparation.</p>	<p>30000</p>	<p>Undertake a systematic assessment of environmental and social risks and impacts from project implementation. Engage stakeholders through consultations, prepare an ESMF, and establish compliance and grievance mechanisms. Ensure full alignment with the AF Environmental and Social Policy and national regulations.</p>	<ul style="list-style-type: none"> <li>• Environmental Safeguards Specialist</li> <li>• Social Safeguards Specialist</li> <li>• Legal/Policy Expert (environmental &amp; social standards)</li> <li>• Community Consultation Facilitators</li> </ul>
<p>Stakeholder Engagement (including consultations)</p>	<p>Critical to secure stakeholder buy-in and sustain project outcomes. Informs engagement strategies and governance mechanisms for post-project sustainability. Budget supports workshops, participatory planning, and facilitation across levels.</p>	<p>25000</p>	<p>Develop and analyze a stakeholder matrix mapping capacities, influence, roles, and related risks. Define stakeholder categories and tailored engagement strategies to ensure effective implementation and long-term sustainability beyond project closure.</p>	<ul style="list-style-type: none"> <li>• Stakeholder Engagement Specialist</li> <li>• Social Development Expert (inclusivity and participatory methods)</li> <li>• Risk Analyst</li> <li>• Consultation Moderators/Facilitators</li> </ul>
<p>Cost-Benefit Analysis</p>	<p>Establishes socio-economic baseline and evaluates expected impacts on income, employment, and resilience. Informs cost-benefit analysis and long-term sustainability strategy. Budget covers data collection, modelling, and expert economic analysis.</p>	<p>30000</p>	<p>Assess current socio-economic conditions, livelihood systems, institutional frameworks, and value chain dynamics (with gender considerations). Quantify projected changes in income, employment, and resilience, and deliver an economic and financial sustainability analysis aligned with GCF requirements.</p>	<ul style="list-style-type: none"> <li>• Socio-Economic Specialist</li> <li>• Financial/Economic Analyst</li> <li>• Institutional Development Expert</li> <li>• Value Chain Specialist</li> </ul>

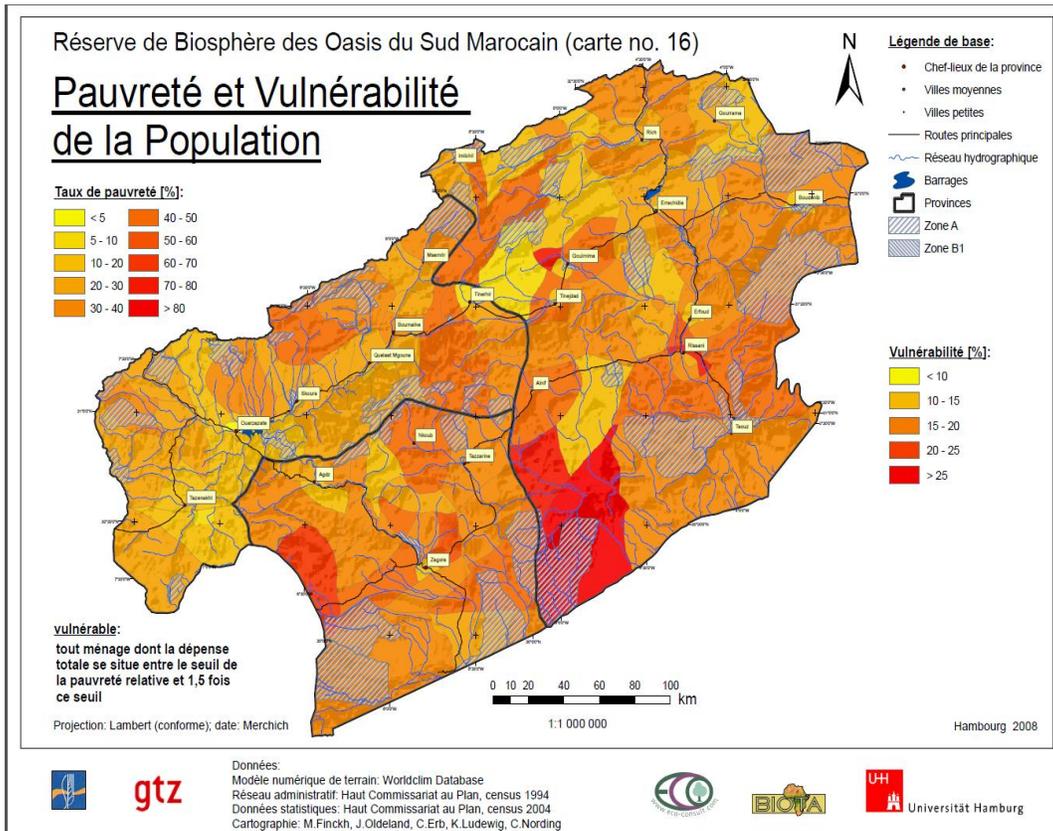
### C. Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
<p><b>Mr. El Mahdi ARRIFI</b> General Director Agency for Agricultural Development (ADA) Ministry of Agriculture, Maritime Fisheries, Rural Development and Water and Forests - Morocco</p>		<p><b>04<sup>th</sup> december 2025</b></p>	<p>Ms Meryem ANDALOUSSI Head of Environment Service</p>	<p>+2126-61- 56-57-81</p>	<p><a href="mailto:m.andaloussi@ada.gov.ma">m.andaloussi@ada.gov.ma</a> <a href="mailto:meryem.andaloussi@gmail.com">meryem.andaloussi@gmail.com</a></p>

