



**ADAPTATION FUND**

AFB/PPRC.38/Inf.64  
25 September 2026

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Adaptation Fund Board  
Project and Programme Review Committee  
Thirty-eighth Meeting  
Bonn, Germany, 19-23 October 2026

## **PROPOSAL FOR JORDAN, LEBANON**



ADAPTATION FUND

**ADAPTATION FUND BOARD SECRETARIAT**  
**TECHNICAL REVIEW OF PROJECT PROPOSAL FOR**  
**"TRANSBOUNDARY ADAPTATION FOR WATERSHED SUSTAINABILITY AND**  
**LIVELIHOODS"– A REGIONAL NATURE-BASED SOLUTIONS INITIATIVE IN LEBANON AND**  
**JORDAN (PROJECT ACRONYM: TAWASUL)"**

|                     |                                                                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project Title       | Transboundary Adaptation for Watershed Sustainability and Livelihoods"– A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (Project acronym: TAWASUL) |
| Project ID          | AF00000503                                                                                                                                                            |
| Category            | Regular size project (over \$1 million)                                                                                                                               |
| Type                | Regional project                                                                                                                                                      |
| Stage               | Concept                                                                                                                                                               |
| Country             | Regional (Jordan, Lebanon)                                                                                                                                            |
| Implementing Entity | UNHAB                                                                                                                                                                 |
| Financing Requested | USD 29,996,557.00                                                                                                                                                     |
| Reviewer            | Isaura Espinosa                                                                                                                                                       |

## Co-reviewer(s)

### IE Contact Person

Cerin Kizhakkethottam, Yasmine Mostafa

## Secretariat's Overall Comment

The project “Transboundary Adaptation for Watershed Sustainability and Livelihoods”— A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (TAWASUL)” aims to strengthen climate resilience in the Awali Watershed (Lebanon) and Wadi Al-Karak watershed (Jordan).

The proposal includes a Project Formulation Grant request in the amount of US\$120,000.

The initial technical review raises several issues, such as reducing proposal document length to the AF limit; indicating allocated amounts at output level; revising overall objective and clarifying the added value of the regional approach; providing the list of activities under outputs along with supporting quantification; clarifying the allocated execution costs of the IE and justifying its involvement; specifying the USPs and clarifying related arrangements to ensure compliance with AF requirements; inclusion of initial gender assessment/ analysis; quantification of cost-effectiveness; providing a summary table of related national/ regional projects; providing a summary table of the consultations; reflecting on the O&M aspects of the facilities, installations, etc. planned to be developed by the project; specifying the project overall risk category; among other Clarification Requests (CRs), Corrective Action Requests (CARs) and notes raised in the review.

The second technical review finds that there are outstanding CRs and CARs to be addressed concerning addressing UPSs, providing a more robust initial gender assessment etc. as provided in the review sheet.

## Country Eligibility

### Are all of the participating countries party to the Kyoto Protocol, or the Paris Agreement?

Response: Pending

**Secretariat:** Yes.

Response: Yes

**Secretariat:** Yes

**Are all of the participating countries developing countries particularly vulnerable to the adverse effects of climate change?**

**Response:** Pending

**Secretariat:** Yes. Both countries are vulnerable to the adverse effects of climate change including rising temperatures, erratic rainfall and shifting precipitation, prolonged droughts, severe water scarcity, among others.

**Response:** Yes

**Secretariat:** N/A

**Response:** Yes

**Secretariat:** Both watersheds are highly vulnerable to compounding climate risks- including drought and water scarcity, floods, wildfires, landslides, soil erosion and heatwaves- which are exacerbated by ecosystem degradation, socioeconomic fragility, and limited adaptive and coping capacity.

## Project Eligibility

**Have the designated government authorities for the Adaptation Fund from each of the participating countries endorsed the project/programme?**

**Response:** Pending

**Secretariat:** Yes. As per the Endorsement letters as dated below:

Lebanon: 13 May 2026

Jordan: 22 June 2026

Note: Please attach endorsement letters to the proposal document.

**Response:** Yes

**Secretariat:** N/A

**Response:** Yes

**Secretariat:** Yes. Both letters have been attached to the proposal document in Annex A.

**Does the length of the proposal amount to no more than fifty (50) pages for the project/programme concept, including its annexes?**

**Response:** Pending

**Secretariat:** No. The proposal including annexes and letters of endorsement exceeds 50 pages, excluding additional information/ clarifications requested by the review comments, among other comments noted below.

CAR1: Revise the proposal document, particularly Part I "Project Background and Context" (33 pages) to reduce

it to the AF page limit. Ensure that the proposal length including annexes ( note: letters of endorsement letters and annexes should be attached to the proposal document) remains within this limit after addressing the review comments.

CR1: Please address the following:

1. As appropriate in the Part I under Project Background and Context, clarify under a dedicated subheading the added value of the regional approach versus single country projects approach, considering that the two countries are neither geographically connected nor are the targeted watersheds are transboundary between the two countries.
2. The use of term “Transboundary Water management” in the title and in assigning AF focal area imply shared water bodies, which is not the case. Please clarify/ revise the use of this term across the document. (Note: selection of “Disaster risk reduction and early warning systems” as AF focal on p.1 would seem more reflective of project focus).

CAR2: In the components and financing tables please also indicate amounts at output level and further clarify the distribution of the components allocated amounts between the two countries (e.g.: are they distributed equally, etc.).

CR2: Under “Project Objectives”, please include a standalone overall objective statement (e.g.: The overall objective of the project is to strengthen climate resilience in the Awali Watershed (Lebanon) and Wadi Al-Karak watershed (Jordan)), followed by the statement on how this objective will be achieved (e.g.: This will be achieved by advancing ecosystem restoration, ....., post-disaster recovery, and participatory planning).

CAR3: The UN-Habitat is involved in the project execution. Please clarify if the execution costs associated with the IE involvement is calculated based on the IE requirements in this respect (i.e., 1.5% of the costs of the activities executed by the IE). Reflect this clarification as appropriate under “components and financing” section in Part I. Also, provide justification for UN-Habitat involvement as EE, supported by a request from concerned designated authorities (DAs).

Editorial Notes:

1. Add table of contents, lists of abbreviations, tables & figures (will not count towards proposal length).
2. Spell out abbreviations when first used and refer to figures, tables, annexes at related discussions.
3. Add table number and heading for all tables in the document.
4. Please double check/ revise Part II section letter numbering.
5. Insert page numbering.
6. Conduct a round of editing/ proofreading for the document after addressing the review comments.

**Response:** Not Cleared

**IE:** CAR1: Addressed. Part I has been revised to be within the AF page limit, including all annexes and endorsement letters.

CR1: 1. Addressed. A dedicated subsection has been added to Part I explaining the regional added value despite the watersheds not being geographically or hydrologically connected.

2. Addressed. Name was changed

CAR2: Addressed. The table has been revised to include indicative allocations at the output and country levels.

CR2: Addressed. A standalone overall objective has been included, followed by a statement explaining how it will be achieved through the proposed project interventions.

CAR3: Addressed. A clarification has been added regarding the adoption of 1.5% of the costs of the activities executed by the IE, and it was reflected appropriately under “components and financing” section in Part I. Also, a justification for UN-Habitat involvement as EE was added.

The request from Jordan's DA was included in Annex 1: Endorsement letters. For Lebanon, it will be shared separately once received, as the Ministry was unable to sign it before the established deadline. Addressed. The requested contents and lists, table titles and numbering, cross-references, section and page numbering have been added or corrected.

**Response:** Not Cleared

**Secretariat:** CAR1: Cleared As per page limit.

CR1: Cleared.

1. As per insertion of last paragraph under section 1.1.
2. Project title changed from transboundary to "transformative".

CAR2: Not Cleared.

1. The Template for a regional proposal has 5 columns with specific headings. Please comply to the template, refrain from adding new rows and columns to the template. Please address.
2. Detailed budget is needed at the fully developed proposal stage. The IE should therefore only bear in mind the Board stipulated percentages for IE serving as EE for all or part of a project and apply as appropriate at the fully developed proposal stage. Please remove budget details such as which EE will be responsible in the existing table.

CR2: Cleared.

Dedicated objective now included in the proposal as follows "The overall objective of the project is to enhance climate resilience and adaptive capacity in the Awali Watershed (Lebanon) and Wadi Al-Karak Watershed (Jordan). This will be achieved by advancing ecosystem restoration, post-disaster ecological recovery, GIS-enabled planning and decision-support systems, gender-responsive and participatory governance, sustainable climate financing, and regional cooperation, while integrating scientific data, traditional knowledge, and evidence-based planning to address national adaptation priorities and shared regional challenges."

CAR3: Not cleared.

Please delete "As shown in the table above, " in the paragraph below the project components and financing table-table 1 since the additional columns added should be deleted (see CAR2).

Editorial Notes: Not cleared.

1. Some abbreviations have not been spelled out (such as Implementing Entity). Suggest conducting another round of proofreading and editing.
2. Please add paragraph numbers in the re-submitted proposal.
3. Please reference where the changes made by the IE (page #, paragraph #) can be found in the proposal for the next round of review comments.

**Does the regional project / programme support concrete adaptation actions to assist the participating countries in addressing the adverse effects of climate change and build in climate resilience, and do so providing added value through the regional approach, compared to implementing similar activities in each country individually?**

**Response:** Pending

**Secretariat:** Yes.

However amendments are needed.

See Part IIA, pp. 35-38. Concrete actions include flood risk reduction and climate-resilient water management, rainwater harvesting mechanisms, soil stabilization and land degradation control, climate-smart agriculture, pollution reduction and water quality management, sustainable land and watershed management practices, reforestation and afforestation, and riparian and wetland restoration and establishment of nature-based wetland treatment systems, and related capacity building activities among other as indicated in Part IIA.

CR3: Please specify the execution entities (EEs) for each of the components/ outputs/ etc.

CAR4: List and provide brief description of the activities under each output and support with related quantification (numbers) to substantiate/ justify related allocated budgets/ requested funds.

CR4: At the end of Part IIA (after objectives) or as appropriate in Part IIA, please Indicate AF outcomes/ objectives supported by the project (can be borrowed from AF alignment Table in Part III).

CAR5: The outputs under components 1 and 2 imply Unidentified Sub-projects (USPs). Please clearly specify these USPs. Specify those that will be identified at full proposal stage (if any) and clarify the arrangements to ensure compliance with the AF requirements for those to be identified during project implementation. AF guidance on USPs can be found at: Guidance Document for Project/Programme with Unidentified Sub-Projects.

**Response:** Not Cleared

**IE:** CR3: Addressed. The financing table has been revised to identify the proposed EE for each component and output, with any entities to be confirmed during full proposal development clearly indicated.

CAR4: Addressed. Activities have been listed and briefly described under each output, with quantified deliverables.

CR4: Addressed. Has been added at the end of Part IIA in alignment with AF alignment Table in Part III.

CAR5: Addressed. The USPs fall under Component 2 and will be identified during project implementation. All necessary arrangements have been included in the concept note to ensure that these USPs comply with the AF's requirements before their implementation.

**Response:** Cleared

**Secretariat:** Yes, the project support concrete actions in addressing the adverse effects of climate change and build in climate resilience. Furthermore concrete activities have been listed under each output with quantifiable deliverables.

CR3, CAR4, CR4, CAR5 have been addressed as per IE comment.

**Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy of the Fund?**

**Response:** Pending

**Secretariat:** Yes. However, amendments are needed.

See Part IIC, pp. 38-39. An initial gender assessment/ analysis is missing.

CAR6: Compliance with the Gender Policy requirements may be demonstrated through an initial gender

analysis/ assessment at the earliest stage of project/programme preparation to determine the different needs, capabilities, roles and knowledge resources of women and men, and/or identify how changing gender dynamics might drive lasting change. Please include such assessment analysis as appropriate under a dedicated section in Part I or attach as an annex and refer to it at relevant sections (e.g.: Part I, Part IIB, Part IIK, etc.).

CR5: In section C, add a dedicated paragraph to confirm that the project intervention will not imply any concerns of negative development/ maladaptation and does not increase the vulnerability of beneficiaries or non-beneficiaries, nor reduce their capacity to adapt to climate change.

**Response:** Not Cleared

**Secretariat:** I agree with the comments of the co-reviewer

**Response:** Not Cleared

**IE:** CAR6: Addressed. A dedicated Initial Gender Assessment has been added to Part I, outlining the differentiated needs, roles, capabilities, vulnerabilities, and knowledge resources of women and men, as well as the potential influence of changing gender dynamics. Its findings have been integrated into the project design and referenced in the relevant sections, including Parts II.B and II.K. A comprehensive gender assessment and costed Gender Action Plan will be prepared during full-proposal development.

CR5: Addressed. A dedicated paragraph has been added to Section C confirming that the project will not result in negative development or maladaptation, increase the vulnerability of beneficiaries or non-beneficiaries, or reduce their capacity to adapt to climate change.

**Response:** Not Cleared

**Secretariat:** CAR6: Not Cleared. An initial gender assessment has been provided however it lacks, quantitative data for gender roles, activities, needs, and available opportunities and challenges or risks for men and women relevant to the project. Please consult national document to produce the relevant initial data.

CR5: Cleared. As per paragraph inserted at section C.

### Is the project / programme cost-effective and does the regional approach support cost-effectiveness?

**Response:** Pending

**Secretariat:** Yes. See Part IID, pp. 39-41. However, some clarifications/ additional details are recommended.

CR6: Please address the following:

1. In the table on pp. 40-41, under "Cost and cost effectiveness" column, Please provide dollar estimates of the losses averted/ gains, if possible, at this stage.
2. In a dedicated paragraph, please clarify how would the regional approach support the project cost-effectiveness.

**Response:** Not Cleared

**IE:** CR6: Addressed 1. At the concept stage, quantified dollar estimates of losses averted and economic gains are not yet available, as they require the site-specific technical, hydrological, and economic data that will only be generated through the detailed vulnerability assessments and design studies under Component 1. These quantified cost-benefit estimates will be developed during the full proposal stage, supported through the

Project Formulation Grant (PFG), once baseline data, intervention-specific technical designs, and site conditions have been established for each priority area.

2. Addressed. A dedicated paragraph has been added.

**Response:** Cleared

**Secretariat:** Yes. CR6 has been addressed as per IE comment.

**Response:** Cleared

**Secretariat:** CR6:

1. Cleared. Based on the clarification of the IE that quantified dollar estimates of losses averted and economic gains are not yet available but that the PFG grant will support the generation of this data.

2. Cleared. A dedicated paragraph on the regional cost effectiveness has been added to the cost-effectiveness section of the proposal as follows "The regional approach further improves cost-effectiveness by creating economies of scale in the development of GIS tools, methodologies, knowledge products, and regional capacity-building programmes. Rather than developing these systems independently in each country, the project promotes joint technical development, peer-to-peer learning, and harmonized approaches that reduce duplication, facilitate replication, and maximize the long-term value of project investments across the wider region."

**Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments? If applicable, it is also possible to refer to regional plans and strategies where they exist.**

**Response:** Pending

**Secretariat:** Yes. See p. 42 (note: this section letter numbering should be Part IIE). However, please address the below comments.

CR7: Change letter numbering to E (as per AF proposal template), please revise and amend the letter numbering for the sections that follow accordingly.

CR8: Double check the relevance of the UNCCD NAP/ strategy in both counties and include along with dates. Also, include any regional plans if/ as available.

CR9:

1. Please provide the dates for the "National Physical Master Plan of the Lebanese Territory (NPMPLT)" and "Jordan Green Growth National Action Plan".

**Response:** Not Cleared

**Secretariat:** I agree with the comments of the co-reviewer  
In addition,

CR9:

2. please include any relevant sub-sectoral plans such as those for water and agriculture sector if they exist,

**Response:** Not Cleared

**IE:** CR7: Addressed. Letter has been changed.

CR8: Addressed. Added to consistency with national or sub-national strategies.

CR9: 1 and 2 Addressed.

**Response:** Not Cleared

**Secretariat:**

CR7: Cleared. Letter numbering has changed.

CR8: Cleared. Aligned National Action Plan (NAP) to Combat Desertification 2015–2020 added to table 4.

CR9:

1. Cleared.

Dates for the “National Physical Master Plan of the Lebanese Territory (NPMPLT)” and “Jordan Green Growth National Action Plan have been inserted at Table 4.

2. Not cleared.

Subregional or national economic plans do not appear to have been included for Jordan. Please review whether there are any relevant subregional plans for the Wadi Al-Karak watershed, particularly those related to agriculture or other economic sectors.

**Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?**

**Response:** Pending

**Secretariat:** Yes. However, this is not fully addressed. See pp. 42-43 (should be Part IIF).

CAR7: revise the table on p. 43 to include measures to be taken to ensure compliance with applicable standards.

**Response:** Not Cleared

**Secretariat:** I agree with the comments of the co-reviewer

**Response:** Not Cleared

**IE:** CAR7: Addressed measures have been added to the table.

**Response:** Cleared

**Secretariat:** Yes.

CAR 7 has been addressed as per IE comment.

**Response:** Cleared

**Secretariat:** CAR7: Cleared.

As per column 4 of table 5.

### Is there duplication of project / programme with other funding sources?

**Response:** Pending

**Secretariat:** Yes. See pp. 43-44 (should ne Part IIG). However, more details are needed.

CAR8: Please provide a summary table of related national and regional projects. The table should include project title and funding source, date (start- end) and status (ongoing, completed, etc.); project interventions objectives focus and location; synergy/ lessons learned/ complementarities with the proposed project.

**Response:** Not Cleared

**Secretariat:** I agree with the comments of the co-reviewer

**Response:** Not Cleared

**IE:** CAR8: Addressed. A table has been added to the annexes.

**Response:** Not Cleared

**Secretariat:** CAR8: Not Cleared.

Part II Section G stages 'A full overview of this mapping is available on request...' The request for the summary table was not provided. Please include the summary table in the resubmission.

### Does the project / programme have a learning and knowledge management component to capture and feedback lessons?

**Response:** Pending

**Secretariat:** Yes. See Part IIG (should be Part IIH), p. 44. A dedicated component on this is part of the project design (Component 3). However, including more details on component 3 activities is recommended.

CR10: Please provide more details on component 3 related activities.

**Response:** Not Cleared

**IE:** CR10: Addressed. More details on component 3 were added.

**Response:** Cleared

**Secretariat:**

CR10: Cleared.

Additional details were provided under component 3 through activities 3.1.1.1-3.1.1.3 as well as amendments to Part II Section H on learning and knowledge management.

### 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?

**Response:** Pending

**Secretariat:** Yes. See pp. 44-45 (should be Part II"1"). However, more information is needed.

CAR9: Revise the discussion in the consultation section and provide a summary table of the consultations undertaken in each country. This summary table should include consulted entity/ stakeholder/ local community and date, number of participants disaggregated by gender, topics discussed, and outcomes and how these outcomes are reflected in project design. Also, refer to related Annex for further details, if any.

**Response:** Not Cleared

**IE:** CAR9: Addressed. The consultation section has been revised and a summary table has been added, covering all requested information.

**Response:** Cleared

**Secretariat:** CAR9 : Cleared.

As per information ins table 6 and amended section I.

### Is the requested financing justified on the basis of full cost of adaptation reasoning?

**Response:** Pending

**Secretariat:** Yes. See pp. 45-46 (should be Part IIJ . However, please address the comment below.

CR11: Add a statement to confirm that the project objectives/ outcomes would be achieved solely based on the finding requested from the AF without additional funding from other donors.

**Response:** Not Cleared

**IE:** CR11: Addressed. A statement has been added confirming that the project objectives and outcomes will be fully achieved using the funding requested from the Adaptation Fund and will not depend on additional donor financing.

**Response:** Cleared

**Secretariat:**

CR: Cleared. As per last paragraph to Part II Section J.

### Is the project / program aligned with AF's results framework?

**Response:** Pending

**Secretariat:** Not fully. See Part III, pp. 48-50. The alignment table does fully not comply with AF requirements.

CAR10: Please address the following:

1. Add Table no. and heading
2. In the upper part of the table (AF outcome level), please distribute amounts among listed AF outcomes.
3. In the lower part of the table (AF output level), please allocate amounts among listed AF outputs.

**Response:** Not Cleared

**Secretariat:** I agree with the comments of the co-reviewer.

CAR 10:

4. Please ensure that the the table is adjusted using the guidelines set out in Results Framework Alignment Table (Amended in November 2025).

5. Please ensure that the AF Outputs in the lower part of the table correspond with the Outcome identified in the upper part of the table.

**Response:** Not Cleared

**Secretariat:** CAR10:

6. As the proposal uses the AF 2026 SRF outcomes and indicators, please pay attention to ensuring that the correct language and numbering is utilized. A number of discrepancies were identified for example; Indicator 3.1 should be indicator 3.A based on the working used.

indicator 3.2 is represented inaccurately

indicator 5 is not written accurately

6.1 reads as indicator 6A

8.1 reads as indicator 8A

For output indicators ;

1.1.1 should be 1.1

2.1.1 should be 2.1

2.2.1 should be 2.2.

3.2.1 should be 3.2

5.1.1 should be 5.2

**Response:** Not Cleared

**IE:** CAR10: 1: Addressed. Tables no. and heading were added.

2. and 3. Addressed. The budget has been distributed across the relevant AF outcomes and outputs in the respective sections of the table.

4. 5.6. Addressed. The table has been revised in line with the November 2025 amended guidelines, ensuring consistency between AF outcomes and outputs and correcting all SRF language and indicator numbering.

**Response:** Cleared

**Secretariat:**

CR11: Not cleared.

The grant amount column should have figures represented at the individual outcome and output indicator level. Please update Table 8 in that regard.

**Has the sustainability of the project/programme outcomes been taken into account when designing the project?**

**Response:** Pending

**Secretariat:** Yes. See pp. 46-47 (should be Part IIK). However, please reflect on the O&M aspects of the facilities, installations, etc. planned to be developed by the project. Also, reflect on the project replicability/ upscaling of

the project outcomes.

CR12: under a dedicated subheading, please clarify the O&M sustainability aspects for the facilities, installations, etc. planned to be developed by the project.

CR13: Please reflect on the potential replication/ scaling up of the project outcomes with other funds after its end.

**Response:** Not Cleared

**IE:** CR12: Addressed. A dedicated Operation and Maintenance Sustainability subsection has been added.

CR13: Addressed. The sustainability section now explains how the project's frameworks, investment portfolios and pilot results can support resource mobilization and the replication and scaling up of successful interventions through national budgets, climate funds, development partners and private-sector financing after project completion.

**Response:** Cleared

**Secretariat:**

CR12: Cleared. A new paragraph on Operations and Maintenance sustainability has been added at Part II Section K.

CR13: Cleared . A new paragraph on replication and scaling up has been added at Part II Section K.

**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?**

**Response:** Pending

**Secretariat:** Not fully. See Part IIL, pp. 47-48.

CAR11: Please address the following:

1. Add table number and heading.
2. At the beginning of Part IIL, please provide a brief discussion on the potential project risk and explicitly include the project overall risk categorization as per AF ESP requirements (e.g.: Category A, B or C).
3. Under column 3 of the table, add "No risk" or related risks for AF E&S principles: Indigenous Peoples, Involuntary Resettlement, and Public Health, along with related notes.

**Response:** Not Cleared

**IE:** CAR11: Addressed. All three points have been addressed in relevant section.

**Response:** Cleared

**Secretariat:** CAR11: Cleared.

The risk alignment table has been adequately updated.

**Response:** Cleared

**Secretariat:** CAR12(NEW):

1. Based on some of the project outputs 1.2.2, 2.1.1 and 2.1.2 etc. please clarify if the project contains USPs.
2. If so please address USPs at part II Section L- Environmental and Social Impacts and Risks as well as Part II Section A under the outputs and specify the type of USPs based on the guidance document. Please consult <https://www.adaptation-fund.org/document/guidance-document-for-project-programme-with-unidentified-sub-projects/>

**Does the project promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms?**

**Response:** Pending

**Secretariat:** Yes. See Part IIB, p. 38. Sufficient for CN stage. More details would be needed at full proposal stage.

**Response:** Cleared

**Secretariat:** Yes. As described in Part IIB the project will develop new innovative adaptation practices in the region- including nature-based solutions, adaptive infrastructure and community-driven technologies- with the intention of scaling and replicating successful approaches. It also aims to build the evidence base through multi-layered vulnerability assessments, GIS and decision-support systems, and systematic documentation of pilot results and lessons learned to inform wider adaptation planning.

## Resource Availability

**Is the requested project / programme funding within the funding windows of the regional projects/programmes?**

**Response:** Pending

**Secretariat:** Yes.

**Response:** Cleared

**Secretariat:** N/A

**Response:** Cleared

**Secretariat:** No Comments provided

**Are the administrative costs (Implementing Entity Management Fee and Project/ Programme Execution Costs) at or below 10 per cent of the project/programme for implementing entity (IE) fees and at or below 10 per cent of the project/programme cost for the execution costs?**

**Response:** Pending

**Secretariat:** Yes. the implementing fee (USD 2,726,959) is at 10% of the project total cost (USD 27,269,598). The execution cost (USD 2,269,598) is at 8.3%.

CR14: Please clarify if the execution cost reflects the IE involvement as EE (Note: In case IE is serving as EE, which is acceptable only under exceptional circumstances and must be well-justified, the execution cost should be limited to 1.5% of the part of the project/programme executed by the implementing entity), while the rest of the execution costs goes to the other EEs. See related CAR3 above.

The proposal includes a PFG request of USD 120,000.

CAR11:

1. Please clarify if UN-Hab intends that all the EEs will execute the PFG or if UN-Hab will be executing the PFG. If UN-Hab will execute the PFG please amend the PFG request form to indicate UN-Hab also as the EE for the PFG.
2. Please include an actual start and end date for the PFG. Since this is the first review of the proposal consider including a date post AFB48 .