# Appendix 1

## Map of poverty and vulnerability of the population of the southern Moroccan oases biosphere reserve



## Appendix 2

### Field Assessment and Proposed Adaptation Strategies for Enhancing Resilience in the Draa Valley Oases

#### ON-SITE PROSPECTING

An agricultural engineer with expertise in oasis areas has been appointed by the consultant to conduct a fact-finding tour and identify the constraints currently affecting the Draa Valley. The goal is to determine actions and projects that can be implemented to adapt to climate changes, which are significantly impacting the economic, social and environmental life of the oasis populations.

During this mission, the expert was accompanied by agents from ORMVAO's head office and field staff from Zagoura. They visited various palm groves in the valley to observe and note both the general constraints affecting all groves and those specific to each grove due to its geographical location and its soil, climate, and environmental characteristics.

#### OASIS ADAPTATION AND RESILIENCE ACTIONS AND PROJECTS

Examination of the situation in the Draa Valley has revealed ecosystemic and socio-economic constraints that need to be addressed and overcome via two main components, namely :

*C1: strengthening the ecosystem's capacity to adapt and resilience.*

*C2: strengthening community resilience by diversifying socio-economic activities.*

The first component, C1, focuses first and foremost on mitigating the effects of drought through any action capable of improving the potential of usable water resources and their optimum conservation, in addition to soil restoration and protection against both water and wind erosion. The second ecosystemic sub-component concerns the preventive management of the fight against palm grove fires, which are increasingly becoming a scourge fuelled by the dry state of the palm trees (photo No. 1), which are producing nothing and are of no interest to farmers. Finally, a third sub-component within this framework would relate to the implementation of nature-based solutions, in this case the fight against the silting up of hydraulic infrastructures and cultivated land, the promotion of aromatic and medicinal plants, etc...

The second component, C2, relates more to the resilience and development of oasis agriculture in its various aspects: organic, local products, etc. on the one hand, and the development of entrepreneurship around oasis trades and the strengthening of the economic empowerment of women and young people on the other.

#### II-3.1 Strengthening the adaptation and resilience of the oasis ecosystem

By crossing the Draa valley palm groves from upstream to downstream, we were able to make the observations listed below and propose priority actions in consultation with ORMVAO managers, as shown in the Excel table in the Appendix:

- The gradient of drought and desiccation of palm trees increases from north to south (i.e. from upstream to downstream of the oued Draa);



Photo 2: Mezquita palm grove (Upstream from the valley)



Photo 3: Ktaoua palm grove (down valley)

This situation indicates that the cleaning of date palm clumps and the development of access to the palm groves are much more of a priority in the oases downstream of the valley than upstream. In addition, a total of **30,000 clumps** to be cleaned are proposed for the valley's six palm groves, together with the development of **100 km of** access tracks equipped with public solar lighting and spread across all the palm groves. **15** first-response fire-fighting **kits** are to be made available to local associations and cooperatives, in addition to training and raising awareness among local people about the risks of fire and the precautions to be taken at all times to prevent them. In addition, the installation of a large number of prevention signs and pictograms along roadsides and access tracks to palm groves would be very useful in instilling environmental education in the local populations and various users of these infrastructures. A feasibility study of a fire warning system could also be considered in this context with a view to avoiding or at least minimizing the potential damage from such disasters.

- Bank erosion is much more pronounced upstream of the valley and in the intermediate basin (four out of six palm groves), whereas it is almost non-existent downstream (M'hamid and Ktaoua palm groves);

		
<p><b>Photo: 4 Erosion of banks in the Tarnata palm grove</b></p>	<p><b>Photo 5: Erosion of banks in the Oulad Lhaj Tarnata area</b></p>	<p><b>Photo 6: Erosion of the water table by gravity irrigation of plots in the fezouata palm grove.</b></p>

The work planned under this scheme involves the construction of **10 km of** protective walls made of masonry or dry stone gabions to stabilize the land against water erosion caused by violent, short-lived wadi flooding.

- Groundwater salinity is very pronounced in the downstream palm groves (M'hamid and Ktaoua), reaching levels of 6 to 10 g/l and even higher in downstream areas;

Hence the importance of carefully selecting salinity-tolerant plant species for cultivation, and of considering the installation of desalination units for irrigation water in the two palm groves affected by this phenomenon.

- The phenomenon of silting up of irrigation canals and cultivated land is also only found in the M'hamid and Ktaoua palm groves.



**Photo: 7 Silting of the irrigation canal in the M'hamid perimeter**



**Photo :8 Silting of an agricultural perimeter at Ktaoua**

This natural scourge can only be combated by fixing the dunes mechanically (using a grid of dry palm fronds) and biologically (planting trees and shrubs suited to the area's dry climate). In this context, it is proposed to treat **1,000 hectares** by fixing the dunes in and around the invaded palm groves and on either side of the irrigation canals, which are under constant threat.

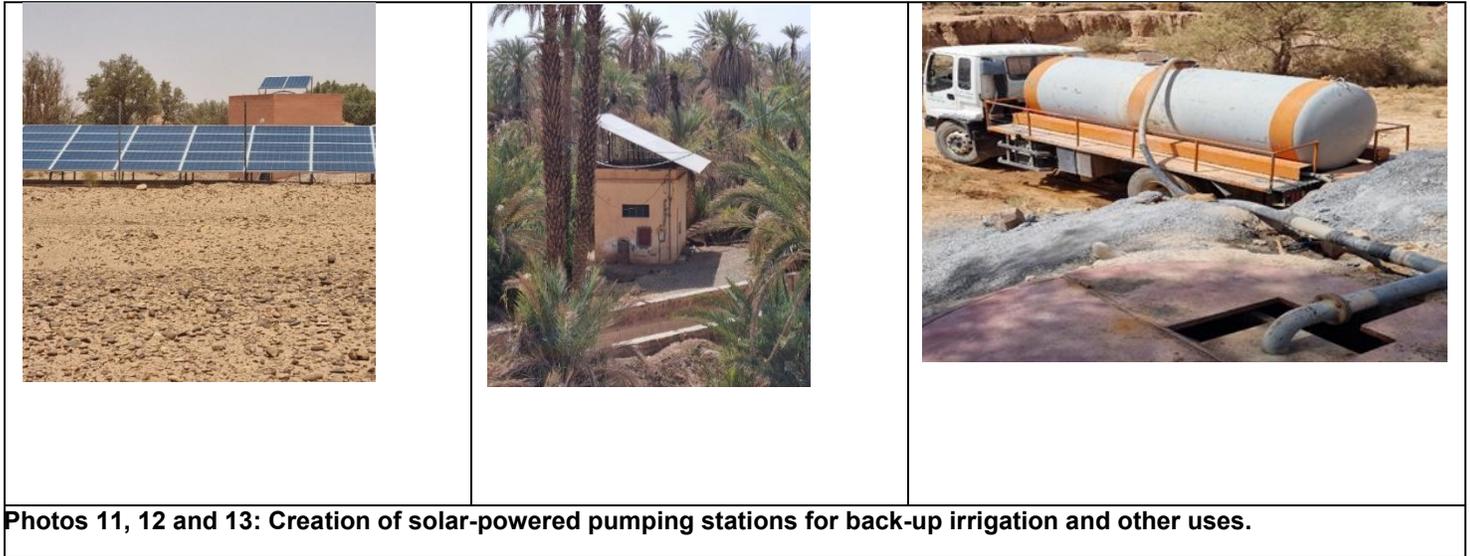
- The water diversion weirs, both for floods and dam releases, play a very important role in the rational management of surface water, but also in recharging the water table by infiltration of a significant proportion of the water by slowing down the flow of water on the wadi bed.