**Response:** Not Cleared

**IE:** CR14: Addressed. The execution cost includes UN-Habitat's involvement as an EE and is limited to 1.5% of the portion it will execute. The justification has been included in the concept note and supported by letters from the DAs. The remaining execution costs are allocated to the other EEs.

CAR11: Addressed.

1. UN-Habitat will execute the PFG, and the PFG request form has been amended accordingly.
2. Actual PFG start and end dates have been added.

**Response:** Cleared

**Secretariat:** CR14: Cleared.

As per paragraph below project components and financing table.

CAR11:Cleared.

PFG request form amended to reflect UN-Hab and PFG executor. Proposed start date for the PFG included in the PFG request form.

**Response:** Cleared

**Secretariat:** Please ensure that any updates in the proposal- title or financing amounts should also be updated in the portal for the re-submission.

## Eligibility of IE

**Is the project/programme submitted through an eligible Multilateral or Regional Implementing Entity that has been accredited by the Board?**

**Response:** Pending

**Secretariat:** Yes. UN-Habitat is accredited by AFB.

Accreditation Expiration Date: 30 October 2027

**Response:** Cleared

**Secretariat:** N/A

**Response:** Cleared

**Secretariat:** No Comments provided



# CONCEPT NOTE FOR REGIONAL PROJECT/PROGRAMME

## PART I: PROJECT/PROGRAMME INFORMATION

**Title of Project/Programme:** Transformative Adaptation for Watershed Sustainability and Livelihoods"– A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (Project acronym: TAWASUL)

**Countries:** Jordan, Lebanon

**Thematic Focal Area<sup>1</sup>:** Disaster risk reduction and early warning systems

**Type of Implementing Entity:** Multilateral Implementing Entity

**Implementing Entity:** UN-Habitat

**Executing Entities:** UN-Habitat, Lebanon: National Council for Scientific Research (CNRS), Society for the Protection of Nature in Lebanon (SPNL), Jordan: International Union for Conservation of Nature (IUCN), Wadi NGO, MoEnv, Ministry of Agriculture (MoA), MoPIC in Jordan

**Amount of Financing Requested:** 29,999,361 (in U.S Dollars Equivalent)

**Project Formulation Grant Request:** Yes ☒ No ☐

**Amount of Requested financing for PFG:** 120,000 (in U.S Dollars Equivalent)

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

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

### Stage of Submission:

- ☒ This proposal has been submitted before including at a different stage (pre-concept, concept)
- ☐ This is the first submission ever of the proposal at any stage

In case of a resubmission, please indicate the last submission date: 12/8/2026

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<sup>1</sup> Thematic areas are: Food security; Disaster risk reduction and early warning systems; Transboundary water management; Innovation in adaptation finance.

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## List of acronyms and abbreviations

| Acronym/<br>Abbreviation | Full name                                                                                                                               | Acronym/<br>Abbreviation | Full name                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------|
| <b>4NC</b>               | Fourth National Communication                                                                                                           | <b>MPA</b>               | Marine Protected Area                                     |
| <b>AF</b>                | Adaptation Fund                                                                                                                         | <b>MoPIC</b>             | Ministry of Planning and International Cooperation        |
| <b>AECID</b>             | Agencia Española de Cooperación Internacional para el Desarrollo (Spanish Agency for International Development Cooperation)             | <b>MoWI</b>              | Ministry of Water and Irrigation                          |
| <b>AUB-NCC</b>           | American University of Beirut – National Conservation Center                                                                            | <b>MVA</b>               | Multi-layered Vulnerability Assessment                    |
| <b>BCM</b>               | Billion Cubic Meter                                                                                                                     | <b>NAPs</b>              | National Adaptation Plans                                 |
| <b>BMZ</b>               | Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (German Federal Ministry for Economic Cooperation and Development) | <b>NARC</b>              | <u>National Agricultural Research Center</u>              |
| <b>BTR1</b>              | First Biennial Transparency Report                                                                                                      | <b>NBSAP</b>             | National Biodiversity Strategy and Action Plan            |
| <b>CCACs</b>             | Community Climate Action Committees                                                                                                     | <b>NEWSP</b>             | National Early Warning System Platform                    |
| <b>CDR</b>               | Council for Development and Reconstruction                                                                                              | <b>NCCP</b>              | National Climate Change Programme                         |
| <b>CNRS</b>              | National Council for Scientific Research                                                                                                | <b>NCNE</b>              | National Centre for Natural Hazards and Early Warning     |
| <b>CHIRPS</b>            | Climate Hazards Group InfraRed Precipitation with Station                                                                               | <b>NCSCM</b>             | <u>National Center for Security and Crises Management</u> |
| <b>COs</b>               | Country Offices                                                                                                                         | <b>NDCs</b>              | Nationally Determined Contributions                       |
| <b>DGUP</b>              | Directorate General of Urban Planning                                                                                                   | <b>NEWSP</b>             | National Early Warning System Platform                    |
| <b>EDL</b>               | Electricity of Lebanon                                                                                                                  | <b>NGO</b>               | Non-Governmental Organization                             |
| <b>EIA</b>               | Environmental Impact Assessment                                                                                                         | <b>NPMLT</b>             | National Physical Master Plan of the Lebanese Territory   |
| <b>ESMP</b>              | Environmental and Social                                                                                                                | <b>NPP</b>               | Net Primary Production                                    |
| <b>ESP</b>               | Environmental and Social Policy                                                                                                         | <b>NWSS</b>              | National Water Sector Strategy                            |
| <b>FAO</b>               | Food and Agriculture Organization of the United Nations                                                                                 |                          |                                                           |

|              |                                                                                                       |                   |                                                                                        |
|--------------|-------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------|
| <b>GBWP</b>  | Gross Biomass Water Productivity                                                                      | <b>PMU</b>        | Programme Management Unit                                                              |
| <b>GDP</b>   | Gross Domestic Product                                                                                | <b>RCP</b>        | Representative Concentration Pathway                                                   |
| <b>GIS</b>   | Geographic Information System                                                                         | <b>RESRP</b>      | Renewable Energy Sector Reform Project                                                 |
| <b>GIZ</b>   | Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation) | <b>ROAS</b>       | Regional Office of Arab States                                                         |
| <b>HPP</b>   | Hydrological Power Plant                                                                              | <b>RPSC</b>       | Regional Project Steering Committee                                                    |
| <b>HRC</b>   | High Relief Council                                                                                   | <b>RSCN</b>       | Royal Society for the Conservation of Nature                                           |
| <b>IDPs</b>  | Internally Displaced Persons                                                                          | <b>RSS</b>        | Royal Scientific Society                                                               |
| <b>IEE</b>   | Initial Environmental Examination                                                                     | <b>SCADA</b>      | Supervisory Control and Data Acquisition                                               |
| <b>IMF</b>   | International Monetary Fund                                                                           | <b>SEA</b>        | Strategic Environmental Assessment                                                     |
| <b>IUCN</b>  | International Union for Conservation of Nature                                                        | <b>SOP</b>        | Standard Operation Procedures                                                          |
| <b>JVA</b>   | Jordan Valley Authority                                                                               | <b>SPNL</b>       | Society for the Protection of Nature in Lebanon                                        |
| <b>KBA</b>   | Key Biodiversity Area                                                                                 | <b>SSP</b>        | Shared Socioeconomic Pathway                                                           |
| <b>KFW</b>   | Kreditanstalt für Wiederaufbau (German Development Bank)                                              | <b>UoMs</b>       | Unions of Municipalities                                                               |
| <b>LCRP</b>  | Lebanon Crisis Response Plan                                                                          | <b>UNCCD</b>      | United Nations Convention to Combat Desertification                                    |
| <b>LPD</b>   | Land Productivity                                                                                     | <b>UNDP</b>       | United Nations Development Programme                                                   |
| <b>LRA</b>   | Litani River Authority                                                                                | <b>UN ESCWA</b>   | United Nations Economic and Social Commission for Western Asia                         |
| <b>LULC</b>  | Land Use Land Cover                                                                                   | <b>UN-Habitat</b> | United Nations Human Settlements Programme                                             |
| <b>MEL</b>   | Monitoring, Evaluation and Learning                                                                   | <b>USAID</b>      | United States Agency for International Development                                     |
| <b>MoA</b>   | Ministry of Agriculture                                                                               | <b>UN Women</b>   | United Nations Entity for Gender Equality and the Empowerment of Women                 |
| <b>MoE</b>   | Ministry of Environment - Lebanon                                                                     | <b>UNRWA</b>      | United Nations Relief and Works Agency for Palestine Refugees in the Near East         |
| <b>MoEnv</b> | Ministry of Environment - Jordan                                                                      | <b>USD</b>        | United States Dollar                                                                   |
| <b>MoIM</b>  | Ministry of Interior and Municipalities                                                               | <b>WAJ</b>        | Water Authority of Jordan                                                              |
| <b>MoEW</b>  | Ministry of Energy and Water                                                                          | <b>WAPOR</b>      | <a href="#">Water Productivity through Open access of Remotely sensed derived data</a> |
| <b>MoLA</b>  | Ministry of Local Administration                                                                      | <b>WDMP</b>       | <a href="#">Water Demand Management Plan</a>                                           |

## Project/Programme Background and Context:

### 1. Introduction to the problems and needs

The proposed regional project targets climate resilience in two ecologically significant but highly vulnerable hydrological systems: The Awali River Watershed in Lebanon and Wadi Al-Karak Watershed in Jordan. Both sites are emblematic of the climate-water nexus in arid and semi-arid regions, where pressures from extreme weather events, rapid urbanization, and environmental degradation intersect with social vulnerability and post-disaster fragility.

#### 1.1 Arab region context

The Arab region is undergoing interconnected pressures from rapid urbanization, socio-economic fragility, large-scale displacement, accelerating climate stress, and chronic underinvestment in long-term development. As documented by the UN-Habitat State of Arab Cities Report 2022, these pressures are deeply interconnected and mutually reinforcing, collectively defining the structural backdrop against which climate and environmental interventions across the region must be designed.

Socio-economic fragility characterizes much of the region. Low-income and vulnerable populations are increasingly concentrated in slums and informal settlements, while unemployment across Arab States exceeds 11%, with youth unemployment 2.5 to 3 times higher than the adult rate, and young women disproportionately excluded from the labor market. These structural inequalities reduce household adaptive capacity and heighten exposure to environmental and economic shocks.<sup>2</sup> Migration including internal displacement, conflict- and climate-related displacement, and labor migration, further intensifies urban pressures. The Arab region hosts approximately 28% of the world's refugee population, around 10.7 million people, placing severe strain on water supply systems, sanitation, housing, and municipal services. This

<sup>2</sup> [UNHabitat \(2023\) - The State of Arab Cities Report 2022](#)

demographic pressure, compounded by rural-to-urban migration driven by agricultural collapse and deteriorating livelihoods, has produced acute housing deficits across the region. Gentrification and declining housing affordability are increasingly displacing vulnerable populations into secure and environmentally exposed living conditions.<sup>3</sup>

Water scarcity and food insecurity represent existential constraints on the region's development trajectory. Thirteen Arab countries fall below the water poverty threshold of 500 cubic meters per capita per year. Water shortages are worsening as higher temperatures accelerate evaporation and strain groundwater reserves, while urban centres face growing threats to energy provision, transport networks, and public health. These hydrological pressures translate directly into deteriorating food security: hunger in the Arab States reached its highest level in more than two decades in 2024, affecting 77.5 million people, representing 15.8% of the population, while nearly 198 million faced moderate or severe food insecurity, a figure that has risen by more than 60% since 2015.<sup>4</sup> Ecosystem degradation deepens these resource pressures further. Over two-thirds of the 70 million hectares affected by human-induced degradation across the Arab region are agricultural land, with overgrazing, deforestation, soil salinization, and intensifying climate stress collectively undermining the watershed systems, biodiversity, and food-producing landscapes upon which rural livelihoods and urban food supplies across the region depend.<sup>5</sup> These challenges are compounded by structural financing and governance gaps. Funding remains heavily oriented toward humanitarian response and reconstruction, rather than long-term climate adaptation, watershed restoration, and sustainable development. The management and financing of urban and environmental projects remain concentrated at the level of central governments, resulting in limited coordination across levels of government and reduced local response capacity. This reactive financing architecture, oriented toward recovery rather than long-term resilience, leaves underlying environmental, social, and institutional vulnerabilities structurally unresolved, creating the very conditions that necessitate interventions such as the present project.<sup>6</sup>

Rationale for the regional approach: Although the Awali River Watershed in Lebanon and the Wadi Al-Karak Watershed in Jordan are neither hydrologically connected nor transboundary, they face similar climate-related challenges, including water scarcity, flooding, ecosystem degradation, rapid urbanization, and fragmented watershed governance. Their different ecological, hydrological, and institutional contexts also provide an opportunity to test and adapt common approaches across contrasting watershed settings. Implementing the project through a regional framework enables the two countries to exchange experience, strengthen institutional cooperation, and jointly develop transferable approaches to watershed resilience that can be replicated across the wider Arab region. The regional approach also creates economies of scale in knowledge generation, digital tool development, and capacity building, while supporting the implementation of national adaptation priorities under both countries' Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). It therefore generates shared knowledge, institutional partnerships, and regional public goods that would not be achieved through two independent national projects.

## 1.2 National context

### 1.2.1 Lebanon context

Lebanon is a small country (10,452 km<sup>2</sup>) located on the eastern Mediterranean. The country has endured a prolonged and compounding series of crises that have fundamentally eroded its institutional capacity, economic resilience, and environmental governance. Since 2019, near-simultaneous shocks – economic collapse, political paralysis, the Syria refugee crisis, COVID-19, the Beirut Port explosion, and recurring armed conflicts – have widened inequalities and left the most vulnerable communities disproportionately exposed, making addressing watershed sustainability and climate adaptation a prerequisite for durable recovery.

Lebanon faces one of the most severe peacetime economic collapses in modern history, with real gross domestic product (GDP) contracting 38–40% cumulatively since 2019, currency devaluation exceeding 98%, banking sector insolvency, and monetary poverty tripling to 44% by 2022.<sup>7</sup> The 2020 Beirut Port explosion (approximately US\$8 billion in damages),<sup>8</sup> the 2023–2024 southern border conflict (US\$14 billion in losses and US\$11 billion in reconstruction needs), and renewed 2026 hostilities – which eroded GDP by 7.1% in 2024 alone – have compounded fiscal collapse and delayed International Monetary Fund (IMF) reforms, placing recovery under severe downside risk.<sup>9</sup>

Climate adaptation, watershed management, and environmental governance that are already underfunded and fragmented before 2019,<sup>10</sup> have remained peripheral to emergency response priorities. Lebanon's First Biennial Transparency Report (BTR1) confirms that resilience sectors remain relatively underfunded and that fragmented governance continues to undermine coordination,<sup>11</sup> while NDC 3.0 identifies critical gaps in institutional capacity and climate finance as key implementation barriers.<sup>12</sup> Actual climate investment falls far short of the estimated US\$7.6 billion needed between 2024 and 2030,<sup>13</sup> as ecosystems and water systems continue to degrade, accumulating risks that will define Lebanon's long-term development trajectory.<sup>14</sup>

Lebanon's resident population is estimated at approximately 5.8–6 million, with a density of roughly 568 persons/km<sup>2</sup>; one of the highest in the Arab world.<sup>15</sup> The country hosts the highest number of refugees per capita in the world: approximately 1.12 million Syrian displaced persons (as of December 2024) and 450,000 Palestinian refugees registered with UNRWA, bringing the total de facto population to over 7 million.<sup>16</sup> This demographic pressure intensifies competition over land, water, and natural resources, directly compounding watershed degradation and undermining ecosystem-based governance.

The Syrian crisis, ongoing since 2011, placed Lebanon under exceptional humanitarian and resource strain, increasing national demand on water services by an estimated 28% and raising water stress by 6% nationally.<sup>17</sup> While a partial return movement of 360,000–400,000 Syrians followed the fall of the Assad government in December 2024, approximately 1.12

<sup>3</sup> UNHabitat (2023) - *The State of Arab Cities Report 2022*

<sup>4</sup> CEDARE (2025) *Water in the Arab Region – Challenges and Opportunities for a Sustainable Future*

<sup>5</sup> FAO (2025) - *Desertification and Agrifood Systems: Restoration of Degraded Agricultural Lands in the Arab Region*

<sup>6</sup> UNHabitat (2023) *The State of Arab Cities Report 2022*

<sup>7</sup> World Bank. (2024a). *Lebanon Poverty and Equity Assessment 2024: Weathering a Protracted Crisis*. Washington, D.C.: World Bank Group.

<sup>8</sup> World Bank. (2025). *Lebanon Rapid Damage and Needs Assessment (RDNA)*. Washington, D.C.: World Bank Group.

<sup>9</sup> World Bank. (2025). *Lebanon Rapid Damage and Needs Assessment (RDNA)*. Washington, D.C.: World Bank Group.

<sup>10</sup> MoE Lebanon/UNDP (2022). *NAP Readiness Proposal: Increased Climate Resilience Planning for Municipal Water Resources in Lebanon*. Beirut: Ministry of Environment & UNDP.

<sup>11</sup> MoE Lebanon/UNDP/GEF (2024). *Lebanon's First Biennial Transparency Report (BTR1) on Climate Change*. Beirut: Ministry of Environment.

<sup>12</sup> Government of Lebanon/MoE (2025). *Lebanon's Nationally Determined Contribution (NDC 3.0) – Target Year 2035*. Beirut: MoE/UNDP/GEF.

<sup>13</sup> World Bank. (2024b). *Lebanon Country Climate and Development Report (CCDR)*. Washington DC: World Bank Group.

<sup>14</sup> MoE Lebanon (2025). *Lebanon's National Adaptation Plan (NAP): Strategy and Roadmap 2025–2035*. Beirut: MoE/UNDP.

<sup>15</sup> World Bank. (2024a). *Ibid.*

<sup>16</sup> UNHCR/Government of Lebanon (2026). *Lebanon Crisis Response Plan (LCRP) 2026*. Beirut: UNHCR.

<sup>17</sup> Müller, M.F. et al. (2019). *Refugees, Water Balance, and Water Stress: Lessons Learned from Lebanon*. *Ambio*, Vol. 49. doi:10.1007/s13280-019-01272-0.

million Syrians remain, as return is constrained by insecurity, housing destruction, and lack of livelihoods.<sup>18</sup> The most recent escalation of hostilities (March–April 2026) triggered approximately 1.2 million internally displaced persons (IDPs); as of mid-May 2026, around 877,400 remain displaced, with over 130,500 in collective shelters.<sup>19</sup> Climate impacts fall disproportionately on the most vulnerable: rural households face projected income reductions of 24% (vs. 12% for urban households), with displaced communities, informal settlers, and subsistence farmers bearing the greatest exposure and least adaptive capacity.<sup>20</sup> Women in rural watershed communities bear primary responsibility for household water collection and food production, yet remain systematically underrepresented in governance structures and climate adaptation financing decisions, making gender-responsive planning an operational prerequisite for effective watershed resilience.<sup>21</sup>

Lebanon's compressed mountain-to-coast topography creates dynamic hydrology, making integrated watershed management ecologically critical and institutionally complex. The Litani, the Orontes, and the Awali rivers are principal freshwater systems supporting agriculture, urban supply, and biodiversity in a densely populated territory.<sup>22</sup> Groundwater is about 0.7 billion cubic meters (BCM) per year against only 0.5 BCM recharge, while river discharge has declined roughly 60% over the last four decades of long-term averages.<sup>23</sup> Economic pressures, unregulated quarrying, and overgrazing drive deforestation, erosion, runoff, and spring drying; pressures identified in the NAP 2025–2035, National Biodiversity Strategy and Action Plan (NBSAP) 2025–2030, and the National Strategy for Forest Fire Management (2024).<sup>24</sup>

Water quality is deteriorating rapidly, with documented microbiological contamination, nitrate pollution, and pesticide residues across Lebanon's river systems. Field studies show *E. coli* and faecal coliform levels in the Awali River exceeding FAO irrigation safety thresholds.<sup>25</sup> Only 8% of collected wastewater receives treatment, with the remainder discharged raw into watercourses and coastal waters,<sup>26</sup> further degrading the freshwater systems on which livelihoods and ecosystems depend. Water governance remains structurally fragmented across the Ministry of Energy and Water (MoEW), Regional Water Establishments, the Council for Development and Reconstruction (CDR), and municipal authorities; consistently hampering the development of unified, climate-responsive watershed policies and basin-level action.<sup>27</sup>

Lebanon's forests and ecosystems face compounding climate-driven stress. Hotter, drier summers and prolonged droughts are increasing wildfire frequency and intensity: 194 fires broke out in one week in October 2019, devastating Chouf and Metn; major fires returned to Chouf in August 2025 and threatened Jezzine, the Awali's principal tributary zone, including the Bkassine pine forest in November 2025.<sup>28</sup> The Lebanese Cedar, listed as near threatened on the International Union for Conservation of Nature (IUCN) Red List and reduced to only 17 km<sup>2</sup> nationwide, faces drought, pests, and recurring fires, threatening the ecological integrity of the Shouf Biosphere Reserve.<sup>29</sup> At 2°C warming, up to 9% of Lebanon could become semi-arid,<sup>30</sup> undermining water regulation, infiltration, and soil stabilisation in the Awali. Land degradation and desertification already cost Lebanon about US\$132 million annually in lost ecosystem productivity.<sup>31</sup>

### 1.2.2. Jordan context

Jordan is among the countries most vulnerable to climate change impacts despite contributing minimally to global greenhouse gas emissions. According to Jordan's Fourth National Communication (4NC) on Climate Change, the country is already experiencing rising temperatures, declining and increasingly erratic rainfall patterns, prolonged droughts, and more frequent extreme weather events, including heatwaves, flash floods, and landslides. These climate-induced hazards are intensifying pressures on water resources, ecosystems, agriculture, infrastructure, and urban systems, significantly increasing risks to livelihoods, public safety, and economic stability. Jordan's territorial and socio-economic characteristics further exacerbate its climate vulnerability. The country covers an area of approximately 89,300 km<sup>2</sup>, with nearly 80% classified as arid and semi-arid lands, making natural resources, ecosystems, and agricultural systems highly sensitive to climate variability and water scarcity. At the same time, population and economic activities are heavily concentrated in limited urban and climatically favorable areas, increasing pressure on infrastructure, housing, water resources, and public services. Jordan has long served as a regional refuge amid ongoing instability in neighboring countries and remains one of the world's highest refugee-hosting countries per capita. Rapid population growth and accelerated urbanization — particularly following the regional crises in Iraq and Syria — have significantly strained infrastructure, natural resources, housing, and municipal services. By the beginning of 2026, Jordan's population reached approximately 12 million people, with nearly 90.3% of the population living in urban areas, positioning Jordan among the world's most urbanized countries. Since independence in 1946, Jordan has hosted nearly 4 million refugees, further increasing pressure on already overstretched water supply systems, sanitation networks, drainage infrastructure, housing, and social services, particularly in urban centres and vulnerable municipalities.

Water scarcity remains Jordan's most critical development challenge, with the country ranked as the second most water-scarce country globally, with annual renewable freshwater resources estimated at only 61 m<sup>3</sup> per person in 2025, among the lowest globally and far below the 500 m<sup>3</sup> per person threshold that defines absolute water scarcity. Jordan's water resources are under extreme pressure from over-abstraction, trans-boundary limitations, climate change impacts, and rising domestic demand. Climate change is expected to further reduce water availability through declining precipitation, lower groundwater recharge, increasing evapotranspiration, and increasing drought frequency. In Jordan, while meteorological droughts are increasing in frequency and duration, but hydrological drought is chronic, particularly in northern areas like Mafraq, where prolonged rainfall deficits combined with heavy withdrawals from dams, reservoirs, and aquifers have

<sup>18</sup> UNHCR Lebanon (2024). Annual Results Report 2024 – Lebanon. Beirut: UNHCR.

<sup>19</sup> Extrapolated data from IOM (2026). Displacement Tracking Matrix: Mobility Snapshot – Round 99. [not available online], and IACL (2026). List of IDPs' Collective Sites. [not available online]

<sup>20</sup> Red Cross Red Crescent Climate Centre/ICRC. (2022). Lebanon Country Climate and Conflict Risk Profile. The Hague: RCCC.

<sup>21</sup> MoE Lebanon/UNDP. (2025). Lebanon's NDC 3.0 – Target Year 2035. Beirut: MoE/UNDP.

<sup>22</sup> Shaban, A. et al. (2021). Rivers of Lebanon: Significant Water Resources under Threats. In *Water Resources Management and Sustainability*. London: IntechOpen. doi:10.5772/intechopen.96655; see also: Ministry of Energy and Water, Lebanon. (2012). National Water Sector Strategy. Beirut: MoEW.

<sup>23</sup> Shaban, A. et al. (2021). *ibid.*

<sup>24</sup> MoE/UNDP/GCF (2025). Lebanon's National Adaptation Plan (NAP): Strategy and Roadmap 2025–2035. Beirut: MoE/UNDP.

<sup>25</sup> Korfali, S.I. and Jurdi, M. (2011). "Suitability of Surface Water for Domestic Water Use: Awali River Case Study." *European Water* 35: 3–12. See also: WHO EMHJ. (2024). Vol. 30, Issue 2.

<sup>26</sup> Fanack Water (2025). [Water Quality in Lebanon](#). See also: World Bank (2012). Lebanon Water Sector: Public Expenditure Review. Washington DC: World Bank Group.

<sup>27</sup> World Bank. (2024). Lebanon CCDR. See also: MoE/UNDP. (2025). Lebanon NAP 2025–2035.

<sup>28</sup> Lebanese Civil Defense (2019). Statement on October 2019 Wildfires. See also: Hély, C. et al. (2022). Fire Regime Analysis in Lebanon (2001–2020). *Fire* 5(5): 141. doi:10.3390/fire5050141.

<sup>29</sup> The Shouf Biosphere Reserve, designated by UNESCO under the Man and Biosphere (MAB) Programme in 2005, is Lebanon's first and largest biosphere reserve (~550 km<sup>2</sup>, Chouf and Jezzine districts), encompassing the Shouf Cedar Nature Reserve, its core protection zone, which contains the largest remaining Lebanese Cedar stands in Lebanon, including Ain Zhalta–Bmohray and Barouk. Managed by the Shouf Cedar Society in coordination with MoE.

<sup>30</sup> PlanAdapt/UNDP/NAP Global Network (2023). [Supporting the Development of Lebanon's National Adaptation Plan Process](#).

<sup>31</sup> World Bank/FAO. (2021). Lebanon — Land Degradation Neutrality Assessment. Washington DC: World Bank Group.

depleted water resources beyond sustainable levels. Drought has had a particularly significant impact on Jordan's water scarcity challenges, which in turn increased exposure and sensitivity to drought's impacts. Historical records show that meteorological droughts have occurred in modern day Jordan for centuries, with notable dry years in the 18th and 19th centuries and more frequent multi-year droughts in the 20th century. Severe meteorological droughts in 1958–1962, 1997, and 1999, for instance, devastated rain-fed agriculture and grazing lands, reduced dam storage to historic lows, and directly impacted the livelihoods of over 180,000 farmers and herders. Since 2000, major drought events were documented in 2001, 2008–2009, 2011, and most recently in 2021<sup>32</sup>.

According to the National Green Growth Action Plan for the Water Sector, more than 90% of rainwater in Jordan is lost through evaporation or surface runoff, while the National Water Strategy emphasizes the growing impacts of climate variability and rainfall fluctuation on water system capacity and supply reliability. Simultaneously, short-duration and high-intensity rainfall events are increasing runoff intensity, flash flood risks, soil erosion, and infrastructure damage, particularly in degraded and urbanized watersheds where natural infiltration capacities have been significantly reduced. Environmental degradation and ecosystem stress are also accelerating across Jordan's landscapes and watershed systems. Jordan's 4NC identifies increasing risks related to land degradation, desertification, biodiversity loss, declining vegetation productivity, and ecosystem deterioration. Unsustainable land-use practices, overgrazing, declining vegetation cover, water over-abstraction, and unplanned urban expansion are reducing ecosystem resilience and increasing vulnerability to climate hazards. Fragile ecosystems and watersheds are increasingly unable to regulate water flows, stabilize soils, support biodiversity, and sustain local livelihoods. Socio-economic vulnerabilities are further compounded by high unemployment, rising living costs, and increasing poverty risks. Unemployment rates reached approximately 21.4% during the third quarter of 2025, with youth and women disproportionately affected. Jordan also has a predominantly young population, with nearly 63% under the age of 30, placing increasing long-term pressure on employment opportunities, infrastructure, education, housing, and service delivery systems. The Jordanian economy remains highly vulnerable to climate change due to its dependence on climate-sensitive sectors such as water, agriculture, tourism, and energy. Declining rainfall, recurrent droughts, land degradation, and water scarcity are increasingly reducing agricultural productivity and livelihood security, particularly in vulnerable watershed systems and rural communities.

These pressures are further compounded by fragmented governance and institutional coordination challenges. Responsibilities for water management, land-use planning, infrastructure, environmental protection, disaster risk reduction, and agriculture are distributed across multiple institutions and administrative boundaries, often resulting in overlapping mandates, coordination gaps, and limited integrated planning. Municipalities meanwhile face chronic financial and technical constraints, increasing infrastructure maintenance burdens, and limited adaptive capacities to address rapidly growing climate and environmental risks. These interconnected climate, environmental, urban, and socio-economic pressures are increasing the exposure and vulnerability of Jordan's watersheds, infrastructure systems, and local communities to compound climate risks, highlighting the urgent need for integrated watershed-based adaptation approaches that strengthen climate resilience, ecosystem restoration, water security, resilient infrastructure, sustainable livelihoods, and coordinated governance across sectors and territories.

## 2.Climate change

### 2.1 Lebanon

**Climate:** Lebanon has a Mediterranean-type climate characterized by hot and dry summers (June–September) and cool and rainy winters (December–mid-March), and warm spring and autumn. Mean annual temperature is 15°C. Coastal summers are hot and humid, exceeding 35°C in August, but the sea moderates daily temperature ranges relative to inland areas; January temperatures are around 5 to 10°C. Coastal annual rainfall is 700–1,000 mm, and about 70% of the national rainfall falls in November–March.<sup>33</sup>

**Climate change:** Lebanon is projected to warm by 1.6°C–2.2°C by mid-century and 2.2°C–4.9°C by end-century under Representative Concentration Pathway (RCP) 4.5 and RCP 8.5 scenarios, with the strongest increases in summer and autumn. Annual precipitation is projected to decline by 6.5%–9% by mid-century and 9%–22% by end-century. Under Shared Socioeconomic Pathway (SSP) 5-8.5 consecutive dry days increase across all regions in 2021–2040 and 2041–2060, specifically in southern and coastal areas; drought risk intensifies toward 2050 under RCP 4.5, RCP 8.5, and SSP5-8.5. Heatwaves become longer and more severe, with days above 35°C and 40°C nearly doubling by 2041–2060 across coastal and inland areas, while compound heatwaves–drought events increase almost fivefold by mid-century, exacerbating climate risks across key sectors.<sup>34</sup>

**Climate change impacts:** Rising temperatures and declining precipitation will affect Lebanon's water resources, agriculture, ecosystems, infrastructure, public health, energy systems, and key economic sectors. The increase in average temperatures and decline in annual precipitation are expected to reduce Water availability will fall through lower river flows, higher evaporation, and a projected 40%–70% decline in snow cover, with snow residence time declining from about 110 days to 45 days. Sea level rise of 30–60 cm over the next 30 will increase saltwater intrusion into coastal aquifers, coastal flooding, and erosion. Agriculture faces reduced soil moisture, more droughts and heatwaves, higher irrigation demand, pests and diseases, and fruit-tree yields losses of up to 50% in some areas. Cooling electricity demand is projected to rise about 1.8% per 1°C of warming, reaching around 5.8% for a 3°C increase. Climate change is expected to increase health risks, including heat-related illness, infectious diseases, and malnutrition, while threatening tourism, natural and cultural heritage, livelihoods and economic resilience.<sup>35</sup>

### 2.2 Jordan

**Climate:** Jordan is located in the West Asia region and is characterized by predominantly dry to semi-arid climate conditions. Annual precipitation falls below 50 millimeters across most of the country's territory, rising to higher levels only in the northwestern highlands. Rainfall is highly seasonal, concentrated between October and May, and varies significantly across Jordan's diverse topographic zones — from the relatively wetter highland areas to the hyper-arid eastern and southern desert regions. Summers are hot and dry, winters are cool with occasional frost at higher elevations, and the Jordan Valley experiences mild winters alongside extremely hot, dry summers with minimal rainfall throughout the year.

**Climate change:** Observed trends and climate projections confirm that Jordan is already experiencing measurable and accelerating climate change, with conditions expected to deteriorate significantly throughout the century. Based on long-

<sup>32</sup> DID report: Planning for Secure Water Futures in Contexts of Drought and Displacement: Evidence from Mafrq, Jordan | UN-Habitat

<sup>33</sup> MoE/UNDP/GEF (2022). Lebanon's Fourth National Communication to the UNFCCC. Beirut, Lebanon.

<sup>34</sup> MoE/UNDP/GEF (2022). Lebanon's Fourth National Communication to the UNFCCC. Beirut, Lebanon.

<sup>35</sup> MoE/UNDP/GEF (2022). Lebanon's Fourth National Communication to the UNFCCC. Beirut, Lebanon.

term historical data, annual precipitation has been declining at a rate of 1.2 mm per year, while mean, maximum, and minimum temperatures are all increasing, at rates of 0.02, 0.01, and 0.03°C per year respectively. Looking ahead, all climate models consistently project a clear decrease in mean annual precipitation across Jordan, with a best estimate decline of approximately 10.8 mm by 2050 compared to 2000 levels, and further reductions of up to 20 mm or more annually by 2080 under higher emissions scenarios. Temperatures are projected to increase by approximately 1°C to 1.3°C by 2050, with warming more pronounced during summer months, and the number of very hot days exceeding 35°C is expected to rise by 23 to 32 additional days annually by mid-century. Jordan's Fourth National Communication (4NC) confirms that by 2100, Jordan will face a significantly warmer and drier climate under all assessed scenarios.<sup>36</sup>

**Climate change impacts:** Climate change is generating widespread and compounding impacts across Jordan's key sectors, with water resources, agriculture, and public health bearing the greatest burden. According to the 4NC, climate change is projected to result in an 18% reduction in surface runoff and a 16% reduction in groundwater recharge, critically straining a country where per capita renewable freshwater already stands at only 61 cubic meters per year, well below the internationally recognized severe water scarcity threshold of 500 cubic meters. Jordan currently requires approximately 1.4 BCM of water annually but faces a structural deficit of around 500 million cubic meters, addressed largely through unsustainable over-extraction of groundwater at rates exceeding annual recharge. Agriculture, which contributes approximately 4% of GDP while consuming more than 50% of available water resources, faces intensifying threats from prolonged droughts, rising temperatures, changing precipitation patterns, and the spread of pests and diseases, placing severe pressure on food production and rural livelihoods. Extreme weather events, including flash floods, landslides, and recurring droughts, have proliferated over the last decade, causing loss of life, destroying agricultural land, and severely damaging infrastructure. Rising temperatures are simultaneously increasing the incidence of water, food, and vector-borne diseases, with health risks compounding across vulnerable rural and urban populations and intersecting directly with growing malnutrition driven by water and food insecurity.<sup>37</sup>

### 3. Targeted watersheds

Lebanon and Jordan are small, water-stressed eastern Mediterranean countries whose watersheds face compounding pressures from climate change, land degradation, rapid urbanization, and fragmented governance, creating a compelling case for coordinated, nature-based solutions as the only viable path toward shared resilience. The targeted watersheds share Mediterranean climatic characteristics but differ across their upstream–downstream profiles. The Awali watershed transitions from a dry sub-humid Mediterranean climate in its high-altitude, predominantly agricultural areas to a coastal Mediterranean climate in its more urbanized downstream areas. Wadi Al-Karak transitions from a semi-arid Mediterranean climate in its urbanized eastern highlands to a dry subtropical climate toward the Dead Sea in the west.

#### 3.1 Lebanon

##### 3.1.1 Watershed context and composition

The Awali watershed is a highly dynamic and climate-sensitive socio-ecological system of about 301 km<sup>2</sup> across 77 cadastres<sup>38</sup> in Saida, Jezzine, and Chouf districts. The river crosses 44 cadastres; its upper section, the Bisri River, originates in the Barouk and Niha mountains and flows about 48 km to the Mediterranean Sea, descending from roughly 1,492 metres over a short distance. This creates steep upper gradients and strong contrasts in water availability, runoff, vegetation, and hazards.<sup>39</sup> A major source of irrigation and freshwater in southern Lebanon,<sup>40</sup> the river is also an important ecological corridor in the declared key biodiversity area (KBA) spanning the Awali to Litani estuaries, supporting riparian biodiversity, including the endangered green turtle (*Chelonia mydas*).

The watershed functions as three interconnected zones. The upper section includes the forested Barouk and Niha highlands, including the Chouf Cedar Nature Reserve, where steep slopes, dense tributary, and karstic geology support rapid runoff, groundwater recharge, and sediment transport. The Barouk and Jezzine rivers converge at Bisri village to form the Bisri River, which flows westward into the lower Awali. The mid-section transitions from steep highland gorges into the broader Bisri Valley, designated in the National Physical Master Plan of the Lebanese Territory (NPMPLT)<sup>41</sup> for its exceptional natural and landscape value, with gentler terrain, springs, agricultural terraces, oak and pine forests, and archaeological heritage. The lower section extends across the coastal plain toward Saida – Lebanon's third-largest city – where accumulated runoff and sediment converge within an increasingly urbanised and densely populated coastal landscape intersecting with the river delta.



FIGURE 1: PHOTO OF AWALI RIVER WATERSHED. SOURCE: CNRS

<sup>38</sup> Jordan Ministry of Environment (2022) - The National Climate Change Adaptation Plan of Jordan.

<sup>37</sup> Jordan Ministry of Environment / UNDP (2023) - Jordan's Fourth National Communication on Climate Change (4NC)

<sup>38</sup> These cadastres vary in administrative status, with some governed by elected municipal councils and others lacking formal municipal structures. In Lebanon, cadastres are the smallest geographic units with defined boundaries used for land registration, while municipalities are governed administrative entities whose boundaries generally align with cadastral limits but may encompass more than one cadastre. Not all cadastres hold municipal status.

<sup>39</sup> Hdeib, R. and Abdallah, C. (2015). *Flood Risk Assessment and Mapping for Lebanon*. UNDP/CNRS-Lebanon.

<sup>40</sup> FAO (2016). Assessment of treated wastewater for agriculture in Lebanon.

<sup>41</sup> National Physical Master Plan of the Lebanese Territory (Decree 2366/2009); designation of Bisri Valley as a cultural and ecological landscape.

The Awali River estuary is identified as one of five proposed Marine Protected Area (MPA) estuary sites under Lebanon's Marine Protected Area Strategy (2012) and the Ministry of Environment (MoE) and IUCN framework,<sup>42</sup> underscoring the ecological significance of the river's coastal zone and the importance of maintaining water quality and adequate river flows throughout the watershed as a prerequisite for its conservation. (see Figure 2). The watershed hosts two operating hydroelectric power plants fed by water diverted from Lake Qaraoun via the Litani River inter-basin transfer system; however, industrial and agricultural pollution from the West Bekaa and Zahleh areas is increasingly contaminating the lake, introducing heavy materials into the hydropower system and degrading water quality in the Awali River downstream. The watershed also encompasses significant agricultural areas and ecologically sensitive riparian zones, yet faces compounding pressures from unplanned development, water degradation, displacement, and institutional fragmentation.

Limited wastewater treatment infrastructure exists within and adjacent to the watershed, including the Saida wastewater treatment plant which is operational but restricted to preliminary treatment only with effluents discharged directly to the Mediterranean Sea, partial sewerage networks in the Chouf district connected to the Souayjani plant, and wastewater networks in the Jezzine region designed to connect to the Saida and Nabatiyeh treatment plants though located outside the watershed boundary. However, coverage remains critically insufficient, with a significant share of wastewater from villages, agricultural areas, and riverside commercial establishments discharged untreated directly into the river and its tributaries.<sup>43</sup>

Administratively, in its lower section, from Bisri to Alman, the river forms a natural boundary between the districts of Saida and Jezzine to the south and the Chouf District to the north. Seven Unions of Municipalities (UoMs) have portions of their territory falling within the watershed, each extending beyond the watershed boundaries into adjacent areas. Moving from downstream to upstream, these are: the UoM of Saida El-Zahrani (Saida District), the UoM of Caza Jezzine (Jezzine District); and four UoMs within the Chouf District which are Iklim El-Kharroub El-Chemali, Iklim El-Kharroub El-Janoubi, Chouf El-Souayjani, Chouf El-Aala and Arqoub-Harf.

Figure 3 shows the administrative composition of the Awali watershed.

### 3.1.2 Land use land cover

Analysis of land use and land cover (LULC) data from CNRS Lebanon<sup>44</sup> across four temporal snapshots (2005, 2013, 2017, and 2022) reveals incremental but structurally significant ecological erosion over the 17-year period. Wooded land remains dominant at 47% of the watershed (141.62 km<sup>2</sup> in 2022), but declined by 2.39 km<sup>2</sup> since 2005. Mature closed-canopy forest stayed relatively stable, while open woodland fringes and shrubby transitional vegetation important for wildlife movement and biodiversity connectivity steadily contracted, progressively isolating the forest core.<sup>45</sup> Grassland declined by 9.5% (20.93 to 18.94 km<sup>2</sup>), reducing habitat corridors. Although total agricultural area remained broadly stable, field crops fell by 11.3%, reflecting abandonment and conversion, while intensive agriculture expanded by 61%, increasing pesticide and nutrient runoff pressure on the river. Figure 6 shows the variation in the LULC composition between 2005 and 2022, while Figure 4 shows the 2022 LULC.

The most alarming trend is the sustained growth of the artificial footprint, which expanded by 22.5% (from 23.05 to 28.23 km<sup>2</sup>) driven primarily by urban sprawl at the expense of agricultural buffer zones and the watershed's natural green fringe. As Figure 5 illustrates, artificial areas recorded the largest net gain (+5.18 km<sup>2</sup>) over this period, while wooded land (-2.39 km<sup>2</sup>) and grassland (-1.99 km<sup>2</sup>) recorded the most significant losses, collectively degrading the watershed's capacity for water regulation, natural filtration, and biodiversity support.

Despite its importance, the watershed is increasingly threatened by pollution, deforestation, sand mining, and unregulated territorial development. As the LULC trajectory demonstrates, the compounding effects of urban encroachment, grassland loss, and agricultural intensification that collectively degrade the watershed's capacity for water regulation, natural filtration, and biodiversity support.



FIGURE 2: EXISTING AND PROPOSED MARINE PROTECTED AREAS (MPAs). SOURCE: MoE/IUCN (2012).



FIGURE 3: ADMINISTRATIVE COMPOSITION OF THE AWALI WATERSHED. SOURCE: UN-HABITAT (2026)

<sup>42</sup> Ministry of Environment (MoE) / IUCN. (2012). *Existing and Proposed Marine Protected Areas (MPAs) in Lebanon*. Beirut: MoE/IUCN, prepared by ELARD.

<sup>43</sup> Karam, F. et al. (2013). Wastewater management and reuse in Lebanon. *Journal of Applied Sciences Research*, 9(4): 2868–2879.

<sup>44</sup> LULC data are based on the CNRS Lebanon classification system (adapted from Moss, 1999), which organises land cover into seven Level 1 categories: artificial areas (urban, industrial, and infrastructure zones); agricultural areas (field crops, permanent crops, and intensive agriculture); wooded land (dense forest, open woodland, and scrubland); grassland; wetland; unproductive areas (bare rocks, bare soils, and beaches); and water bodies. Each category is further subdivided into progressively detailed sub-classifications (Levels 2 through 4) derived from satellite imagery analysis and field validation.

<sup>45</sup> Based on CNRS Lebanon's two-level LULC classification, dense wooded land (mature closed-canopy forest) remained broadly stable over the study period (47.97 km<sup>2</sup> in 2005; 48.14 km<sup>2</sup> in 2022). By contrast, clear wooded land (open woodland fringe) declined from 49.37 to 48.42 km<sup>2</sup>, and scrubland (shrubby transitional vegetation) from 46.79 to 45.37 km<sup>2</sup>, over the same period. CNRS Lebanon, Land Cover Classification Map, temporal snapshots 2005, 2013, 2017, and 2022.

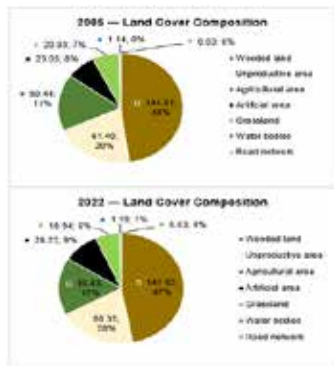


FIGURE 6: LAND COVER COMPOSITION BETWEEN 2005 AND 2022. SOURCE: UN-HABITAT (2026), ADAPTED FROM CNRS DATA (2022).

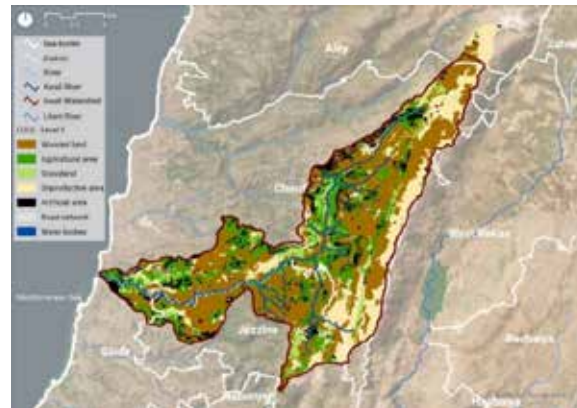


FIGURE 4: LULC 2022. SOURCE: UN-HABITAT (2026), ADAPTED FROM CNRS DATA (2022)

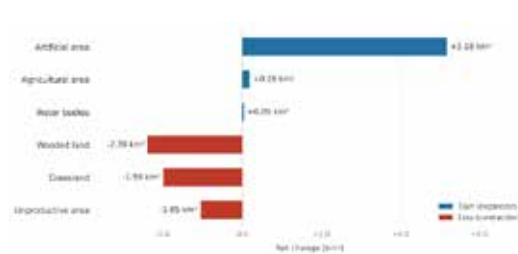


FIGURE 5: CHANGE IN NET LAND COVERAGE IN THE AWALI WATERSHED BETWEEN 2005 AND 2022. SOURCE: UN-HABITAT (2026), ADAPTED FROM CNRS DATA (2022)

### 3.1.3 COMPOUND VULNERABILITY CYCLE IN AWALI RIVER WATERSHED

The Awali Watershed faces interconnected climate, environmental, and socio-economic vulnerabilities driven by rising temperatures, droughts, rainfall variability, ecosystem degradation, and growing human pressures. These challenges are compounded by land degradation, biodiversity loss, water scarcity, pollution, urban expansion, and fragmented governance, collectively increasing risks to ecosystems, livelihoods, and long-term watershed resilience. The vulnerability analysis is therefore structured around three interrelated dimensions: Climate Stressors and Hazards, Ecosystem and Biodiversity Vulnerabilities, and Urban and Livelihood Vulnerabilities.

#### 3.1.3.1 Climate Hazard Profile in Awali River Watershed

The Awali watershed has a Mediterranean climate with strong rainfall seasonality and erosion-sensitive soils. Mean annual precipitation is about 1,067 mm, ranging from 600–700 mm on the coast to 1,300–1,400 mm in the mountains; mean annual temperatures falls from about 15°C coastally to 11°C in mountainous headwaters, while humidity declines from 70–80% to 50–60%. Over the past 70 years, 12 intense storm events (including January 2013, with 277 mm in six days) caused severe flooding, infrastructure failure, and agricultural damage, making the Awali one of Lebanon's most flood-affected rivers.<sup>46</sup> The Awali Watershed is situated at the convergence of multiple natural hazard systems, as documented through Lebanon's National Early Warning System Platform (NEWSP)<sup>47</sup>. The platform's interactive hazard web maps records five primary hazard categories of direct relevance to the watershed: forest fires, floods, storms, soil erosions, and landslides (see 7 to Figure 12). These hazards do not operate in isolation; they interact and cascade, with each event frequently triggering or amplifying another.

##### Fire hazard

Wildfires recur in Lebanon, particularly during prolonged drought, high temperatures, and strong dry winds; forests, woodlands, and peri-urban natural areas are especially vulnerable as urbanization increases. Climate change is expected to increase fire occurrence through warming and more frequent droughts, causing repeated burning, degraded soil and hydrological conditions, biomass loss, vegetation change, and reduced land stability. Lebanon has lost more than 35% of its initial forest cover: forest cover fell from 35% in 1960 to 13% in 2010 (22% over 50 years). Most fires occur between June and October, peaking in August (25%) and September (27%).

The Geographic Information System (GIS)-based fire hazard map combines land cover, topography, road networks, vegetation fire intensity, Civil Defense fire records (1983–2013), and CNRS fire monitoring data (2016–present), including fire locations, frequency, and types, to identify susceptibility and supports prevention and risk management. Much of the watershed has moderate to very high wildfire risk, with extensive high/very high hazard zones in western, central, and eastern mountainous; low hazard areas are limited and scattered.

##### Flood hazard

Lebanon's wet-season floods follow intense storms or spring snowmelt, overflowing rivers and damaging agricultural land, infrastructure, livelihoods, and natural resources. They also cause recurring economic losses and can trigger landslides, reinforcing the need for hydro-meteorological forecasting and disaster risk management. Lebanon experiences about 1–2 floods annually, expected to increase as climate change alters rainfall and temperatures. Storm rainfall can reach 100 mm/hour, causing damage to property, infrastructure, and agricultural lands, while triggering landslides and environmental degradation. More frequent and intense extreme rainfall will further raise flood risk amid population growth, urbanization, poverty, and inadequate infrastructure.



FIGURE 7: FIRE HAZARD MAP IN THE AWALI WATERSHED. SOURCE: NCNE



FIGURE 8: FLOOD HAZARD MAP IN THE AWALI WATERSHED. SOURCE: NATIONAL CENTER FOR NATURAL HAZARDS AND EARLY WARNING (NCNE).

<sup>46</sup> Hdeib, R. and Abdallah, C. (2019). *A Framework for Flood Modelling in Data-Sparse Regions Based on a New Cost-Performance Grid: Application on the Awali in Lebanon*. PhD thesis, Montpellier SupAgro. NNT: 2019NSAM0005.

<sup>47</sup> This platform is originally developed in 2015 under the name SUNAR by CNRS-Lebanon with World Bank support, and now operated by the National Centre for Natural Hazards and Early Warning (NCNE).

Recent CNRS flood risk assessments<sup>48</sup> indicate Awali flood hazards are significantly underestimated: extreme events may reach 506 m<sup>3</sup>/s peak discharge, threatening downstream agricultural, settlements, and infrastructure, particularly in the Bisri Valley. Flooding along the most critical river sections (around 16% of total length) could impact up to 1,000 people; structural damage rises from an estimated United States Dollar (USD) 4.0 million in a 10-year event to USD 5.6 million in a 100-year event. Seasonal agricultural losses may reach USD 1.5 million across about 125 hectare (ha) of fruit trees, 30 ha of cropland, and high-value greenhouse areas, alongside extensive road flooding and exposure of residential and commercial assets.