The construction of four weirs and the reinforcement of six others already existing along the Draa valley are therefore envisaged, taking into account other programmes already decided by the ORMVAO (see photos 9 and 10 below):



**Photos 9 and 10: Weir and diversion dam in need of rehabilitation and reinforcement.**

A number of earthen irrigation channels within the valley and khetaras on the Tansifte and Blida outside the valley need to be rehabilitated in order to increase their efficiency and enable significant water savings, which are highly valuable.. The flow rates of the khetaras can be improved by building structures to collect rainwater and recharge theaquifer. All the palm groves are suffering to varying degrees from a lack of irrigation water, causing their crops to dry up further day by day due to prolonged water stress. This leaves no choice but to dig and equip at least 30 wells or boreholes with solar energy, which will serve for supplemental irrigation and fire-fighting interventions in the palm grove when necessary, as well as for potential uses. This type of initiative has already been launched by ORMVAO and some private entities, and has already shown positive results (see photos 11, 12 and 13 below).



**Photos 11, 12 and 13: Creation of solar-powered pumping stations for back-up irrigation and other uses.**

**STRENGTHENING COMMUNITY RESILIENCE.**

Understanding the socio-economic constraints significantly impacting the development pace of village communities in the valley necessitates enhancing their resilience through diversifying socio-economic activities, thereby generating additional household income, particularly for rural women and youth.

In this context, the actions to be undertaken focus closely on the plot and rural household level, that are directly impacting people as well as agricultural and para-agricultural activities.

The first area of action focuses on the resilience and development of oasis agriculture through :

- Training farmers in the various techniques available for water-saving irrigation and maximizing the use of this vital resource;
- Improving marketing channels for oasis agricultural products;
- Promoting organic products especially dates, for future national and global market value.
- Labelling and developing the market for local products, particularly "Tahlaoute" date syrup;
- By-products from the oases can be recycled as compost, animal feed or materials to combat water evaporation in the field, to save water.
- The second strand of actions for this component relates more to the development of entrepreneurship around oasis trades and the empowerment of rural women and young people through the following:
  - Support for initiatives to create income-generating projects and organization of training and capacity-building sessions for women and young people.
  - Support and capacity building for a professional agricultural organization.
  - Promoting agricultural trades and encouraging self-employment among rural women and young people (e.g. creating marketing showcases for agricultural and craft products);
  - Support for guest infrastructures, ecolodges, and catering centers as part of the development of agro-ecotourism;
  - Capacity building for tourist guides and escorts.
  - Support and financial backing for the implementation of innovative project ideas for the benefit of rural women.