### Storm hazard

A storm hazard map was developed using storm records since 1980 from the High Relief Council (HRC), DesInventar, and the NEWSP Natural Hazard Collector database. Storm intensity was assessed using temperature, precipitation, and wind speed data from 57 meteorological stations, while frequency was classified into high (1-year), medium (5-year), and low (10-year return period) occurrence categories. This is particularly important as climate change has increased the frequency and intensity of storms, heatwaves, floods, and droughts, which have caused significant damage to infrastructure, livelihoods, agriculture, and communities in recent years.

The storm hazard potentiality map shows that the watershed is characterized by varying levels of storm risk, with high to very high hazard zones concentrated mainly in the western and southwestern areas, while the central and eastern portions are generally exposed to low to very low hazard levels. Overall, storm-related risks are highest near the coastal and lower-elevation sections of the watershed and decrease toward the interior areas.

### Soil erosion hazard

The soil erosion hazard potentiality map shows that much of the watershed is exposed to high and very high erosion risk, particularly along steep slopes and drainage corridors. Moderate hazard areas are also widespread, while low-risk zones are relatively limited, indicating that soil erosion is a major environmental concern across the watershed, potentially affecting land productivity, water quality, ecosystem stability, and infrastructure.

### Landslide hazard

Landslides<sup>49</sup> are among Lebanon's most severe natural hazards, causing an estimated USD 10–15 million in annual losses over the past 40 years, plus deaths, injuries, and damage to infrastructure, buildings, roads, and agricultural terraces. Climatic, geological, human, and engineering factors exacerbate impacts, while risk mapping, management strategies, and preventive measures remain limited. January–February 2024 storms triggered around 70 debris flows and rockfalls, causing economic damage, road closures, accidents, injuries, and village isolation; torrential rain and unstable geology were primary triggers, illustrating growing climate change influence on landslide risks.

The landslide hazard potentiality map shows that a large portion of the watershed is exposed to moderate to very high landslide risk, with the highest hazard levels concentrated in the central and eastern mountainous areas, while lower-risk zones are mainly found in the western and coastal sections. Overall, the map suggests that landslides represent a significant hazard across large parts of the watershed, particularly in steep and elevated terrain.

### Multi-hazard map

The multi-hazard potentiality map indicates that most of the watershed is exposed to moderate to high combined hazard levels, with high and very high multi-hazard zones concentrated primarily in the central and eastern areas, while lower hazard levels are more limited and scattered. Overall, the map suggests that a significant portion of the watershed is vulnerable to multiple overlapping hazards, highlighting the need for integrated risk management and resilience measures.

### Drought hazard<sup>50</sup>

Lebanon has warmed by about 0.3°C per decade since 1970, versus a global average of 0.15°C per decade. Since 1960, hot nights increased 7%, monthly rainfall declined 11 mm per decade, and extreme rainfall increased. Mediterranean sea level has risen about 20 mm/year and sea surface temperatures by 1.3°C since 1980. Around 10% of the population is already drought-susceptible. Climate projections indicate temperatures could rise by up to 1.7°C by mid-century and 3.2°C by 2100, while rainfall may decrease by 4–11%, producing drier, longer, and more frequent droughts, and growing risks to water, agriculture, livelihoods, and food security, requiring stronger drought monitoring and adaptation measures.

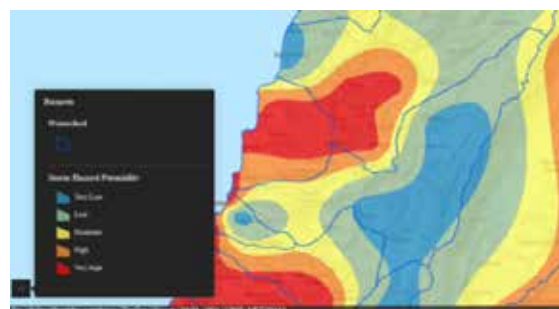


FIGURE 9: STORM HAZARD MAP IN THE AWALI WATERSHED. SOURCE: NCNE.



FIGURE 10: SOIL EROSION HAZARD MAP IN THE AWALI. SOURCE: NCNE

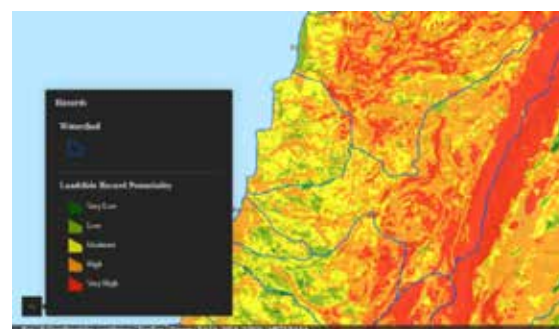


Figure 11: Landslide hazard map in the Awali watershed. Source: NCNE.



FIGURE 12: MULTI-HAZARD MAP FOR THE AWALI WATERSHED. SOURCE: NCNE.

<sup>48</sup> Flood Hazard Mapping Assessment for El-Awali River Catchment-Lebanon, Conference: EGU General Assembly 2016At: Vienna, Austria Volume: Vol. 18, EGU2016-17305-1, 2016, <https://www.researchgate.net/publication/301747463>; see also CNRS-SuNaR 2015; Flood Risk Assessment for Lebanon

<sup>49</sup> NEWSP mapped around 10,000 different types of landslides in the country through visual interpretation of satellite imagery and published in 2010 the Landslide Susceptibility/Hazard maps at the scale of 1/50,000. These maps were based on the Binary-Univariate statistical approaches that explored objectively the dual relationship between 17 terrain parameters according to their importance in causing landslides (high slopes, lithology, karst, slope aspects, faults, road opening, quarries, etc.). These maps can facilitate the required restoration for damaged locations due to landslides and help prevent any destructive events in the future

<sup>50</sup> The drought hazard map is currently under development by CNRS.

### Rainfall Variability<sup>51</sup>

Analysis of precipitation data for the Awali Watershed over the 2018–2026 period, derived from the Climate Hazards Group InfraRed Precipitation with Station (CHIRPS) dataset distributed through the FAO Water Productivity through Open access of Remotely sensed derived data (WaPOR) portal, reveals a highly variable rainfall regime, concentrated in November–March with prolonged dry summers. Wet 2019–2020 conditions shifted to drier 2021–2022 years, while 2024–2025 brought the most severe drought in over six decades. Spatially, topography creates a strong gradient from 1,300–1,400 mm/year in the upper mountain catchment, where snowmelt supports spring recharge, to 600–700 mm downstream on the coast. This gradient shapes vegetation productivity, groundwater recharge, and agricultural water availability; drought stress and seasonal water scarcity are most acute downstream, where reduced rainfall converges with higher population density and cumulative land degradation.

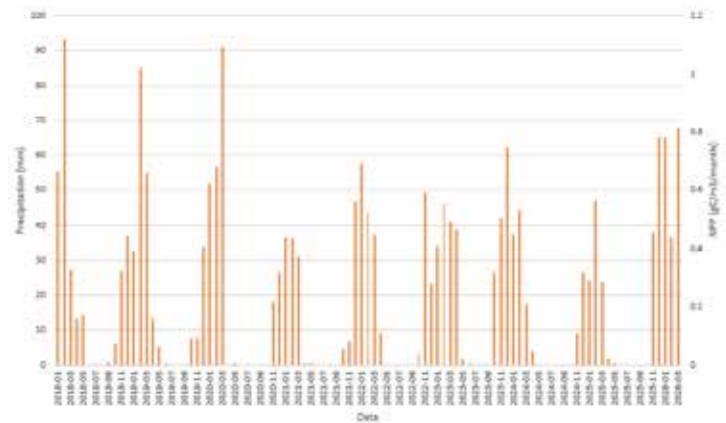


FIGURE 13: MONTHLY PRECIPITATION IN AWALI WATERSHED DURING 2018-2025. SOURCE: UN-HABITAT ADAPTED FROM FAO-WAPOR

### Heatwave risk

As per CNRS, the Awali Watershed falls within a moderate heatwave risk zone. Hazard profile is shaped by microclimatic variability: the upper Chouf highlands experience relatively lower temperature extremes, while the mid and lower watershed face higher heat stress. Exposure is significant in densely populated Saida. The assessment incorporates vulnerability factors, including elderly residents, children under five, multidimensional poverty levels, chronic health risks, and building density, alongside coping capacity indicators such as healthcare facility availability and access, solar energy systems, and electricity access. By combining hazard, exposure, vulnerability, and coping capacity, the map provides a comprehensive representation of heatwave risk and helps identify areas requiring targeted adaptation and public health measures.



FIGURE 14: HEATWAVE RISK MAP. SOURCE: CNRS

#### 3.1.3.1.1 Vulnerability profile and coping capacity

The index for risk management (INFORM) Lebanon 2024 documents a high, multi-layered vulnerability profile across Saida, Jezzine, and Chouf, combining natural hazards, socioeconomic fragility, and critically limited coping capacity. As per INFORM, the watershed faces near-maximum drought stress and agricultural water scarcity, critically elevated wildfire risk (particularly in the upper Jezzine and Chouf), severe erosion and land degradation in all three districts, and localised but extreme flood exposure in downstream and riverine zones of Saida and Chouf, creating a multi-hazard environment in which climate-driven risks interact and cascade. Significant poverty, coastal–mountain inequality, and a high economic dependency limit recovery from climate, economic, or conflict-related shocks. Syrian and Palestinian refugees and internally displaced Lebanese, concentrated in downstream and peri-urban cadastres, add pressure on already-strained water, land, and sanitation infrastructure. Weak governance, limited access to healthcare and social protection, and infrastructure deficits – most acute in the rural and mountainous areas of Jezzine – constrain coping capacity, while gender inequality further compounds vulnerability by excluding women from the decision-making and resource governance processes. Together, these conditions support an integrated, nature-based, community-centred resilience approach.

#### 3.1.3.1.2 Climate Change in the Awali River Watershed

While localised climate projections are not available for the watershed, national climate scenarios for Lebanon indicate rising temperatures, declining precipitation, and more frequent extreme weather events (see Climate Change section above). Given the watershed's already critical exposure to climate-sensitive hazards, these projected changes are expected to significantly exacerbate current risks and associated pressures on ecosystems and the services they provide. Forests, riparian vegetation, and grasslands – that regulate water infiltration, reduce erosion, stabilize riverbanks, filter water and support biodiversity and soil health – are already under compounding stress, weakening the watershed's capacity to absorb and recover from climate shocks. As these ecological buffers weaken, the human consequences intensify communities characterised by high socioeconomic fragility, large displaced populations, limited coping capacity, and gender-based disparities in access to resources and decision-making are left increasingly exposed with diminishing natural safety nets to fall back on. This combined deterioration of ecosystem and community resilience underscores the urgency of targeted, integrated interventions that restore and strengthen the watershed's natural systems as a prerequisite for durable climate adaptation, and provides the evidence base for the nature-based, community-centred, and governance-strengthening approach advanced by this project.

<sup>51</sup> FAO WaPOR / CHIRPS. Precipitation data accessed via FAO WaPOR portal (wapor.apps.fao.org), 2018–2026.

### 3.1.3.2 Ecosystem and Biodiversity Vulnerabilities

#### Ecosystem Condition and Productivity

The ecosystems of the Awali Watershed are under increasing stress from the combined impacts of prolonged droughts, rainfall variability, land degradation, urban encroachment, and growing human pressures. The watershed's pronounced topographic gradient, from the forested headwaters of Barouk and Niha to the densely populated coastal plain, creates diverse ecological and hydrological conditions, while these interconnected pressures are progressively reducing ecosystem functionality and weakening ecological resilience.

The Land Productivity Dynamics (LPD) analysis, derived from the FAO WaPOR platform, reveals a mixed pattern of land productivity across the watershed. While large areas remain stable or improving productivity, substantial mid- and lower-watershed areas exhibit stressed, declining, or moderately declining, due to urban expansion, agricultural intensification, riparian degradation, and climate-related pressures. Upper Chouf highlands and Shouf Biosphere Reserve are generally stable to improving, reflecting more intact upper catchment. These findings highlight priority areas for sustainable land management and ecosystem restoration.

The Gross Biomass Water Productivity (GBWP) analysis, derived from the FAO WaPOR platform, further demonstrates spatial variations in water-use efficiency across the watershed. Most areas exhibit low to moderate biomass water productivity, while higher values are concentrated in localized zones, particularly in parts of the eastern and lower watershed. Areas with lower productivity may reflect water stress, degraded land cover, or less efficient land and water management practices. Together, the LPD and GBWP analyses point to the need for integrated land, water, and ecosystem management interventions to address degradation hotspots and improve resource-use efficiency and strengthen watershed resilience.

Analysis of monthly precipitation and net primary production (NPP) between 2018 and 2025 reveals a clear seasonal pattern in ecosystem productivity.

Precipitation is concentrated during the winter months, while NPP typically peaks several months later during spring and early summer, reflecting the delayed response of vegetation growth to accumulated rainfall and favorable growing conditions. This pattern underscores the strong dependence of ecosystem productivity on seasonal water availability and Mediterranean climatic conditions.

Declining vegetation productivity directly weakens the watershed's natural regulatory functions. Reduced vegetative cover diminishes soil stability, lowers moisture retention, accelerates erosion, and reduces the watershed's capacity to regulate runoff, recharge groundwater, support biodiversity, and buffer against climate extremes. As a result, vulnerability to drought, land degradation, and flash floods is likely to increase across the watershed.

**Habitat Connectivity and Biodiversity Integrity:** The Awali is a critical ecological corridor within a declared KBA spanning the Awali to Litani estuaries, linking upper-Chouf montane forest ecosystems to the Mediterranean coast. Its estuary, one of five proposed estuary MPAs under Lebanon's 2012 MPA strategy, supports coastal wetlands, sandy beaches, and marine vegetation beds, providing food, nesting, and shelter for fish and wildlife. Classified for threatened species, fragile habitats, and low recovery potential, these habitats may not recover without active intervention.<sup>52</sup> Fragmentated riparian vegetation, declining instream flows, and river-corridor urbanisation along the river course, is progressively severing the longitudinal ecological corridor between the upper catchment are progressively serving this longitudinal corridor and reducing the watershed's overall biodiversity integrity.

**Water Ecosystems and Hydrological Health:** The ecologically valuable Awali estuary supports fisheries and seagrass meadows, and provides food, nesting, resting, and shelter habitat. It is increasingly threatened by fishing activities – prohibited year-round within a 500-metre radius on each side of the estuary, 500 metres inside the river, and 2 kilometres seaward under Ministry of Agriculture (MoA) Decision No. 385/1 (January 26, 1997) – and by chemical pollution from agricultural runoff, urban wastewater, and industrial sewage.<sup>53</sup> Compounded with watershed hydrological and water quality deterioration, these pressures undermine the coastal interface and its biodiversity.

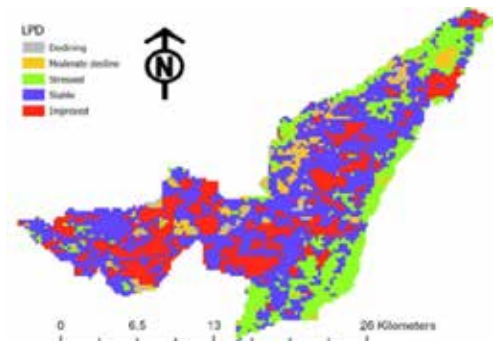


FIGURE 15: LAND PRODUCTIVITY DYNAMICS (LPD) MAP IN AWALI WATERSHED. SOURCE: UN-HABITAT ADAPTED FROM FAO-WAPOR

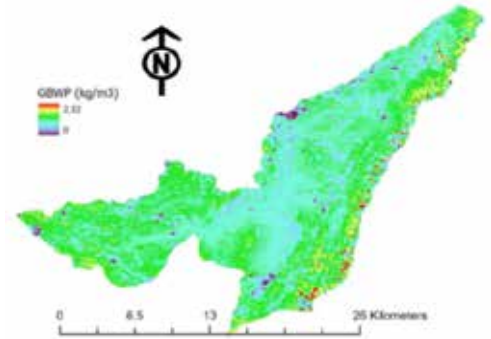


FIGURE 16: MAP OF GROSS BIOMASS WATER PRODUCTIVITY IN AWALI WATERSHED. SOURCE: UN-HABITAT ADAPTED FROM FAO-WAPOR.



FIGURE 17: MONTHLY PRECIPITATION AND NET PRIMARY PRODUCTION DURING 2018-2025 IN AWALI WATERSHED. SOURCE: UN-HABITAT ADAPTED FROM FAO-WAPOR

<sup>52</sup> MoE / IUCN (2012). Lebanon's Marine Protected Area Strategy: Supporting the management of important marine habitats and species in Lebanon. Beirut, Lebanon, Gland, Switzerland y Malaga, Spain: the Lebanese Ministry of Environment / IUCN. 64 pp.

<sup>53</sup> ibid

### 3.1.3.3 Urban and Livelihood Vulnerabilities

#### Population Density & Distribution

The watershed is home to roughly 120,000 individuals<sup>54</sup> and includes some of Lebanon's most vulnerable cadastres in terms of pressure on resources.<sup>55</sup> As of mid-May 2026 and following the conflict, approximately 36,000 IDPs are hosted within the watershed, with nearly 34% of IDPs are living within Saida El-Ouastani Cadastre which forms the downstream area where the river discharges into the Mediterranean, placing acute pressure on its landscape and, in particular, on the El-Kinayat open space, a significant green area in that zone.<sup>56</sup> Figure 18 below illustrate the population distribution per cadastre within the Awali watershed.

FIGURE 18: DISTRIBUTION OF TOTAL POPULATION AS OF DECEMBER 2024. SOURCE: UN-HABITAT, ADAPTED FROM IACL (2024).



#### Urbanization and Urban Growth

Figure 19 overlays 1998 NPMLT urban areas and 2022 CNRS LULC within the Awali Watershed, showing spatially differentiated urban expansion over 24 year, consistent with the 22.5% increase in artificial area between 2005 and 2022. Growth is most concentrated downstream around Saida, where the 2022 footprint visibly extends beyond the 1998 core in multiple directions, consuming adjacent agricultural land and narrowing the vegetated buffer between the built environment and the river mouth. Along the mid-watershed corridor, particularly in the Jezzine and Chouf districts, new urban patches are dispersed across valley floors and slopes, reflecting a fragmented and unplanned development pattern scattered across numerous small clusters rather than consolidated around existing urban centres. In the upper catchment, urban expansion is limited but not absent, with isolated new development patches visible in highland areas that were largely undeveloped in 1998 core. Across all 3 zones, new development clusters near the river, increasing pressure on riparian areas essential for water quality, flood regulation, and biodiversity connectivity. The pattern reflects fragmented, inadequately planned and regulated urbanisation and reinforces the need for land-use governance interventions.

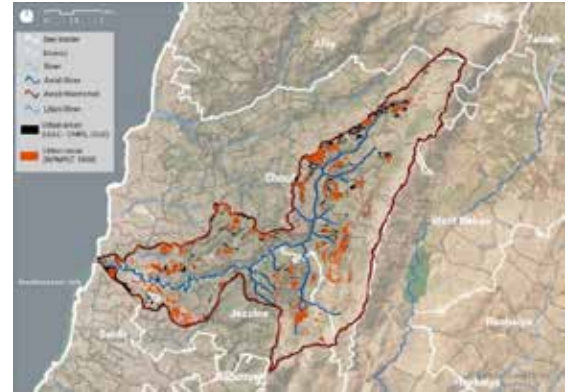


FIGURE 19: URBAN GROWTH IN THE AWALI WATERSHED. SOURCE: UN-HABITAT (2026)

#### Watershed Planning

Watershed planning is among the top priorities of the Directorate General of Urban Planning (DGUP). During our consultation with them, they emphasized that in 2002 the Higher Council issued a decree designating all river buffer zones as “areas under study,” freezing development pending master plans and initially setting a 500-metre buffer on both sides of river courses. In 2004, this was revised to a 200-metre buffer (100 metres each side), with permits in unplanned cadastres placed under the Higher Council direct authority.<sup>57</sup> However, DGUP reported that since the issuance of these decrees, no follow-up planning or zoning measures have been enacted due to technical, financial, and human resource constraints. In currently unplanned cadastres, allowable land exploitation remains very limited (25% floor area ratio and 50% total exploitation), presenting a critical window of opportunity to establish sound spatial frameworks before development pressures intensify. Conversely, key stakeholders noted that planned areas pose their own risks to the watershed: the subdivision of land into very small plots (around 500 m<sup>2</sup> each) creates conditions conducive to rapid and dispersed urbanization, which fragments ecological corridors and increases impervious surface coverage across sensitive riparian zones. This prolonged planning vacuum highlights the urgent need for a strategic watershed management plan. The project will serve as a pilot to develop and institutionalize a watershed-level master plan that provides strategic guidance for the planning of currently unplanned cadastres and the revision of existing master plans where they exist. The watershed master plan will guide sustainable development, direct growth away from environmentally sensitive and hazard-prone areas, protect critical ecological assets and water resources, and establish site-specific planning regulations across the basin. It will also promote more coordinated land use, infrastructure planning, ecosystem conservation, and climate adaptation measures, supporting a more resilient, balanced, and integrated approach to watershed management and territorial development.

#### Hydroelectric Infrastructure

<sup>54</sup> Extrapolated data from Inter-Agency Coordination Lebanon (2024). Add more details (December 2024, LRP 2026...)

<sup>55</sup> [List of 332 most vulnerable localities \(cadastres\)](#), Inter-Agency Coordination Lebanon (2022)

<sup>56</sup> Extrapolated data from IOM (2026). Displacement Tracking Matrix: Mobility Snapshot – Round 99. [not available online], and IACL (2026). List of IDPs' Collective Sites. [not available online]

<sup>57</sup> Planned cadastres are those that have approved master plans guiding development, with municipalities responsible for implementation and oversight. In contrast, unplanned cadastres lack master plans, and all development within them must adhere solely to construction guidelines issued by the DGUP, primarily concerning setback requirements and allowable exploitation ratios, without broader planning frameworks in place. For the proposal phase, data from the DGUP will be available on the distribution of planned and unplanned cadastres. During our consultation, DGUP emphasized that unplanned cadastres account for a significant proportion of the territory, underscoring the scale of the challenge and the importance of integrating watershed planning and climate-resilient zoning into future development strategies.

The Awali Watershed hosts two of Lebanon's three cascade hydroelectric power plants managed by the Litani River Authority (LRA): the Awali Hydropower Plant (HPP) (Boulus Arqash) at 108 MW which is the largest in Lebanon, and the Joun HPP (Charles Helou) at 48 MW (see Figure 2). Together with the upstream Markabi HPP (36 MW) in West Bekaa, the 1962–1968 three plants form a cascade system with a combined installed capacity of 192 MW, capable of generating over one billion kWh annually in wet years.<sup>58</sup> According to a former HPP's mechanical engineer at the HPPs, this system was supplying a significant national electricity share up to 1980, when hydropower provided most electricity; today, the three plants provide only 4–7% of national generation, reflecting both infrastructure deterioration and the major demand growth since the 1970s.<sup>59</sup>

The engineered inter-watershed system exploits over 800 metres of elevation change between the Litani headwaters and the Mediterranean coast. Water stored in Lake Qaraoun (220 million m<sup>3</sup>) is diverted westward through the Markabi tunnel, passing through the Markabi HPP before reaching Anan Lake, then tunnelled to the Awali HPP in the Qtaleh valley. Its outflow enters the Awali artificial lake, which also collects natural river flows, before water descends via tunnel to Joun HPP near the coast, ultimately supporting irrigation across South Lebanon. The total maximum hydraulic flow through the system is 24 m<sup>3</sup>/s.

The cascade provided before 2019 electricity to approximately 200 villages in the Chouf, Jezzine, and surrounding districts, delivering around 20 hours of power daily in a country where state supply from Électricité du Liban (EDL) has collapsed to as little as one to two hours per day.

Despite this strategic importance, the plants face severe operational challenges. The aging plants operate well below design potential, with turbine inlet valves, speed governors, protection systems, and Supervisory control and Data Acquisition (SCADA) control systems across all three HPPs deteriorated to the point that a World Bank-financed rehabilitation programme under the Lebanon Renewable Energy Sector Reform Project (RESRP) is underway. Joun HPP flow-meter failure creates major water-accounting uncertainty, while sedimentation has reduced Anan and Joun lake storage; RESRP is commissioning bathymetric studies to determine remaining capacity.

Figure 21 illustrates the interconnected flow pathways from Lake Qaraoun through the Markabi, Anane, and Awali/Joun reservoirs.

Climate-related stressors compound these vulnerabilities. In March 2025, the LRA suspended all three plants for six weeks in response to the worst drought in over 65 years, explicitly prioritising irrigation over power generation, a problem that will intensify as climate change reduces water availability.<sup>60</sup> The diversion of the Awali River's natural flow into the hydroelectric system reduces instream flows to the point of drying the river channel during dry seasons, degrading riparian habitat, reducing aquatic biodiversity, and diminishing the river's natural self-purification capacity compounding the water quality deterioration caused by sewage discharge, agricultural runoff, and upstream pollution documented throughout the watershed.<sup>61</sup>

## Environmental Quality and Wastewater Treatment

Wastewater treatment coverage within and adjacent to the Awali Watershed remains critically insufficient, with a substantial domestic, commercial, and agricultural wastewater discharged untreated directly into the river and its tributaries.<sup>62</sup> The Saida Wastewater Treatment Plant, the largest serving the lower watershed, provides only preliminary treatment and discharges effluents into the Mediterranean Sea rather than being reused or fully treated.<sup>63</sup> Souayjani plant in Chouf District is operational for part of the mid-watershed population. Jezzine District has partial wastewater networks but no full treatment plant; its networks are designed to connect to facilities in Saida and Nabatiyeh outside the watershed.<sup>64</sup> As a result, untreated discharges from riverside villages, agricultural, commercial establishments, and tourism facilities therefore continue to degrade river water quality, aquatic ecosystems, and groundwater resources.<sup>65</sup> This infrastructure gap is directly relevant to the ecological integrity of the Awali Estuary where untreated upstream discharges threaten the seagrass meadows, coastal wetlands, and fisheries habitat for which the site is classified.

### 3.1.4 Stakeholder Consultation Findings

Key informant interviews and phone calls have been held with key stakeholders, including union of municipalities representatives, public institutions, water authorities, environmental institutions, and community actors, to identify specific challenges, needs, and priorities related to climate change adaptation, watershed management, and land use governance, within the watershed. (see section II.I.).



FIGURE 20: IMAGES OF HYDROELECTRIC POWER PLANTS. SOURCE: CNRS.

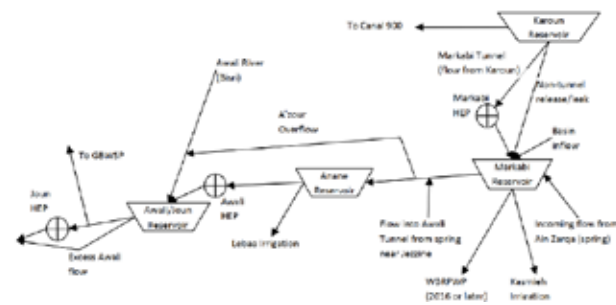


FIGURE 21: SCHEMATIC DIAGRAM OF WATER SOURCES, DIVERSIONS, AND WITHDRAWALS IN THE AWALI WATERSHED HYDROELECTRIC CASCADE SYSTEM. SOURCE: CNRS.

<sup>58</sup> World Bank / LRA. (2024). *Environmental and Social Audit of Litani River HPPs*. Lebanon Renewable Energy Sector Reform Project, P180501. Washington DC: World Bank Group.

<sup>59</sup> Jibrán, G. et al. (2006). Prospects and challenges of using hydropower for electricity generation in Lebanon. *Renewable Energy*, 31(10). ScienceDirect.

<sup>60</sup> Agenzia Nova. (2025). Lebanon: Hydroelectric Plants Suspended for Six Weeks. March 17, 2025.

<sup>61</sup> Korfali, S.I. and Jurdi, M. (2011). Suitability of Surface Water for Domestic Water Use: Awali River Case Study. *European Water* 35: 3–12

<sup>62</sup> Karam, C., Fadel, M. and Haddad, G. (2013). *Wastewater Management in Lebanon: Challenges and Opportunities*. Lebanese American University / UNDP-Lebanon.

<sup>63</sup> Council for Development and Reconstruction (CDR) (2010). *Master Plan for Wastewater Treatment in Lebanon*. Beirut: CDR.

<sup>64</sup> UNICEF and European Union (2023). *Water, Sanitation and Hygiene (WASH) Sector Assessment — Lebanon*. Beirut: UNICEF Lebanon.

<sup>65</sup> World Bank (2024). *Environmental and Social Audit of LRA Hydropower Plants*. Report prepared under the Rehabilitation and Electricity Supply Restoration Project (RESRP), P180501.

The Awali Watershed is under significant and accelerating pressure from unplanned urbanization, unregulated water extraction, deteriorating water quality, and progressive ecosystem degradation, all compounded by chronic governance fragmentation and Lebanon's protracted socioeconomic crises. The presence of approximately 36,000 IDPs in the downstream cadastres further strains already-limited municipal water, land, and sanitation resources. These converging pressures, identified through data analysis, field assessments, and stakeholder consultations, define the adaptation and restoration deficit that this project seeks to address.

#### **Key Challenges:**

**Urban expansion and land use pressures:** The Awali watershed is experiencing rapid and largely unplanned urbanization, resulting in encroachment on river buffer zones, and fragmented development driven by the subdivision of land into small plots. Urban encroachment on designated buffer zones is advancing across multiple cadastres, most acutely in the Charhabil cadastre of Saïda, where buildings have been constructed as close as 50 metres to the river, well below the 100-metre buffer established by the DGUP's Higher Council in 2004. At the same time, the expropriated Bisri Valley lands remain without a management or restoration framework, leaving them vulnerable to encroachment and degradation. The privatization of parts of the riverfront has reduced public access to the river, while the river delta continues to suffer from solid waste accumulation and the loss of its ecological character, collectively undermining the watershed's ecological and hydrological integrity. **Water resources, groundwater, and agricultural pressure:** Water availability and groundwater integrity in the Awali watershed are under increasing pressure from over-extraction, land use change, and climate-driven hydrological decline. Widespread unregulated well-digging, coupled with a shift from rainfed to water-intensive agriculture, is placing growing pressure on groundwater reserves and river flows, particularly in areas lacking access to gravity-fed irrigation. Seasonal water scarcity is becoming more pronounced, affecting domestic water supply and hydropower generation, while springs in Jezzine and the upper catchment are increasingly drying out due to reduced precipitation, declining snowpack, and over-extraction. These challenges are further exacerbated by significant land use changes, including a 61% increase in intensive agriculture between 2005 and 2022 as per the LULC analysis and the decline of traditional rainfed farming systems, contributing to increased runoff, higher water demand, and unsustainable pressure on the watershed's resources. **Water quality and pollution:** Water quality across the watershed is deteriorating due to multiple pollution sources, including the direct discharge of untreated sewage from villages, restaurants, tourist establishments, and commercial facilities into the river. Although the Awali River remains relatively cleaner than many Lebanese rivers, pollution incidents are increasing with urban growth and unregulated development along the river corridor. The lack of wastewater treatment infrastructure across most of the watershed further exacerbates these challenges. In addition, pollution originating upstream from agricultural and industrial effluents from Qaraoun Lake in the West Bekaa and Zahleh degrades water entering the watershed and hydropower system, highlighting the need for interventions both within and beyond the watershed boundaries. **Hydropower infrastructure and energy governance:** The watershed hosts two of Lebanon's most strategically important hydroelectric plants, the Awali (Boulos Arqash) and Joun (Charles Helou) HPPs, yet both face acute and compounding operational challenges that jeopardise their continued functioning. The infrastructure is aging, having been commissioned between 1962 and 1968, and is operating well below design potential due to decades of deferred maintenance, turbine corrosion and mechanical damage from polluted Qaraoun Lake inflows, and damage to the high-voltage transmission network from the escalation of hostilities. Despite the plants' operational and strategic importance, delivering up to 20 hours of electricity per day to approximately 200 villages within the LRA's service area during high-flow winter and spring seasons, an advantage increasingly curtailed by seasonal water scarcity and declining river flows, the surplus electricity generated beyond local distribution is fed into the national high-voltage network, while communities outside the LRA service area receive only their standard EDL rationed allocation. The World Bank is currently financing a project to rehabilitate and modernize the machinery and electromechanical equipment of the Awali hydropower plant, with the aim of improving operational efficiency, reliability, and electricity generation capacity.

**Ecosystem degradation and cultural heritage loss:** The ecological integrity of the Awali Watershed is under severe and multi-directional stress. Forest degradation, driven by urban encroachment, is eroding the watershed's natural capacity for water regulation, infiltration, and biodiversity support – as confirmed by the LULC trajectory showing sustained contraction of woodland fringes and grassland corridors between 2005 and 2022. Riparian vegetation along the river course is declining, removing the natural filtration, flood buffering, and habitat functions that no engineered alternative can cost-effectively replace. Sub-rivers feeding into the Awali, such as Nahr El-Qamla and Nahr Abou Ghayath, are degraded and in need of restoration, while the river delta is accumulating solid waste and losing its natural ecological character. The watershed's exceptional cultural heritage is equally under threat: the Qanat El-Khaskia, an ancient aqueduct linking the river to the Achmoun Phoenician Temple, has been destroyed, the temple site abandoned, and numerous archaeological remains along the river course remain unmapped and unprotected, representing an irreversible loss of cultural landscape value that further weakens the case for conservation investment.

**Governance fragmentation and institutional capacity gaps:** Underlying and enabling all of the above challenges is a fundamental deficit in watershed governance. No integrated watershed management plan, water strategy, or basin-level coordination mechanism exist, leaving the Awali managed through fragmented and often contradictory mandates distributed across municipal councils, UoMs, the DGUP, national line ministries, the LRA, the water establishments (Beirut and Mount Lebanon WE and South Lebanon WE) with no institution holding clear accountability for the watershed as a whole. Data and monitoring gaps are severe: vulnerability, environmental, and hydrological data are available only at the district or governorate level, not at the cadastral resolution needed for targeted local intervention and planning. The presence of approximately 36,000 IDPs concentrated in the downstream cadastres as of mid-May 2026 adds acute and largely unplanned pressure on municipal water, sanitation, and land management systems that are already operating beyond capacity. Taken together, these governance and institutional deficits constitute the structural root cause of the watershed's deterioration, and their resolution through integrated planning, strengthened institutional capacity, and evidence-based governance is the prerequisite for the effectiveness and durability of any physical or nature-based intervention. **Priority needs:** Addressing the Awali Watershed's compounding challenges requires interlinked interventions across six interconnected areas. On urban and land use governance, the most fundamental need is a strategic watershed management plan with legally binding land use and buffer zone enforcement (a framework absent since the DGUP's 2004 decree) complemented by regulation of well-digging permits and restrictions on further parcellation of organised cadastres. On water resources, an integrated water management strategy is needed to coherently link agricultural demand, domestic supply, environmental flows, and groundwater protection across the watershed. On water quality, urgent investment in wastewater treatment infrastructure for villages and riverside commercial establishments is required to halt the direct discharge of untreated effluent into the river. On hydropower and energy, the rehabilitation of the aging Awali and Joun HPPs and upstream pollution control at Qaraoun Lake are essential to preserve Lebanon's most strategic clean energy

assets, alongside governance mechanisms ensuring that watershed communities directly benefit from the clean energy produced within their territory. **On ecosystems and heritage**, the protection of fertile riparian lands, ecological corridors, and the river delta must be treated as a priority investment, alongside the rehabilitation of the watershed's cultural and archaeological assets (including the Qanat El-Khaskia aqueduct and the Achmoun Phoenician Temple) as anchors for community stewardship and eco-tourism. **On governance and data**, cadastral-level environmental monitoring and data systems are a prerequisite for evidence-based watershed planning, adaptive management, and targeted investment prioritisation across all other intervention areas.

## 3.2 Jordan

### 3.2.1 Watershed Context and Composition

The Wadi Al-Karak watershed is a highly dynamic and climate-sensitive socio-ecological system extending from the elevated highlands of Al-Karak City toward the Jordan Valley and Dead Sea lowlands. Covering approximately 249 km<sup>2</sup>, the watershed is characterized by pronounced topographic, climatic, and hydrological gradients that shape distinct environmental conditions, settlement patterns, ecosystem functions, and hazard dynamics across the watershed. The watershed experiences an extreme elevation gradient ranging from approximately 1,277m above sea level in the upstream highlands to nearly -445m below sea level in the downstream lowlands. These topographic transitions create multiple climatic zones ranging from Warm Semi-Arid conditions in the upper and central areas to Warm Arid, Warm Desert, and Very Warm Desert conditions toward the downstream lowlands adjacent to the Dead Sea. Hydrologically, the watershed functions as one interconnected drainage system structured through a hierarchical network of tributaries and channels. Multiple low-order streams originate in the upper catchment areas and progressively converge into higher-order channels forming the main Wadi Al-Karak corridor. This drainage hierarchy reflects strong upstream-downstream hydrological connectivity, where runoff, sediments, pollutants, and climate-related impacts are transmitted and accumulated across the watershed. The steep topographic gradient accelerates runoff generation, erosion processes, sediment transport, and flash flood propagation from upstream and midstream areas toward downstream accumulation zones, increasing exposure to hydrological and environmental risks along the watershed corridor.

The watershed's hydrological system is also closely linked to the distribution of groundwater-dependent water resources, particularly springs, which are predominantly concentrated within the midstream areas of the watershed. This concentration reflects the transitional hydrogeological conditions of the watershed, where groundwater emergence supports local water supply, agricultural activities, and ecosystem functions. However, increasing climate variability, declining recharge, over-abstraction, and land degradation place growing pressure on these water resources, increasing vulnerability to water scarcity and ecosystem stress across the watershed.

Functionally, the watershed is divided into three interconnected sections that respond differently to climate and hydrological dynamics. The Upper Section, representing 30.8% of the watershed area, functions as the primary runoff generation and water collection zone where rainfall is captured and headwater flows originate. This section is characterized by elevated terrain, steep slopes, dense tributary networks, and increasing urban expansion pressures around Karak, Mutah, and Mazar cities and surrounding communities. It accommodates approximately 80,155 residents — nearly 60% of the total watershed population of 133,005 — making it the most densely populated section of the watershed and placing increasing pressure on infrastructure, water resources, drainage systems, and land systems. These conditions heighten sensitivity to rapid runoff generation, soil erosion, land degradation, and flash flood initiation during intense rainfall watershed. The Mid-Section, accounting for 48.0% of the watershed, acts as the transition and transport zone and represents the core multi-hazard hotspot within the watershed. Tributaries progressively converge into larger drainage channels within this zone, intensifying hydrological connectivity, runoff concentration, sediment transport, and flash flood propagation along the main wadi corridor. The Mid-Section accommodates approximately 40,136 residents distributed across transitional urban-rural settlements and agricultural communities exposed to overlapping hydrological and environmental risks. The interaction between steep terrain, concentrated hydrological flows, and environmental degradation significantly increases susceptibility to erosion, slope instability, land degradation, and cascading climate hazards.



FIGURE 22: PICTURE FROM WADI AL-KARAK WATERSHED

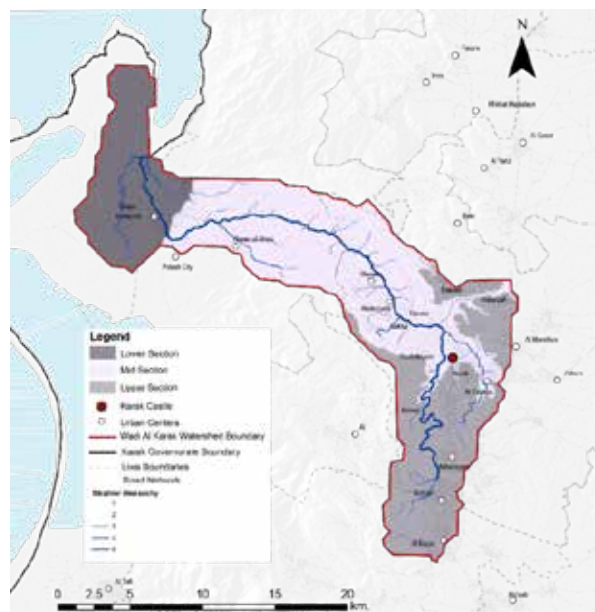


FIGURE 23: FUNCTIONAL SECTIONS OF WADI AL-KARAK WATERSHED

The Low Section, representing 21.2% of the watershed area, functions as the accumulation and deposition zone where runoff and transported sediments converge toward flatter downstream areas extending toward the Jordan Valley and Dead Sea lowlands. The higher-order drainage channels within this section concentrate hydrological flows and sediment loads, increasing exposure to inundation, sediment deposition, infrastructure disruption, and water stress. The section accommodates approximately 12,713 residents, primarily concentrated within downstream agricultural and lowland communities highly dependent on climate-sensitive livelihoods and water availability. These areas are increasingly vulnerable to hydrological extremes and the cumulative downstream impacts of environmental degradation occurring across the watershed.

Administratively, the upstream areas of the watershed fall within the jurisdictions of Greater Karak Municipality and Mutah and Mazar Municipality. The midstream section is shared between Greater Karak Municipality in the upper midstream areas and the Jordan Valley Authority (JVA) toward the lower midstream section. Meanwhile, the downstream areas are primarily managed by the JVA, in addition to parts of Ghawr Al-Mazra'a Municipality. Overall, municipalities collectively manage only approximately 28% of the total watershed area, while nearly 42% of the watershed falls under the jurisdiction of the JVA, particularly across the downstream and lower midstream areas. At the local scale, the watershed encompasses the boundaries of 35 cities and villages, with major population concentration occurring within Mutah, Mazar, Ghawr Al-Mazra'a, and Karak City, which together account for approximately 65% of the total watershed population. At the local scale, the watershed encompasses the boundaries of 35 cities and villages, with major population concentration occurring within Mutah, Mazar, Ghawr Al-Mazra'a, and Karak City, which together accommodate approximately 65% of the total watershed population. These fragmented governance conditions create institutional challenges for emergency response, zoning enforcement, infrastructure maintenance, land-use management, ecosystem protection, and climate risk reduction. While the watershed functions as one interconnected hydrological and ecological system, governance responsibilities remain fragmented across multiple titutions and administrative boundaries. As a result, climate-related risks, environmental degradation, and hydrological pressures originating in one section of the watershed directly affect downstream areas and neighboring jurisdictions. Consultations conducted with local communities and stakeholders further highlighted several governance and administrative challenges affecting watershed management and climate resilience efforts. Participants emphasized weak coordination between municipalities and sectoral institutions, overlapping mandates and responsibilities, limited enforcement of land-use management and environmental regulations, and the absence of integrated watershed-scale planning mechanisms. Community members also noted the lack of

FIGURE 26: CLIMATIC ZONES IN KARAK GOVERNORATE

comprehensive risk assessments, insufficient environmental monitoring and data sharing, and limited preparedness and response capacities for climate-related disasters. Stakeholders further highlighted increasing urban encroachment into environmentally sensitive and flood-prone areas, weak infrastructure planning, uncoordinated implementation of projects, and limited participation of local communities in decision-making processes. In several areas, participants also reported increasing social tensions linked to water scarcity, declining agricultural livelihoods, and unequal distribution and management of water resources across the watershed.

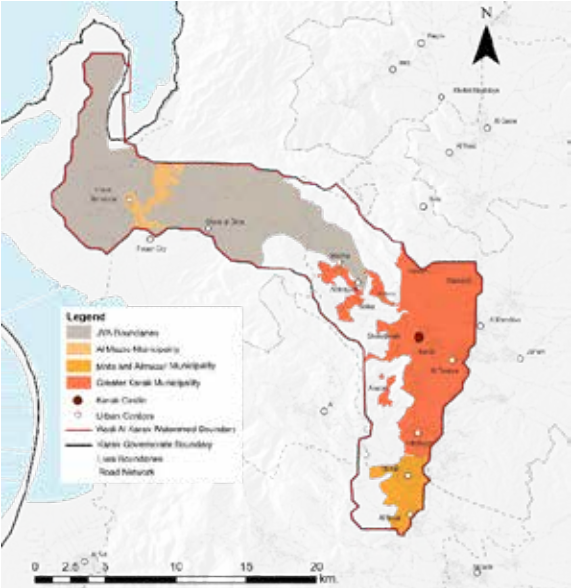


FIGURE 24: ADMINISTRATIVE BOUNDARIES OF WADI AL-KARAK WATERSHED

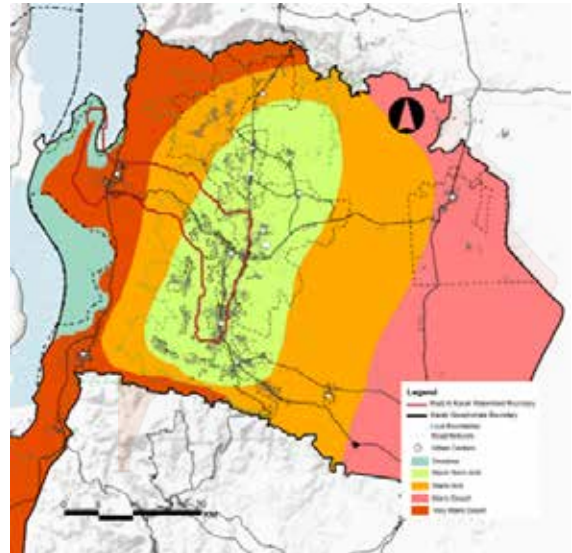


FIGURE 25: CLIMATIC ZONES IN KARAK GOVERNORATE

Together, the watershed composition illustrates how topography, hydrological connectivity, settlement patterns, and fragmented governance structures interact to create interconnected and cascading vulnerabilities across the watershed. Climate hazards, environmental degradation, water stress, ecosystem decline, and infrastructure pressures are not isolated challenges, but mutually reinforcing processes transmitted across upstream, midstream, and downstream areas through the watershed system. These interconnected dynamics underscore the need for an integrated watershed-scale adaptation approach that strengthens coordination across jurisdictions and sectors while addressing climate, urban, ecosystem, biodiversity, and livelihood vulnerabilities through nature-based solutions, ecosystem restoration, resilient infrastructure, and adaptive governance mechanisms across the entire watershed.

### 3.2.2 Land Cover/ Use

The land cover composition of the Wadi Al-Karak watershed reflects a fragile and highly climate-sensitive landscape shaped by strong topographic and climatic gradients across the watershed. Bare soils and exposed rocks constitute the dominant land cover type, covering approximately 41% of the watershed area. These areas are concentrated mainly across steep and degraded landscapes and indicate high levels of erosion, land degradation, low soil stability, and limited vegetation cover. The dominance of exposed surfaces also increases runoff intensity and sediment transport during extreme rainfall events. Sparsely vegetated rangelands represent approximately 29.8% of the watershed and are distributed extensively across the watershed, particularly within transitional and semi-arid areas. These rangelands reflect declining vegetation productivity and increasing ecosystem stress associated with drought, overgrazing, and climatic variability. Their degraded condition reduces ecosystem resilience and increases susceptibility to desertification and soil erosion. Agricultural activities occupy a significant portion of the watershed and remain highly dependent on climate-sensitive water and land resources. Rainfed agriculture covers approximately 13% of the watershed, primarily within upstream and elevated areas receiving relatively higher rainfall. Irrigated agriculture accounts for approximately 6.2% of the watershed and is concentrated mainly within downstream and valley areas where water access supports more intensive cultivation. Agricultural tree crops are also distributed across selected parts of the watershed and represent important livelihood and economic activities. Urban areas cover approximately 7.2% of the watershed and are concentrated mainly within upstream urban centers and selected midstream corridors, particularly around Karak, Mutah, and Mazar. Urban expansion within hydrologically sensitive and steep terrain areas has increased pressure on infrastructure, drainage systems, water resources, and surrounding ecosystems while reducing natural infiltration capacity. Natural ecosystems within the watershed are extremely limited and fragmented. Forests cover only approximately 1.2% of the watershed area, while water bodies represent only around 0.1%, highlighting the scarcity of permanent surface water resources and the declining extent of natural habitats and biodiversity systems across the watershed.

Overall, the land cover structure reflects increasing pressures from urban expansion, water scarcity, climate change, ecosystem and land degradation. The watershed's strong topographic gradient from elevated highlands to low-lying valley areas further shapes distinct land-use patterns, hydrological processes, vegetation conditions, and ecosystem functions across the watershed.

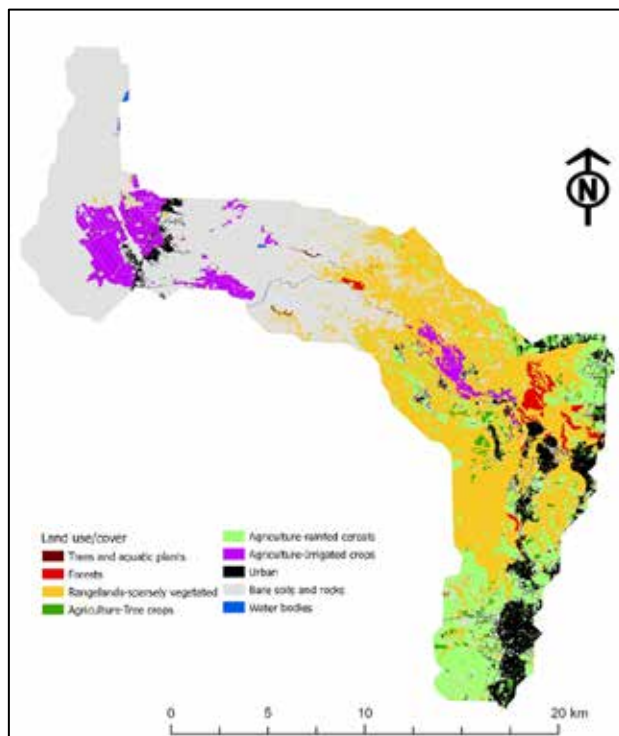


FIGURE 27: LAND USE/COVER MAP OF WADI AL-KARAK WATERSHED

### 3.2.3 Compound Vulnerability Cycle in Wadi Al-Karak Watershed

Wadi Al-Karak watershed is characterized by a compound and interconnected system of vulnerabilities where climate change impacts, ecosystem degradation, and human pressures continuously reinforce one another across the watershed. Climate stressors such as increasing temperatures, prolonged droughts, rainfall variability, flash floods during winter season and extreme storm events are intensifying hydrological instability and placing growing pressure on fragile ecosystems and communities. At the same time, land degradation, declining vegetation productivity, soil erosion, habitat fragmentation, and reduced water retention capacity are weakening the watershed's natural ability to buffer climate impacts. These challenges are further amplified by urban expansion, pressure on infrastructure and natural resources, fragmented governance, and increasing stress on climate-sensitive livelihoods. Together, these dynamics create a reinforcing cycle of drought, flooding, erosion, water scarcity, biodiversity loss, and declining resilience across the watershed. To better understand these interconnected challenges, the vulnerability analysis is structured around three interrelated dimensions: Climate Stressors and Hazards, Ecosystem and Biodiversity Vulnerabilities, and Urban and Livelihood Vulnerabilities.

#### 3.2.3.1 Climate Hazards Profile Wadi Al-Karak Watershed

**Rising Temperatures and Heatwaves:** Historical climate records for Karak Governorate, including Wadi Al-Karak, indicate a clear warming trend over recent decades, particularly in extreme maximum temperatures. Peak temperatures increased from approximately 39.4°C in 1990 to 42.2°C in 2000, 43.3°C in 2010, and reached nearly 43.9°C by 2025, despite minor interannual variability. Between 1990 and 2020, the governorate experienced approximately 60–160 heatwave events, indicating significant exposure to recurrent extreme heat. Climate projections under the RCP 4.5 scenario suggest that heatwave occurrence could increase by more than 200% by 2070–2100, with longer duration and higher intensity events. Climate change trends from downscaled RCP4.5 and 8.5 showed a trend of warming with time, where both minimum and maximum temperatures will increase by 0.60-0.97 to 1.27-2.87 °C for minimum air temperature and by 0.56-0.83 to 1.20-2.91 °C for maximum air temperature by the end of century for wadi AlKarak Watershed. **Consultations** conducted with local communities and stakeholders across the watershed further highlighted increasing concerns regarding rising temperatures and recurrent heatwaves, with participants reporting severe water shortages during the summer months and increasing pressure on water resources, agriculture, livestock, and daily living conditions. Community members also noted that prolonged heat and drought conditions are increasingly affecting local economic activities, particularly crop production, livestock rearing, and agri-tourism, reflecting growing climate stress and socio-economic vulnerability across the watershed.

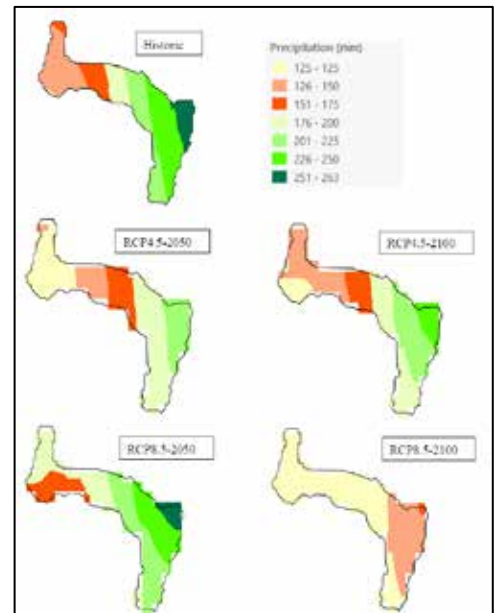


FIGURE 28: CHANGES IN ANNUAL PRECIPITATION FOR WADI AL-KARAK UNDER RCP4.5 AND RCP8.5

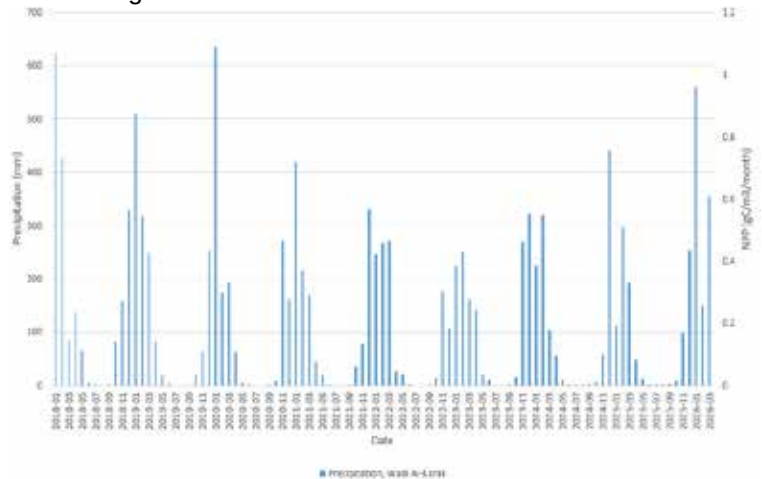


FIGURE 29: MONTHLY PRECIPITATION IN WADI AL-KARAK WATERSHED DURING 2018-2025 (SOURCE OF DATA: FAO-WAPOR)

**Rainfall Variability:** Precipitation trends in the Wadi Al-Karak watershed between 2018 and 2026 indicate high temporal variability in rainfall patterns, characterized by irregular fluctuations between wetter and drier periods. Rainfall is concentrated within short seasonal peaks, while extended dry periods dominate most of the year, reflecting the watershed's semi-arid climatic conditions. The data further demonstrates significant interannual variability, where some years' experience substantially higher rainfall events than others, highlighting increasing climatic uncertainty and unstable hydrological conditions across the watershed. Rainfall distribution also exhibits strong spatial variability shaped by the watershed's pronounced topographic gradient. Average annual precipitation for the period 1990–2020 generally decreases from the elevated upstream highlands toward the downstream lowland areas. In the upper catchment areas, annual rainfall reaches approximately 350 mm, while downstream areas receive significantly lower amounts, averaging nearly 150 mm annually. This upstream–downstream rainfall gradient strongly influences vegetation productivity, water availability, ecosystem conditions, agricultural systems, and hydrological processes across the watershed, increasing drought stress and water scarcity particularly within downstream and degraded areas. Climate projections for Wadi Al-Karak indicate increasing rainfall variability and long-term drying trends compared to the historical annual average of approximately 199 mm. Under the RCP4.5 scenario, annual precipitation is projected to decline to approximately 165.4 mm by 2050 and remain below historical levels through 2100, increasing drought stress, water scarcity, and ecosystem vulnerability across the watershed. **Consultations** conducted with local communities and stakeholders across the watershed highlighted increasing concerns over declining rainfall during summer and more frequent flash flood events during winter. Participants recalled the severe impacts of the January 2026 storms and floods, noting that flash floods caused severe damage to cultural heritage assets, including a partial wall collapse at Karak Castle, as well as to agricultural lands, infrastructure, and livelihoods across several communities within the watershed. The flood carried large quantities of sediment, rocks, and debris from upstream areas, damaging numerous homes and obstructing access to agricultural lands. In some areas, access to farms remains blocked to this day. Community members also emphasized limited preparedness and awareness regarding how to respond to changing rainfall patterns and flash flood risks, reflecting increasing climate vulnerability and reduced adaptive capacity across the watershed.

**Droughts and Water Scarcity** represent one of the most critical and long-term climate stresses affecting the Wadi Al-Karak watershed. Over the past 70 years, Karak Governorate has experienced 14 drought events, averaging nearly two severe droughts per decade. Climate projections indicate a transition from episodic droughts toward prolonged multi-year drought conditions, with drought periods expected to extend beyond three consecutive years under moderate climate scenarios and exceed five years under high-emissions scenarios, accompanied by approximately 180–240 dry days annually. These prolonged dry conditions are expected to intensify pressure on already limited surface and groundwater resources, exacerbating water scarcity across the watershed. The watershed is already characterized by severe water stress, with per-capita water availability estimated at approximately 79 liters per person per day — significantly below national adequacy levels. Drought conditions further reduce groundwater recharge, spring discharge, vegetation productivity, and agricultural water availability, while accelerating land degradation and ecosystem stress across the watershed. **Consultations** conducted with local communities and stakeholders across the watershed emphasized that the past seven years have been marked by severe and prolonged drought conditions, with participants reporting continuous declines in rainfall, increasing water shortages, and worsening pressure on agriculture, livestock, and natural resources. Community members also highlighted increasing encroachment and pressure on water sources due to growing scarcity, alongside declining agricultural productivity, land degradation, deterioration of grazing areas, and increasing economic hardship. These observations reflect escalating climate stress and reduced resilience across the watershed.

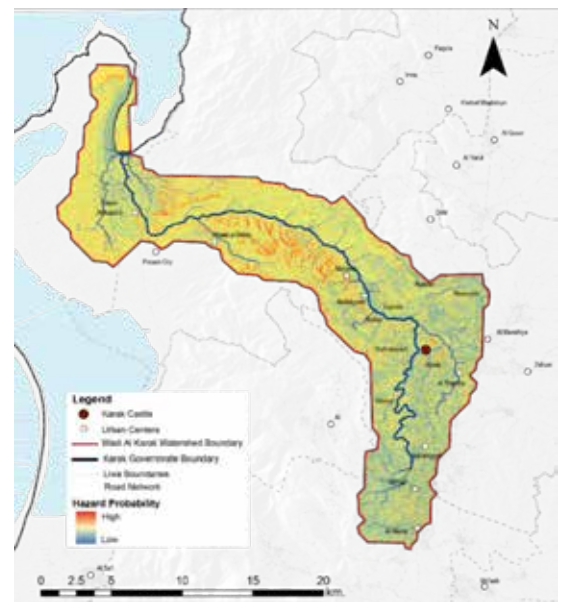


FIGURE 30: FLASH FLOODS MAP IN WADI AL-KARAK WATERSHED

**Flash floods** Flash Floods represent one of the most severe climate-related hazards affecting the Wadi Al-Karak watershed. Despite overall aridity, the watershed is increasingly exposed to short-duration, high-intensity rainfall events. In January 2026, Wadi Al-Karak experienced three extreme rainfall events — the most intense since 1971 — causing rapid runoff, soil saturation, and overflow of the Wadi Al-Karak Dam after reaching its approximately 2 million m<sup>3</sup> capacity. The resulting flash floods caused severe downstream impacts, damaging nearly 60% of critical infrastructure, including transport networks, services, agricultural lands, and residential areas. These events illustrate the watershed's growing exposure to compound climate risks. The watershed's steep topographic gradient, dense drainage hierarchy, degraded land cover, and expanding urban development further intensify flood vulnerability by accelerating runoff concentration, erosion, sediment transport, and flood propagation from upstream areas toward downstream accumulation zones. The flash flood susceptibility model identifies the main wadi corridor and surrounding settlements as the most vulnerable areas, with approximately 25 km<sup>2</sup> — nearly 10% of the watershed — exposed to high flood susceptibility. The majority of the watershed, however, falls within medium to high susceptibility levels, particularly across the central and downstream corridors where hydrological connectivity and runoff accumulation are strongest. **Consultations** conducted with local communities and stakeholders across the watershed highlighted flash floods as one of the most destructive and recurring hazards affecting the area. Participants frequently referred to the January 2026 flood events, describing severe damage to homes, agricultural lands, roads, infrastructure, and local livelihoods, particularly communities located along the main wadi corridor. During field visits, community members guided the assessment team through several affected areas, including agricultural lands buried under massive rocks and sediments transported by floodwater, with some boulders reportedly weighing several tons. Participants also showed streets and roads in hilly areas that collapsed due to intense runoff and erosion, where only thin asphalt layers remained after underlying soils were washed away. Community members further emphasized limited flood protection measures, weak preparedness, and increasing exposure of settlements and infrastructure within flood-prone areas, reflecting growing vulnerability to flash flood risks across the watershed. Community members further emphasized severe threats to properties and human safety, and major weaknesses in existing infrastructure and drainage systems, which they noted are unable to cope with increasing rainfall intensity and extreme stormwater flows. Stakeholders further noted that damages to investments and assets under the MoA resulting from the January 2026 flood events alone were estimated at nearly USD 30 million.

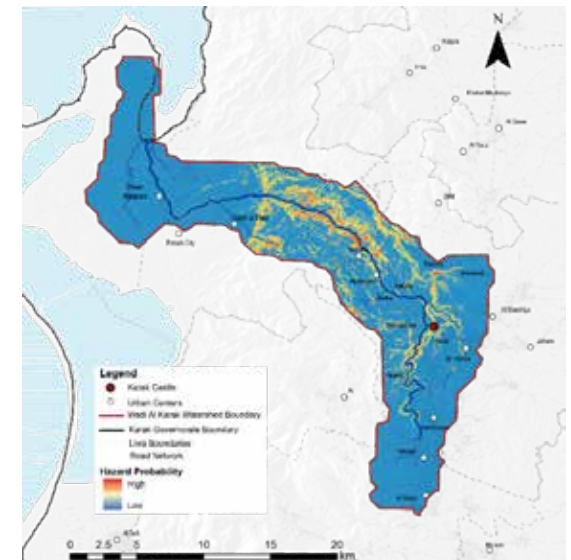


FIGURE 31: LANDSLIDES MAP IN WADI AL-KARAK WATERSHED

**Landslides:** represent a significant hazard within the Wadi Al-Karak watershed, particularly across the steep and unstable midstream areas surrounding Karak City and adjacent settlements. The hazard is driven by the interaction between steep slopes, weak geological formations, intense rainfall events, soil saturation, erosion processes, and expanding urban and infrastructure development within vulnerable terrain. During heavy rainfall events, rapid runoff and increased soil moisture reduce slope stability and increase the likelihood of slope failure, particularly in areas characterized by shallow soils, degraded vegetation cover, and unstable geological conditions. Urban expansion and road development further intensify landslide susceptibility by altering natural drainage pathways and increasing pressure on fragile slopes. The majority of landslide-prone zones are concentrated within the Mid-Section of the watershed, where steep slope breaks and active transport processes dominate. These areas directly threaten transport corridors, infrastructure systems, expanding urban areas, and critical connectivity between upstream and downstream communities. Landslides can also accelerate soil erosion, increase sediment accumulation within wadis, damage agricultural lands, disrupt drainage systems, and isolate communities during extreme weather events, further increasing risks to accessibility, infrastructure stability, ecosystem functionality, and emergency response capacity across the watershed.



FIGURE 32: OLIVE FARMS BURIED UNDER MASSIVE ROCKS.

### 3.2.3.2 Ecosystem and Biodiversity Vulnerabilities

The ecosystems of the Wadi Al-Karak watershed are increasingly stressed by the combined impacts of prolonged droughts, rainfall variability, land degradation, water scarcity, ecosystem fragmentation, and expanding human pressures. The watershed's strong topographic and climatic gradients, extending from elevated upstream highlands toward downstream lowland areas, create highly variable ecological and hydrological conditions across the watershed. These interconnected pressures are progressively reducing ecosystem functionality, weakening ecological resilience, and increasing exposure to climate-related hazards across natural and human systems. LPD, NPP, and GBWP analyses reveal widespread ecosystem stress and declining vegetation conditions across the watershed. Large portions of the watershed are characterized by declining, moderately declining, or stressed, reflecting the cumulative impacts of prolonged droughts, rainfall variability, and increasing climatic stress. The analyses demonstrate that vegetation productivity in Wadi Al-Karak is highly dependent on rainfall availability, making ecosystems particularly sensitive to prolonged dry periods and unstable precipitation patterns. The relatively low NPP values observed across the watershed indicate reduced vegetation growth and declining ecosystem productivity. Similarly, the extremely low GBWP values identified in western and downstream areas reflect severe land degradation associated with water erosion, shallow soils, and extensive rock exposure. These degraded conditions reduce the land's capacity to retain moisture, sustain vegetation growth, and support healthy ecosystem functions. Areas with relatively higher productivity are concentrated mainly within irrigated agricultural zones alongside wadis and downstream valley areas, highlighting the increasing dependence of ecosystem productivity and agricultural systems on irrigation and external water inputs. Declining vegetation productivity directly affects ecosystem health by reducing vegetation cover, weakening soil stability, lowering soil moisture retention, and increasing susceptibility to erosion and desertification processes. Reduced vegetation cover also weakens the watershed's natural ability to regulate runoff, recharge groundwater, support biodiversity, and buffer against climate extremes, further intensifying vulnerability to drought, land degradation, and flash floods. In addition, declining vegetation productivity can undermine food security by reducing agricultural productivity, limiting the availability of grazing resources, increasing pressure on water resources, and weakening the resilience of local livelihoods that depend on land-based production systems.

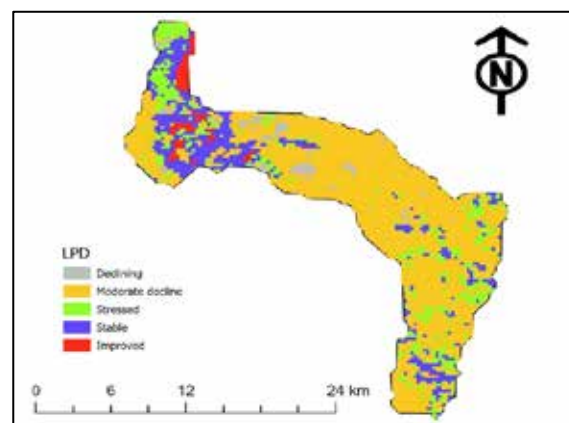


FIGURE 34: LPD MAP IN WADI AL-KARAK WATERSHED IN 2024 (SOURCE OF DATA: GEE)

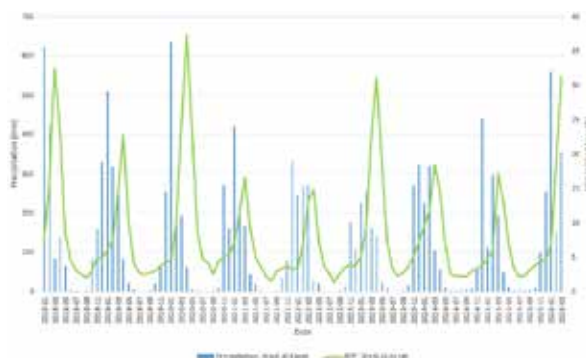


FIGURE 33: MONTHLY PRECIPITATION AND NET PRIMARY PRODUCTION DURING 2018-2025 (SOURCE OF DATA: FAO-WAPOR)

**Habitat Connectivity and Biodiversity Integrity:** Natural ecosystems within the watershed are highly fragmented and increasingly degraded. Land cover analysis indicates that forests cover only approximately 1.2% of the watershed area, while sparsely vegetated rangelands dominate nearly 29.8% of the watershed. Large portions of the watershed are additionally characterized by bare soils and exposed rock formations, indicating severe ecosystem degradation and declining habitat quality across extensive areas of the watershed. The limited extent and fragmented distribution of forests, natural vegetation, and ecological corridors weaken habitat connectivity and biodiversity integrity across the watershed. Ecosystem fragmentation is further intensified by urban expansion, agricultural encroachment, overgrazing, drought stress, and land degradation, collectively reducing ecological continuity between upstream, midstream, and downstream ecosystems. Declining vegetation conditions and fragmented habitats reduce biodiversity resilience and increase ecosystem vulnerability to climate change and environmental disturbances. Degraded ecosystems also become increasingly susceptible to habitat loss, invasive species expansion, and declining ecological functionality, further weakening the watershed's natural capacity to sustain biodiversity, regulate environmental processes, and maintain ecosystem services.

**Consultations** conducted with local communities and stakeholders across the watershed further highlighted noticeable declines in native biodiversity, with participants reporting that several native plant species and bird populations that were previously common are no longer regularly observed in many parts of the watershed. Community members associated these changes with prolonged drought conditions, vegetation loss, land degradation, overgrazing, and increasing human pressures on natural ecosystems such as illegal hunting, reflecting growing ecological stress and declining ecosystem health across the watershed. Participants also noted that many forested areas within the watershed are largely artificial plantations rather than natural forests, and that significant portions of these planted forests have deteriorated or died due to water scarcity, drought stress, and the lack of sufficient treated water and irrigation for maintenance, reflecting growing ecological stress and declining ecosystem resilience across the watershed.



FIGURE 36: SEVERE SOIL EROSION AND LAND DEGRADATION IN WADI AL-KARAK

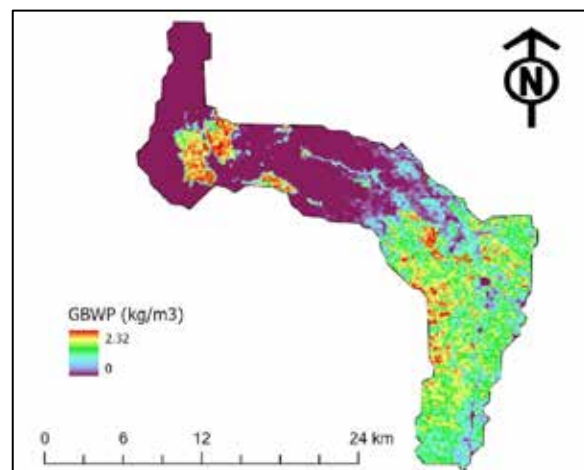


FIGURE 35: GROSS BIOMASS WATER PRODUCTIVITY (GMWP) IN WADI AL-KARAK WATERSHED (SOURCE OF DATA: FAO-WAPOR).

**Soil Stability and Land Degradation:** The watershed experiences severe land degradation driven by erosion processes, exposed soils, steep terrain, sparse vegetation cover, and hydrological instability. Bare soils and exposed rocks constitute approximately 41% of the watershed area, reflecting advanced land degradation conditions and low soil stability across large portions of the watershed. The watershed's steep topographic gradient, combined with intense rainfall events and concentrated runoff, accelerates erosion processes and sediment transport from upstream and midstream areas toward downstream accumulation zones. The GBWP analysis further highlights severe erosion impacts in western Wadi Al-Karak, where shallow soils and extensive rock exposure significantly reduce land productivity and moisture retention capacity. These degraded conditions weaken soil fertility, reduce infiltration capacity, increase runoff intensity, and accelerate desertification processes. Soil instability also contributes to increasing sediment accumulation within wadis and downstream areas, negatively affecting agricultural lands, infrastructure systems, hydrological processes, and ecosystem functionality across the watershed.



FIGURE 37: SPRINGS ACROSS THE WADI AL-KARAK WATERSHED

**Water Ecosystems and Hydrological Health:** The watershed's hydrological system is increasingly stressed by rainfall variability, prolonged droughts, flash floods, water scarcity, and ecosystem degradation. Hydrologically, the watershed functions as one interconnected drainage system structured through a dense hierarchy of tributaries and channels that progressively converge toward the main Wadi Al-Karak corridor. This strong upstream–downstream hydrological connectivity accelerates runoff, erosion, sediment transport, and flood propagation across the watershed. Water resources across the watershed consist of springs, dams, government and private wells, and localized water storage systems distributed unevenly across upstream, midstream, and downstream areas. Springs are concentrated mainly within the midstream zones where transitional hydrogeological conditions support groundwater discharge, while wells are widely distributed across agricultural and urban areas reflecting increasing dependence on groundwater extraction to address water scarcity and declining rainfall reliability. Increasing drought conditions, declining groundwater recharge, over-abstraction, pollution pressures, and ecosystem degradation are placing growing stress on both surface and groundwater systems. Limited water availability, combined with uneven water infrastructure and increasing demand from urban, agricultural, and industrial activities, further weakens hydrological resilience across the watershed. These pressures are intensified by pollution from untreated wastewater discharge, cesspits, agricultural runoff, and sediment accumulation transported through interconnected drainage networks, contributing to declining water quality and ecosystem health across downstream and hydrologically connected areas. **Consultations** highlighted growing concerns regarding declining water quality and increasing stress on water resources due to drought, over-abstraction, pollution, and weak water governance. Participants also emphasized the absence of an integrated water management policy at the watershed level, weak coordination between institutions, limited water-related research, data, and monitoring systems, and low public awareness regarding water conservation and ecosystem protection, reflecting declining hydrological resilience across the watershed.

### 3.2.3.3 Urban and Livelihood Vulnerabilities

**Population Density & Distribution:** Population density and distribution across the watershed create uneven exposure to climate and environmental risks. High population concentration in upstream urban areas increases pressure on infrastructure, drainage systems, water resources, and land systems located within steep and hydrologically sensitive terrain, intensifying vulnerability to flash floods, erosion, and infrastructure disruption. Meanwhile, dispersed rural communities in midstream and downstream areas face reduced service coverage, limited emergency response capacity, and high dependence on climate-sensitive livelihoods such as agriculture and grazing.

**Urbanization and Urban Growth:** Urbanization and urban growth within the watershed, particularly in upstream and midstream areas around Karak, Mutah, and Mazar, are increasing pressure on hydrologically sensitive lands, infrastructure systems, and natural ecosystems. Expansion of built-up areas into steep terrain and drainage corridors reduces natural infiltration, increases surface runoff, and heightens exposure to flash floods, erosion, infrastructure disruption, and ecosystem fragmentation, while placing additional stress on already limited water and land resources. **Consultations** highlighted increasing pressures from urban expansion, weak governance, and inadequate infrastructure systems across both urban and rural areas. Participants emphasized weak enforcement of planning and environmental regulations, fragmented institutional responsibilities, limited coordination between municipalities and sectoral institutions, and the absence of integrated watershed-scale planning and risk management mechanisms. Community members also noted weak technical capacities, limited climate adaptation planning, lack of early warning systems, and insufficient risk assessments and environmental data to support informed decision-making. Stakeholders further highlighted increasing urban expansion within flood-prone and environmentally sensitive areas, particularly along the wadi corridor and upstream zones, where expansion of built-up areas has reduced natural infiltration and increased surface runoff and flood risks. Participants noted that existing infrastructure and stormwater systems are not designed to cope with increasing rainfall intensity and extreme flood events, while random and unregulated development continues to increase exposure of communities and infrastructure to climate hazards.

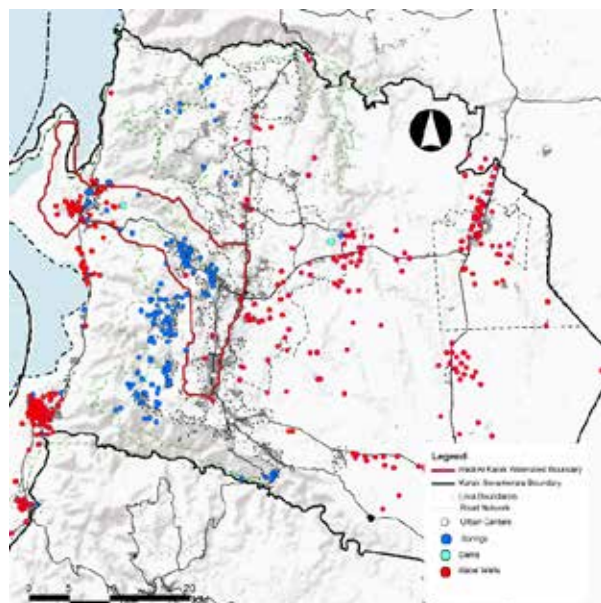


FIGURE 38: WATER POINTS MAP ACROSS WADI AL-KARAK WATERSHED

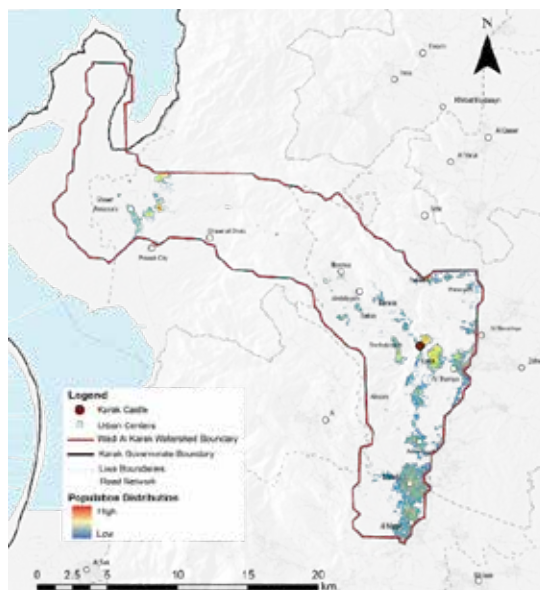


FIGURE 39: POPULATION DENSITY AND DISTRIBUTION

**Access to services and critical infrastructure:** Across the Wadi Al-Karak watershed remains uneven and increasingly vulnerable to climate-related hazards and environmental pressures. Urban centers, particularly around Karak City, accommodate the highest concentration of infrastructure systems, including transportation networks, electricity lines, water systems, urban services, and wastewater treatment facilities. However, many rural, mountainous, and downstream communities continue to face infrastructure deficits, limited-service accessibility, and reduced emergency response capacity. Sewerage networks remain incomplete across large parts of the watershed, with many communities relying on septic tanks and cesspits instead of centralized wastewater systems, increasing risks of groundwater contamination, environmental pollution, and public health concerns. The watershed's strong topographic gradients, fragmented settlement patterns, and hydrological connectivity increase the exposure of roads, utilities, and infrastructure corridors to flash floods, landslides, erosion, and runoff accumulation. Critical transport routes linking upstream, midstream, and downstream communities are particularly vulnerable to disruption during extreme weather events, affecting accessibility, mobility, service delivery, and disaster response across the watershed. **Consultations** highlighted growing challenges related to access to water, with participants reporting recurrent water supply interruptions, particularly during summer months, and increasing difficulties in securing sufficient water for households, agriculture, and livestock. Community members also noted inequities in water distribution schedules and increasing dependence on water rotation systems, reflecting growing pressure on already limited water resources across the watershed. Also, weak infrastructure systems, lack of early warning systems, inadequate drainage networks, and unplanned urban expansion, reflecting increasing climate and environmental vulnerability across the watershed

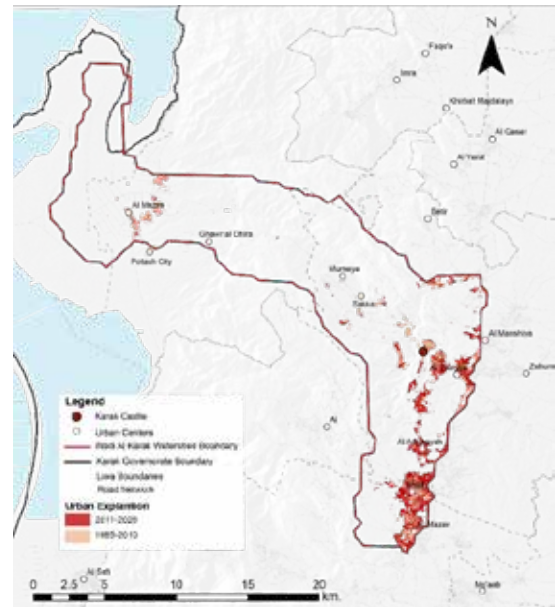


FIGURE 41: URBAN EXPANSION IN WADI AL-KARAK WATERSHED

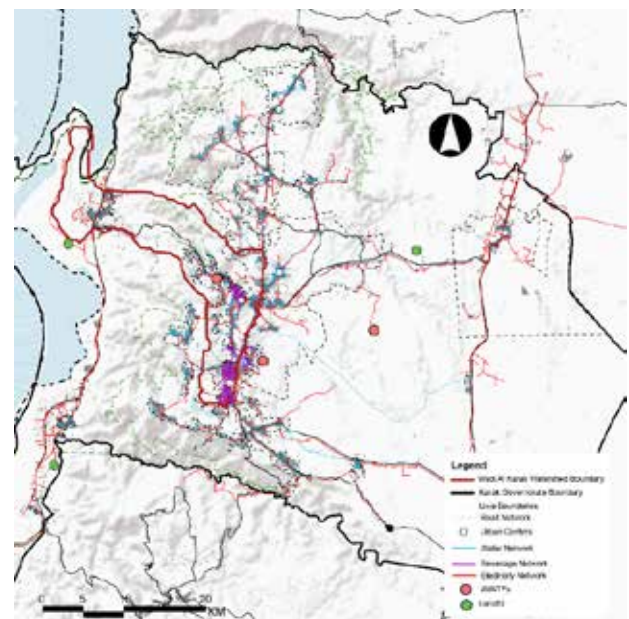


FIGURE 40: ACCESS TO INFRASTRUCTURE IN KARAK GOVERNORATE

**Environmental quality** across the watershed is increasingly threatened by pollution pressures, ecosystem degradation, and inadequate wastewater and sanitation infrastructure. Untreated wastewater discharge, sewage leakage, and pollution from septic tanks and cesspits contribute to the contamination of wadies, soils, groundwater, and downstream water resources, particularly within hydrologically connected areas. Existing wastewater treatment facilities also face operational and infrastructure challenges that limit their capacity of effectively managing growing wastewater loads. Agricultural activities further contribute to environmental degradation through excessive pesticide and fertilizer use, increasing risks of soil contamination, water pollution, and ecosystem stress. During flood events, runoff transports pollutants, sediments, and waste materials across the watershed through interconnected drainage networks, intensifying downstream environmental impacts. Environmental disturbance, habitat degradation, pollution pressures, and declining ecosystem health also contribute to the spread of invasive species, further weakening biodiversity integrity and ecosystem resilience. Together, these pressures reduce water quality, degrade ecosystem functionality, threaten public health, and weaken the watershed's natural capacity to buffer against climate-related hazards. **Consultations** highlighted increasing pollution pressures, groundwater contamination, untreated wastewater discharge, weak water management practices, and unsustainable agricultural activities, contributing to declining environmental quality across the watershed.



FIGURE 42: INFRASTRUCTURE DISRUPTION IN WADI AL-KARAK

**Livelihoods and Socioeconomics:** Beyond agriculture, the Wadi Al-Karak watershed supports a range of non-agricultural economic activities concentrated mainly around Karak City and major urban corridors. These include industrial facilities, mining activities, tourism services, transportation networks, trade, and heritage-related economic functions associated with archaeological and cultural sites distributed across the governorate. The spatial distribution of factories, mining sites, archaeological sites, and urban economic centres demonstrates the watershed's economic importance beyond climate-sensitive agricultural systems. However, many of these sectors remain increasingly vulnerable to climate-related hazards, including flash floods, landslides, heatwaves, water scarcity, and infrastructure disruption. Industrial and mining activities also contribute additional environmental pressures through land degradation, water stress, pollution risks, and ecosystem disturbance, particularly within hydrologically connected and environmentally sensitive areas. **Consultations** with local communities and farmers further revealed significant shifts in agricultural practices and livelihood patterns across the watershed. Farmers reported that several traditional crops and locally adapted plant varieties are no longer cultivated or have become increasingly difficult to sustain due to prolonged drought, declining rainfall reliability, rising temperatures, water scarcity, soil degradation, and increasing production costs. Many farmers indicated a growing reliance on olive cultivation, as olives are perceived to be more drought-tolerant, less water-intensive, and economically safer under increasingly harsh climatic conditions.

These changes reflect declining agricultural diversity, increasing livelihood vulnerability, and reduced resilience of traditional farming systems across the watershed. Consultations also highlighted growing socioeconomic pressures on rural communities, with participants reporting increasing migration trends, particularly among younger populations, due to declining agricultural profitability, limited economic opportunities, and worsening environmental conditions. Community members noted that climate-related stresses, combined with reduced livelihood security and degradation of natural resources, are contributing to gradual shifts away from traditional land-based livelihoods and increasing dependence on urban centers and external sources of income. Climate-related disruptions to transport corridors, infrastructure systems, water availability, and ecosystem functionality can therefore generate cascading socioeconomic impacts across multiple sectors, affecting employment opportunities, local economic productivity, tourism potential, agricultural sustainability, and regional connectivity throughout the watershed.

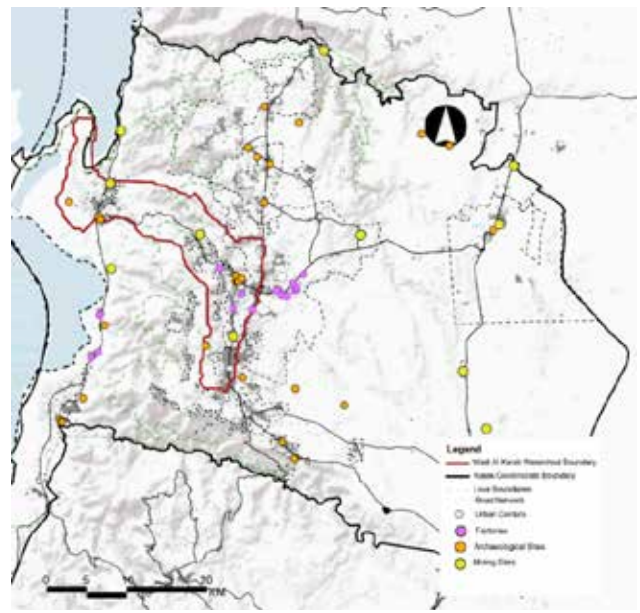


FIGURE 43: NON-AGRICULTURAL LIVELIHOODS MAP IN KARAK GOVERNORATE

#### 4. Initial Gender Assessment:

An initial gender assessment was prepared during concept note development to outline the differentiated needs, roles, capabilities and knowledge resources of women and men in the Awali and Wadi Al-Karak watersheds, drawing on secondary national and regional evidence and on the stakeholder consultations conducted between April and June 2026. The findings will be further substantiated through a comprehensive gender assessment during full-proposal development. **Gender roles:** Water, land, agriculture, and natural-resource management are strongly influenced by gender roles in both watersheds. Available evidence and consultations indicate that women play important roles in household water management, food production, home gardening, seed preservation, and small-livestock raising. Men predominate in commercial and irrigated agriculture<sup>66</sup>, land transactions, and formal representation within municipalities, water authorities, and agricultural cooperatives. In Wadi Al-Karak, consultations reported a shift towards olive cultivation in response to drought, which may affect mixed agricultural systems in which women have traditionally contributed labour and knowledge. **Needs:** Because their roles concentrate at household level, women are likely to absorb climate and water stress first. Water supply interruptions and rotation schedules in Wadi Al-Karak, and seasonal scarcity and spring drying in the upper Awali, are likely to translate into longer collection times, additional unpaid labour, and, in some cases, greater heat exposure for women and girls. Deteriorating water quality raises household health burdens that women typically manage. Flood recovery burdens — such as those following the January 2026 flash floods in Jordan — are likely to fall disproportionately on women-headed households, who typically have fewer reserves. **Capabilities:** Women's adaptive capacity is constrained by unequal access to land, formal water rights, employment, finance, extension services, technologies, and institutional decision-making. As land and other productive assets are predominantly registered to men, women may face barriers to cooperative membership, agricultural support, credit, and adaptation finance. Mobility constraints, unpaid care responsibilities, and the timing and location of public meetings can further restrict their participation in consultations, training, and decision-making. **Knowledge resources:** Women possess important but often underrecognized knowledge relevant to nature-based adaptation, including knowledge of local and drought-tolerant crops, seed selection and storage, household water conservation and reuse, small-livestock management, and changes in springs and local ecosystems. **Participation:** Women remain systematically underrepresented in the institutions governing watershed resources in both countries, including municipal councils, unions of municipalities, water user associations, cooperatives, and sectoral bodies. Consequently, decisions concerning restoration priorities, water infrastructure, agricultural support, and investment may not adequately reflect the experience and knowledge of those managing water and other resources at the household level. **Intersectional considerations:** Gender inequalities may be compounded by age, disability, poverty, geographic isolation, displacement status, household structure, and limited land ownership. The comprehensive gender assessment will examine the specific conditions of women-headed households, women farmers, young women and men, persons with disabilities, older people, refugees and displaced persons, and other relevant groups within each watershed. **Changing gender dynamics as a driver of lasting change:** Climate-driven out-migration, which in Jordan is predominantly male and concentrated among younger adults, is expected to shift a growing share of agricultural and land management decisions to those remaining, including women,

<sup>66</sup> Jordan Department of Statistics. 2024. Gender Indicators – Land and Apartment Ownership by Sex and FAO & UN Women. 2023. Women in Agriculture and Rural Development in Lebanon.

making their inclusion in watershed governance a practical necessity. Combined with established national gender machineries in both countries, this creates an entry point through which gender-responsive watershed planning can be anchored beyond the project period. **Implications for design:** These findings are reflected in the project as follows: vulnerability assessments under Output 1.1.2 will examine gender-differentiated socioeconomic vulnerabilities using data disaggregated by sex, age, disability, income, and livelihood, where available, and integrate the findings into vulnerability mapping and priority-area identification.; master plans and restoration frameworks under Outputs 1.1.3–1.1.4 will apply gender-responsive planning criteria and require women's representation in validation; capacity building under Output 1.1.5 will engage the national gender machineries and target women within municipalities and sectoral institutions; financing models under Outcome 1.2 will address eligibility barriers (including those linked to asset ownership) limiting women's access to adaptation finance; and pilot interventions under Outcome 2.1 will prioritise women-headed households, engage women's cooperatives as implementing partners, and apply a minimum threshold for women's membership of Community Climate Action Committees. A full gender assessment and costed Gender Action Plan with sex-disaggregated indicators and targets will be prepared during full proposal development.

**Problem Statement:** The watersheds of Wadi Al-Karak in Jordan and Awwali River in Lebanon are increasingly vulnerable due to the interconnected impacts of climate change, unplanned urbanization, ecosystem degradation, and fragmented governance systems, resulting in increased flood and drought risks, declining ecosystem resilience, infrastructure vulnerability, and socio-economic instability.

## Project/Programme Objectives:

This regional project seeks to strengthen climate resilience in the Awali Watershed (Lebanon) and Wadi Al-Karak watershed (Jordan) by advancing ecosystem restoration, post-disaster recovery, gender-responsive governance, and sustainable financing, directly addressing national priorities and regional gaps through the integration of scientific data, traditional knowledge, and participatory planning. The overall objective of the project is to enhance climate resilience and adaptive capacity in the Awali Watershed (Lebanon) and Wadi Al-Karak Watershed (Jordan). This will be achieved by advancing ecosystem restoration, post-disaster ecological recovery, GIS-enabled planning and decision-support systems, gender-responsive and participatory governance, sustainable climate financing, and regional cooperation, while integrating scientific data, traditional knowledge, and evidence-based planning to address national adaptation priorities and shared regional challenges.

**Specific Objectives:** 1.Climate resilience governance strengthened in the Awali Watershed and Wadi Al-Karak watershed through integrated GIS and decision-support systems, multi-layered vulnerability and gender assessments, evidence-based restoration and planning frameworks aligned with national NDCs/NAPs, strengthened institutional capacities and participatory governance mechanisms, and inclusive blended financing mechanisms mobilizing climate funds, green recovery financing, and municipal investment. 2.Ecosystem resilience restored and climate adaptive capacity of local authorities and civil society strengthened in targeted watersheds through Nature-based Solutions (NbS) interventions, post-disaster ecological recovery, and GIS-enabled landscape planning and monitoring. 3.Transboundary climate adaptation cooperation between Lebanon and Jordan strengthened and contributing to enhanced climate resilience through regional "Peace through Water" dialogue, joint knowledge exchange platforms, and coordinated watershed management mechanisms at local, national, and regional levels

## Project/Programme Components and Financing:

TABLE 1:PROJECT/PROGRAMME COMPONENTS, OUTPUTS AND FINANCING BY COUNTRY AND EXECUTING ENTITY

| Project/Programme Components                                                                                                          | Expected Outcomes                                                                                     | Expected Outputs                                                                                                                                                                                                                                                                 | Amount Component (US\$) | Amount Output (US\$) | Amount LEB (US\$) & EE                                                            | Amount JO (US\$) & EE                                                             | Amount Regional (US\$) | EE type           |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|-------------------|
| Component 1: Multi-layered vulnerability assessments, climate-mainstreamed master plans, restoration frameworks, and financing models | Outcome 1.1: Enhanced governance through data-driven planning and strengthened institutional capacity | Output 1.1.1: GIS databases and decision-support systems established                                                                                                                                                                                                             | 4,150,000               | 750,000              | 425,000 UN-Habitat and CNRS                                                       | 325,000                                                                           | -                      | IE executes as EE |
|                                                                                                                                       |                                                                                                       | Output 1.1.2: Multi-layered vulnerability assessments conducted and priority areas identified                                                                                                                                                                                    |                         | 600,000              | 300,000 UN-Habitat and CNRS                                                       | 300,000                                                                           | -                      |                   |
|                                                                                                                                       |                                                                                                       | Output 1.1.3: Adaptation and restoration frameworks developed                                                                                                                                                                                                                    |                         | 400,000              | 200,000 UN-Habitat and CNRS                                                       | 200,000                                                                           | -                      |                   |
|                                                                                                                                       |                                                                                                       | Output 1.1.4: Climate-mainstreamed watershed master plans developed                                                                                                                                                                                                              |                         | 1,500,000            | 750,000 Specialized service provides to be selected through a competitive process | 750,000 Specialized service provides to be selected through a competitive process | -                      |                   |
|                                                                                                                                       |                                                                                                       | Output 1.1.5: Institutional capacities strengthened and awareness enhanced across relevant sectors (including agriculture, water resources management, forestry and biodiversity conservation, land management, and finance and economic planning) and across governance levels. |                         | 200,000              | 100,000 UN-Habitat and CNRS                                                       | 100,000 UN-Habitat and MOPIC                                                      | -                      |                   |
|                                                                                                                                       | Outcome 1.2: Strengthened evidence-based financing for adaptation and ecosystem restoration           | Output 1.2.1: Evidence-based and climate-responsive financing models developed                                                                                                                                                                                                   |                         | 200,000              | 100,000 UN-Habitat                                                                | 100,000 UN-Habitat                                                                | -                      |                   |
|                                                                                                                                       |                                                                                                       | Output 1.2.2: Priority adaptation and restoration investments identified, cost-estimated, and developed into investment portfolios                                                                                                                                               |                         | 200,000              | 100,000 UN-Habitat                                                                | 100,000 UN-Habitat                                                                | -                      |                   |
|                                                                                                                                       |                                                                                                       | Output 1.2.3: Financing mechanisms and resource                                                                                                                                                                                                                                  |                         | 100,000              | 50,000 UN-Habitat                                                                 | 50,000 UN-Habitat                                                                 | -                      |                   |
|                                                                                                                                       |                                                                                                       |                                                                                                                                                                                                                                                                                  |                         |                      |                                                                                   |                                                                                   |                        |                   |

|                                                                                                                                                            |                                                                                                 |                                                                                                                              |            |            |                                                                                            |                                                                                                                         |                    |                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------|------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------|
|                                                                                                                                                            |                                                                                                 | mobilization strategies developed and presented to relevant stakeholders                                                     |            |            |                                                                                            |                                                                                                                         |                    |                       |
|                                                                                                                                                            |                                                                                                 | Output 1.2.4: Capacity strengthened and awareness enhanced for planning and managing adaptation finance.                     |            | 200,000    | 100,000 UN-Habitat                                                                         | 100,000 UN-Habitat                                                                                                      | -                  |                       |
| Component 2: Implementation of adaption and restoration interventions with a focus on nature-based solutions and post-disaster risk reduction and recovery | Outcome 2.1: Improved community-led ecosystem restoration and climate-resilient risk reduction. | Output 2.1.1: Priority pilot interventions identified, validated, and prepared through site-specific assessments and studies | 19,839,350 | 800,000    | 400,000 SPNL                                                                               | 400,000 IUCN                                                                                                            | -                  | Non-IE executes as EE |
|                                                                                                                                                            |                                                                                                 | Output 2.1.2: Priority pilot interventions designed and implemented                                                          |            | 18,439,350 | 9,174,000 Specialized service provides to be selected through a competitive process        | 9,265,350 IUCN, WADI, MOENV, MOA                                                                                        | -                  |                       |
|                                                                                                                                                            |                                                                                                 | Output 2.1.3: Local adaptive capacity strengthened and awareness enhanced                                                    |            | 200,000    | 100,000 SPNL                                                                               | 100,000 IUCN                                                                                                            | -                  |                       |
|                                                                                                                                                            |                                                                                                 | Output 2.1.4: Monitoring and Evaluation for pilot intervention                                                               |            | 400,000    | 200,000 SPNL and Specialized service provides to be selected through a competitive process | 200,000 IUCN, WADI, MOENV and MOA and Specialized service provides to be selected through a competitive process process | -                  |                       |
| Component 3: Regional cooperation & knowledge exchange                                                                                                     | Outcome 3.1: Strengthened local, National, and regional water and climate diplomacy             | Output 3.1.1: Regional dialogue, coordination, and knowledge exchange events and forums conducted                            | 1,000,000  | 500,000    | -                                                                                          | -                                                                                                                       | 500,000 UN-Habitat | IE executes as EE     |
|                                                                                                                                                            |                                                                                                 | Output 3.1.2: "Peace through Water" knowledge series produced and disseminated                                               |            | 200,000    | -                                                                                          | -                                                                                                                       | 200,000 UN-Habitat |                       |
|                                                                                                                                                            |                                                                                                 | Output 3.1.3: Regional Learning and Innovation Programme Delivered                                                           |            | 100,000    | -                                                                                          | -                                                                                                                       | 100,000 UN-Habitat |                       |
|                                                                                                                                                            |                                                                                                 | Output 3.1.4: Existing platforms and initiatives leveraged to support coordinated climate adaptation efforts                 |            | 200,000    | -                                                                                          | -                                                                                                                       | 200,000 UN-Habitat |                       |
| Total Component (A)                                                                                                                                        |                                                                                                 |                                                                                                                              | 24,989,350 |            | 11,999,000                                                                                 | 11,990,350                                                                                                              | 1,000,000          |                       |
| 4. Project/Programme Execution Cost (B)                                                                                                                    |                                                                                                 |                                                                                                                              | 2,282,797  |            | 1,129,471                                                                                  | 1,138,098                                                                                                               | 15,228             |                       |
| 5. Total Project/Programme Activity Cost (A+B)                                                                                                             |                                                                                                 |                                                                                                                              | 27,272,147 |            | 13,128,471                                                                                 | 13,128,448                                                                                                              | 1,015,228          |                       |
| 6. Project/Programme Implementing Entity Fee (if applicable)                                                                                               |                                                                                                 |                                                                                                                              | 2,727,214  |            | 1,312,847                                                                                  | 1,312,844                                                                                                               | 101,522            |                       |
| Amount of Financing Requested                                                                                                                              |                                                                                                 |                                                                                                                              | 29,999,361 |            | 14,441,318                                                                                 | 14,441,292                                                                                                              | 1,116,750          |                       |

As shown in the table above, UN-Habitat will serve as the lead executing entity (EE) for Components 1 and 3, with support from other entities where specialized inputs are required, including for example planning-related aspects. The selection of UN-Habitat as the main EE is based on its extensive experience in developing GIS databases and decision-support systems, designing adaptation and restoration frameworks, managing regional cooperation and knowledge exchange activities, and in Jordan, implementing the Multi-layered Vulnerability Assessment (MVA). Through these initiatives, UN-Habitat has developed significant technical expertise in the relevant thematic areas. In particular, UN-Habitat Jordan has established strong institutional capacity on the MVA methodology, supported by a team of trained personnel with direct experience in its design, implementation, and application. Building on this comparative advantage will accelerate project implementation, ensure methodological consistency, and enhance the quality and reliability of project outputs.

With respect to the MVA activity, the project will facilitate the transfer of knowledge and technical expertise from the Jordan team to the Lebanon team, thereby strengthening regional capacity and promoting sustainability. At the same time, all activities will be tailored to the Lebanese context through close collaboration with relevant local stakeholders, including support for field data collection, analysis, and contextualization of the assessment methodology and findings.

Given UN-Habitat's proven track record and established technical capacity, self-execution represents the most efficient and effective implementation modality for these activities. This approach is further supported by formal letters from the Designated Authorities (DAs) in Lebanon and Jordan, which endorse UN-Habitat's proposed role and implementation arrangements for the project. Accordingly, the execution costs where UN-Habitat acts as and EE have been calculated in line with the applicable requirements, including the application of the 1.5% EE fee. Evidence of UN-Habitat's previous MVA experience and results can be provided upon request.

## Projected Calendar:

| Milestones                                | Expected Dates |
|-------------------------------------------|----------------|
| Start of Project/Programme Implementation | January 2028   |
| Mid-term Review (if planned)              | December 2030  |
| Project/Programme Closing                 | December 2032  |
| Terminal Evaluation                       | March 2033     |

## PART II: PROJECT / PROGRAMME JUSTIFICATION

The Theory of Change (ToC) for TAWASUL explains how the project's interventions are expected to contribute to long-term climate resilience in the Awali Watershed in Lebanon and Wadi Al-Karak Watershed in Jordan. It presents the logical pathway linking the identified climate and environmental challenges to the project's intended impacts, outcomes, and outputs. The ToC begins with the recognition that both watersheds are increasingly vulnerable to interconnected climate

and environmental pressures, including droughts, flash floods, ecosystem degradation, biodiversity loss, water scarcity, land degradation, and infrastructure vulnerabilities. These challenges are further aggravated by fragmented governance systems, limited climate-responsive planning, weak institutional coordination, insufficient adaptation financing, and limited regional cooperation mechanisms. To address these challenges, the project is structured around three interconnected components. The first component focuses on strengthening climate governance, planning systems, and financing mechanisms through integrated GIS systems, vulnerability assessments, watershed master plans, restoration frameworks, and evidence-based financing models. These interventions aim to improve decision-making, institutional coordination, and climate-responsive governance across local, national, and regional levels. The second component focuses on implementing community-led ecosystem restoration and climate adaptation interventions using nature-based solutions and post-disaster recovery approaches. Through pilot interventions, ecosystem rehabilitation, adaptive landscape planning, and local capacity strengthening, the project seeks to reduce climate and disaster risks while improving ecosystem functionality and adaptive capacities of communities and local authorities. The third component focuses on strengthening regional cooperation and climate diplomacy between Lebanon and Jordan through the “Peace through Water” approach. This includes regional dialogue platforms, knowledge exchange, learning programmes, and coordinated watershed management mechanisms that support shared learning, regional collaboration, and scaling-up of resilience practices. The ToC assumes that if institutions are equipped with the tools, knowledge, financing mechanisms, and coordination systems necessary for climate-responsive watershed management; if communities actively participate in adaptation and restoration actions; and if regional cooperation and climate financing opportunities are sustained, then the project will contribute to improved ecosystem resilience, reduced climate vulnerabilities, strengthened adaptive governance, enhanced livelihoods, and stronger regional cooperation. Ultimately, the ToC demonstrates how integrated watershed management, ecosystem restoration, sustainable financing, and collaborative adaptation approaches can collectively support more resilient ecosystems and communities while creating a replicable regional model for climate adaptation and transboundary watershed resilience in the Arab region.

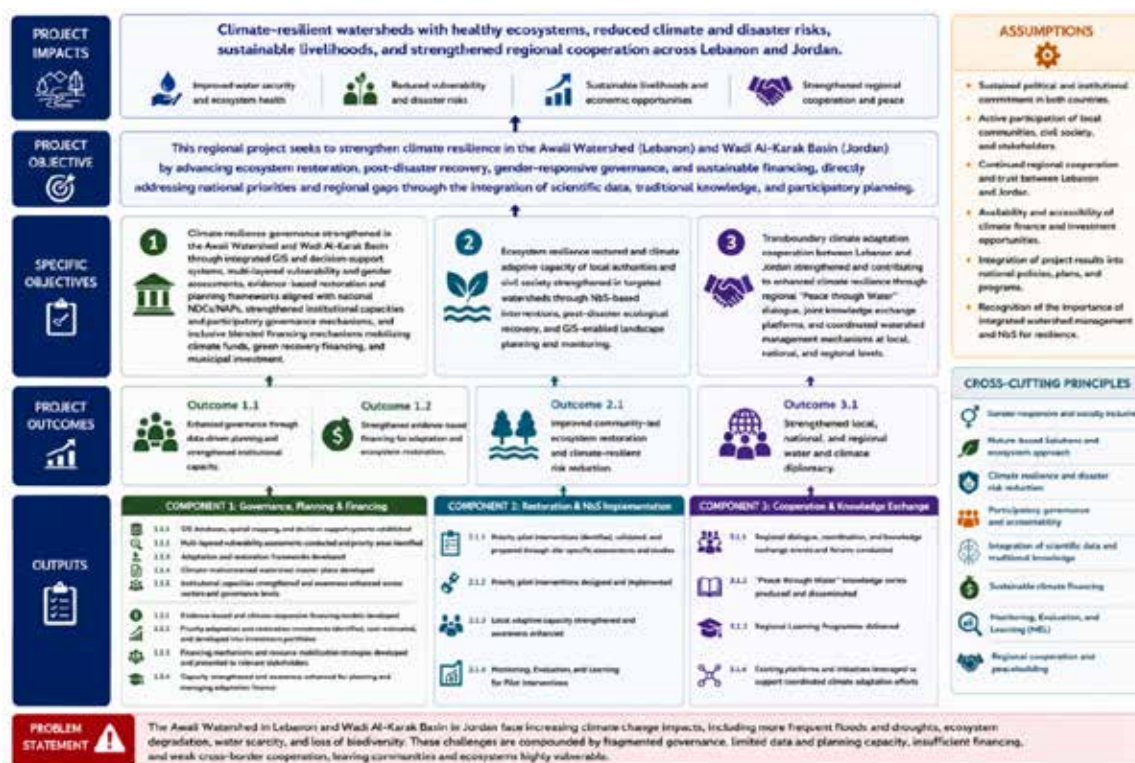


FIGURE 44: TAWASUL PROJECT TOC

## A. Project components

To achieve the overall objective of strengthening climate resilience through ecosystem restoration, post-disaster recovery, gender-responsive governance, and sustainable financing, the project is structured around three interrelated components further structured into specific outcomes and outputs (1) MVAs, restoration frameworks, climate-mainstreamed master plans, and sustainable financing models; (2) implementation of adaptation and restoration interventions, with a focus on nature-based solutions and post-disaster risk reduction and recovery; and (3) regional cooperation and knowledge exchange to foster learning, replication, and scaling of good practices.

### Component 1: Multi-Layered Vulnerability Assessments, Climate-Mainstreamed Master Plans, Restoration Frameworks and Financing Models:

This component will encompass a comprehensive set of activities designed to strengthen governance, institutional capacity, and financing for climate adaptation and ecosystem restoration. It is designed to integrate scientific assessments, planning tools, institutional strengthening, and financing strategies to deliver sustainable adaptation and ecosystem restoration outcomes.

**Outcome 1.1: Enhanced Governance Through Data-Driven Planning and Strengthened Institutional Capacity:** This outcome focuses on rethinking, redesigning, and strengthening governance systems, institutional coordination, and evidence-based planning for climate adaptation and ecosystem restoration through integrated data systems, MVAs, climate-responsive planning tools, and institutional capacity development across sectors and governance levels. It aims to support more integrated, participatory, and climate-informed watershed governance approaches that enhance resilience, coordination, and long-term adaptive capacity across the Awali Watershed and Wadi Al-Karak Watershed.

**Output 1.1.1: GIS Databases, spatial mapping and Decision-Support Systems Established:** Integrated GIS databases and decision-support systems will be established to consolidate climate change, biodiversity and ecosystem, urban, infrastructure, and socioeconomic data into unified spatial platforms. These systems will support multi-layered vulnerability

assessments, evidence-based planning, climate risk analysis, monitoring, coordination, and informed decision-making across sectors and governance levels while strengthening long-term data management and resilience planning capacities.

**Activity 1.1.1.1: Develop analytical frameworks and assess data/institutional needs:** Develop 2 tailored analytical frameworks (one per country) defining indicators, data requirements, spatial scales, and methods, informed by 2 watershed-level assessments (one per country) of existing datasets, systems, users, and institutional data-management needs conducted with relevant stakeholders and data custodians.

**Activity 1.1.1.2: Collect and harmonize spatial data and establish integrated GIS databases:** Collect, digitize, harmonize, and validate available data. Develop 2 integrated GIS databases, one for each watershed, supported by standardized indicators, metadata, quality-control procedures, and updating mechanisms.

**Activity 1.1.1.3: Develop and implement GIS-based Decision-Support Systems:** Develop, deploy, and operationalize 2 integrated decision-support systems (one per watershed) that combine GIS databases, interactive dashboards, scenario-analysis models, and multi-criteria prioritization tools to support vulnerability analysis, restoration planning, investment prioritization, and monitoring. The system in each country will be implemented across 10 targeted institutions in Jordan and 8 targeted institutions in Lebanon through user training, technical support, and capacity-building activities to ensure effective adoption and long-term use.

**Output 1.1.2: Multi-Layered Vulnerability Assessments Conducted and Priority Areas Identified:** Comprehensive MVAs will be conducted using the UN-Habitat RISE-UP MVA methodology, which addresses the nexus between climate change hazards and risks, urbanization and spatial trends, socioeconomic characteristics, biodiversity loss, and land degradation to identify, map, and assess compounded vulnerability hotspots arising from spatial overlaps and interrelations. The assessments will combine GIS and spatial analysis, field assessments, stakeholder validation, and participatory consultations to identify vulnerable communities, degraded ecosystems, exposed infrastructure systems, and priority adaptation and restoration areas across the watersheds.

**Activity 1.1.2.1: Launch and prepare the Multi-Layered Vulnerability and Risk Assessments:** Conduct 2 inception and launch workshops, one per watershed, and prepare 2 assessment plans operationalizing the analytical frameworks developed under Output 1.1.1. The plans will confirm the assessment scope, indicators, data requirements, spatial units, mapping methods, stakeholder-engagement approach, and expected outputs.

**Activity 1.1.2.2: Conduct Multi-Layered Vulnerability and Risk Assessments:** Apply the analytical frameworks to map and analyze historical trends, current conditions, and future multi-layered vulnerabilities and risks. Produce 2 integrated vulnerability-mapping packages, 2 multi-layered hotspot maps, and 2 comprehensive Multi-Layered Vulnerability Profiles, one for each watershed, presenting climate risks and urban and biodiversity vulnerability patterns.

**Activity 1.1.2.3: Identify priority adaptation and restoration areas:** Develop 2 spatial prioritization maps and 2 prioritization multi-criteria matrices, identifying priority adaptation and restoration areas per watershed based on vulnerability, urgency, expected resilience benefits, and feasibility.

**Activity 1.1.2.4: Validate and disseminate the Multi-Layered Vulnerability and Risk Assessments findings:** Conduct participatory validation workshops, involving institutional and community stakeholders, and finalize and disseminate 2 MVA reports.

**Output 1.1.3: Adaptation and Restoration Frameworks Developed:** Integrated adaptation and restoration frameworks will be developed to guide watershed restoration, biodiversity conservation, ecosystem rehabilitation, nature-based solutions, climate adaptation, and sustainable land and water management interventions. The frameworks will support the identification of priority ecological corridors, restoration zones, flood and erosion management measures, and resilient landscape management approaches tailored to the ecological and socioeconomic conditions of each watershed.

**Activity 1.1.3.1: Identify adaptation and restoration interventions and NbS typologies:** Building on the priority areas identified under Output 1.1.2, undertake a participatory assessment and prioritization process involving relevant stakeholders, including local authorities, communities, technical experts, and other key actors, to identify suitable adaptation and restoration interventions. Define tailored adaptation approaches and NbS typologies that respond to identified climate, urban, and biodiversity vulnerabilities. Through stakeholder consultations and validation workshops, develop and prioritize intervention packages covering at least five priority areas per watershed, ensuring that selected measures are technically feasible, locally appropriate, and aligned with community and ecosystem needs.

**Activity 1.1.3.2: Develop and validate adaptation and restoration frameworks and implementation Plans:** Consolidate the intervention packages into 2 integrated adaptation and restoration frameworks (one per watershed) and 2 implementation and monitoring plans, one for each watershed.

**Activity 1.1.3.3: Endorse, disseminate and mainstream the frameworks and plans:** Facilitate stakeholder endorsement and institutional approval of the 2 frameworks and 2 implementation and monitoring plans. Disseminate their findings and mainstream their priorities into relevant national, sectoral, institutional, and municipal plans, regulatory frameworks, financing models, and investment portfolios to support replication and scaling-up.

**Output 1.1.4: Climate-Mainstreamed Watershed Master Plans Developed:** Climate-mainstreamed watershed master plans will be developed to support integrated watershed management and guide spatial and territorial planning processes across the watersheds. The master plans will integrate climate adaptation, disaster risk reduction, ecosystem protection, biodiversity conservation, and resilience-building measures into land-use planning, water resource management, resilient infrastructure development, ecosystem conservation, and climate-resilient socioeconomic development while strengthening coordination among municipalities, watershed institutions, line ministries, and local communities.<sup>67</sup>

**Activity 1.1.4.1: Develop integrated climate and spatial development scenarios:** Translate the adaptation and restoration frameworks into at least 2 spatial development scenarios per watershed, balancing priority adaptation and restoration interventions with settlements, infrastructure, agriculture, water management, ecosystem protection, and socioeconomic development.

**Activity 1.1.4.2: Develop climate-mainstreamed watershed master plans:** Develop 2 integrated watershed master and management plans, one per watershed, translating the preferred scenario into land-use and protection zones, development controls, resilient infrastructure systems, water-resource management approaches, ecosystem conservation measures, and climate-resilient livelihood areas.

<sup>67</sup> In Lebanon, this intervention has been identified as a priority by the DGUP, which has sought to undertake this work since 2004 but has been unable to do so due to financial and human resource constraints. Refer to Section "Watershed Planning" above for further details.

**Activity 1.1.4.3: Establish implementation and mainstreaming mechanisms:** Develop 2 master-plan implementation programmes defining planning actions, responsibilities, timelines, coordination mechanisms, and indicative investment requirements. Validate and support the mainstreaming of the plans through participatory workshops and high-level endorsement dialogues.

**Output 1.1.5: Institutional Capacities, Governance Systems, and Awareness Enhanced Across Relevant Sectors and Governance Levels:** Institutional capacities, governance systems, and awareness will be strengthened to support integrated watershed management, climate adaptation, ecosystem restoration, resilience planning, and evidence-based decision-making through technical training, institutional development, participatory planning, knowledge-sharing, and capacity-building related to GIS systems, vulnerability assessments, climate-mainstreamed planning, watershed management, and adaptation finance management.

**Activity 1.1.5.1: Assess and enhance institutional capacities and watershed governance systems:** Conduct 2 country-specific institutional and capacity assessments, prepare and implement 2 institutional capacity-development plans, and establish or strengthen 2 multisectoral watershed coordination mechanisms. Implementation will include tailored technical training, institutional development, on-the-job support, training of trainers, and knowledge-transfer activities.

**Activity 1.1.5.2: Develop and implement awareness-raising campaigns across relevant sectors and governance levels:** Develop and implement 2 country-specific awareness-raising campaigns, one in Jordan and one in Lebanon, targeting relevant institutions, sectors, governance levels, and communities.

**Activity 1.1.5.3: Establish multi-level and multisectoral governance mechanisms for integrated watershed planning and financing:** Establish 2 governance mechanisms, one per watershed, involving national ministries, municipalities, watershed institutions, communities, civil society, academia, financial institutions, and the private sector. The mechanisms will coordinate outcomes 1.1 and 1.2 activities related to data and decision-support systems, vulnerability assessments, restoration frameworks, watershed master plans, institutional capacity, financing models, and investment portfolios, with defined roles, procedures, and accountability arrangements.

**Outcome 1.2: Strengthened Evidence-Based Financing for Adaptation and Ecosystem Restoration:** This outcome focuses on strengthening financing mechanisms, investment planning, and institutional capacities required to mobilize, coordinate, and manage the significant long-term investments needed for climate adaptation, integrated watershed management, and ecosystem restoration across the targeted watersheds. It supports the development of climate-responsive financing approaches, investment portfolios, resource mobilization mechanisms, and institutional capacities needed to sustain large-scale adaptation, restoration, and resilience investments.

**Output 1.2.1: Evidence-Based and Climate-Responsive Financing Models Developed:** Climate-responsive financing models and investment approaches will be developed to align adaptation and restoration priorities with national and international climate finance opportunities while supporting long-term resilience and sustainable watershed management objectives. The financing models will explore innovative and inclusive financing mechanisms capable of mobilizing investments for adaptation, ecosystem restoration, resilient infrastructure, and nature-based solutions.

**Activity 1.2.1.1: Assess the climate finance landscape and financing gaps:** Conduct 2 country-specific assessments, one for Jordan and one for Lebanon, examining existing funding flows, financing institutions, available instruments, eligibility requirements, investment barriers, financing gaps, and opportunities related to the priorities identified under Outcome 1.1.

**Activity 1.2.1.2: Develop and validate climate-responsive financing models:** Develop 2 tailored financing models, one per country, defining potential financing sources, funding structures, cost- and risk-sharing arrangements, operation and maintenance financing, and opportunities for public, private, concessional, and community-based financing. The models will be validated through targeted consultations with relevant institutions and financing actors.

**Output 1.2.2: Priority Adaptation and Restoration Investments Identified, Cost-Estimated, and Developed into Investment Portfolios:** Priority adaptation and restoration interventions identified through the vulnerability assessments and planning processes will be technically developed, cost-estimated, and organized into investment portfolios to support investment readiness, resource mobilization, and implementation planning. The portfolios will support the identification of scalable and bankable adaptation projects capable of attracting financing from national, regional, and international climate and development financing sources.

**Activity 1.2.2.1: Prepare priority investments for financing:** Develop the priority investments identified through the vulnerability assessments, adaptation and restoration frameworks, and watershed master plans into bankable project concept notes and conduct prefeasibility assessments if needed.

**Activity 1.2.2.2: Prepare watershed investment portfolios:** Develop 2 watershed investment portfolios, including at least 5 advanced project concept notes per watershed.

**Output 1.2.3: Financing Mechanisms and Resource Mobilization Strategies Developed and Presented to Relevant Stakeholders:** Financing mechanisms and resource mobilization strategies will be developed to support long-term implementation of adaptation and restoration priorities. These strategies will include blended finance approaches, green recovery financing, public-private partnerships, municipal resilience investments, and ecosystem-based financing mechanisms and will be presented to relevant stakeholders, financial institutions, development partners, and climate finance actors to strengthen investment coordination and financing sustainability.

**Activity 1.2.3.1: Develop financing mechanisms and resource-mobilization strategies:** Prepare 2 country-specific financing and resource-mobilization packages, assessing mechanisms such as blended finance, concessional finance, public-private partnerships, municipal resilience financing, green recovery instruments, and ecosystem-based financing. Each package will include a mapping of potential funders and investors, institutional responsibilities, engagement pathways, and resource-mobilization timelines.

**Activity 1.2.3.2: Convene investment and financing dialogues:** Organize at least 5 investment dialogues and portfolio-presentation events, engaging representatives of governments, municipalities, climate funds, financial institutions, development partners, private investors, and other relevant financing actors.

**Output 1.2.4: Capacity Strengthened and Awareness Enhanced for Planning and Managing Adaptation Finance:** Capacities and awareness related to adaptation finance planning, financial management, transparency, accountability, and implementation of climate adaptation and ecosystem restoration investments will be strengthened across relevant institutions and stakeholders. Training and technical support will support effective planning, mobilization, management, and sustainability of adaptation financing mechanisms across the Awali Watershed and Wadi Al-Karak Watershed. Together, these activities create a robust framework that combines scientific assessments, planning tools, institutional strengthening,

and innovative financing strategies, ultimately delivering sustainable outcomes for climate adaptation and ecosystem restoration.

**Activity 1.2.4.1: Develop and implement climate finance capacity-building programmes:** Develop 2 country-specific guidance packages and deliver tailored training and technical-support sessions for national sub-national, and local officials and practitioners, complemented by on-the-job support for applying the financing models and managing the investment portfolios.

**Activity 1.2.4.2: Develop and implement climate finance awareness campaigns:** Develop and implement 2 country-specific campaigns through policy dialogues, institutional briefings, knowledge products, and outreach activities to raise awareness of climate and adaptation finance opportunities, requirements, mechanisms, transparency, and accountability among decision-makers, municipalities, financial institutions, the private sector, and civil society.

**Component 2: Implementation of Adaption and Restoration Interventions with a focus on Nature-Based Solutions and Post-Disaster Risk Reduction and Recovery:** This component will translate the evidence, priorities, and plans generated under Component 1 into practical, community-led adaptation and ecosystem-restoration interventions in the Awali Watershed in Lebanon and Wadi Al-Karak Watershed in Jordan. It will support nature-based solutions, ecosystem-based adaptation, and post-disaster risk-reduction and recovery measures tailored to the conditions of each watershed. The component is structured around the following outcome:

**Outcome 2.1: Improved Community-Led Ecosystem Restoration and Climate-Resilient Risk Reduction:** This outcome focuses on implementing community-led adaptation and restoration interventions that reduce climate vulnerabilities, strengthen ecosystem resilience, improve watershed management, and support disaster risk reduction and recovery through nature-based and locally driven solutions, directly targeting the hotspots and priority areas identified through the Component 1 vulnerability assessments.

**Output 2.1.1: Priority Pilot Interventions Identified, Validated, and Prepared Through Site-Specific Assessments and Studies:** The work will begin with careful site-specific assessments and studies to validate and prioritize pilot interventions. These assessments will ensure that interventions are tailored to local ecological conditions and community needs, making them both effective and sustainable. This output will constitute the formal process for identifying and preparing the Unidentified Sub-Projects. It will apply the approved eligibility, prioritization, exclusion, environmental, social, gender, and institutional criteria to all candidate interventions.

**Activity 2.1.1.1: Identify and validate priority Pilot interventions:** Apply the findings of Component 1 to identify and prioritize candidate interventions and validate them with relevant institutions, municipalities, communities, women, youth, farmers, landowners, civil society organizations, and other affected stakeholders. Interventions will be selected from the eligible typologies of ecosystem restoration through NbS; flood-resilient water management; rainwater harvesting; climate-smart agriculture; pollution reduction and water-quality improvement; and degraded-land restoration. The exact types, combinations, locations, scales, and designs will be determined during implementation based on Component 1 findings.

**Activity 2.1.1.2: Assess and clear Unidentified Sub-Projects for implementation:** Conduct site-specific technical, environmental, social, and gender assessments; define required risk-management measures; and update the Environmental and Social Management Plan (ESMP).

**Output 2.1.2: Priority pilot interventions designed and implemented:** Once priority interventions are identified and prepared, pilot interventions will be designed and implemented using integrated nature-based solutions and ecosystem-based adaptation approaches tailored to the specific ecological, hydrological, socioeconomic, and climate conditions of each targeted watershed and hotspot area. Interventions may include flood risk reduction and climate-resilient water management, rainwater harvesting mechanisms, soil stabilization and land degradation control, climate-smart agriculture, pollution reduction and water quality management, sustainable land and watershed management practices, reforestation and afforestation, and riparian and wetland restoration and establishment of nature-based wetland treatment systems. More detailed information on the proposed interventions will be further developed and presented within the full proposal. The project will be guided by the UN-Habitat RISE-UP MVA methodology<sup>68</sup>, which enables the identification and analysis of compounded vulnerability hotspots and supports the design of tailored, site-specific interventions responding to the unique conditions and vulnerabilities of each watershed. The interventions will be designed based on the findings, vulnerability hotspots, and priority areas identified under Component 1. As a result, the proposed interventions in Lebanon and Jordan will differ based on the distinct environmental conditions, hazard profiles, ecosystem characteristics, hydrological systems, and socioeconomic priorities identified within each watershed while collectively contributing to strengthened regional resilience and integrated watershed management.

**Activity 2.1.2.1: Prepare detailed designs and implementation packages for selected interventions:** Develop detailed designs and implementation/construction packages for interventions identified and cleared under Output 2.1.1

**Activity 2.1.2.2: Implement and operationalize selected pilot interventions:** Procure, implement, supervise, test, and hand over the approved pilot interventions in coordination with responsible institutions, municipalities, communities, and other local stakeholders, ensuring quality control, safeguard compliance, and sustainable operation and maintenance.

**Output 2.1.3: Local Adaptive Capacity Strengthened and Awareness Enhanced:** Equally important is the strengthening of local adaptive capacity. Communities will be engaged throughout the process, from planning to implementation, ensuring that restoration and risk reduction efforts are community-led and culturally appropriate. Training programs, awareness campaigns, and participatory workshops will help build knowledge and skills, empowering local actors to maintain and expand interventions over time. Through the integration of scientific expertise and active community participation, this component fosters landscapes and societies that are resilient, adaptive, and capable of withstanding the pressures of climate-related shocks while recovering more swiftly from disasters. It highlights the pivotal role of nature-based solutions as a foundation for ecological restoration and disaster risk reduction, demonstrating how such approaches not only safeguard ecosystems but also strengthen social cohesion, improve local livelihoods, and build long-term resilience at the community level.

**Activity 2.1.3.1: Develop and Implement Local Capacity and Stewardship Programmes:** Develop and implement 2 watershed-specific capacity-development programmes for communities, farmers, municipalities, and

<sup>68</sup> [Multilayered Vulnerability Assessment Handbook - Resilience planning for urban, biodiversity and climate action | UN-Habitat](#)

local organizations. The programmes will provide practical training, demonstrations, peer learning, and on-the-job support related to NbS, climate-resilient agriculture, water and land management, community monitoring, and post-disaster recovery. Community stewardship and operation and maintenance arrangements will be established for each implemented intervention.

**Activity 2.1.3.2: Develop and implement community awareness and engagement campaigns:** Implement 2 watershed-level campaigns, one per watershed, using community events, participatory workshops, educational materials, local media, and demonstration sites to promote climate-risk awareness, ecosystem restoration, sustainable practices, and community ownership of the interventions.

**Output 2.1.4: Monitoring, Evaluation, and Learning for pilot intervention:** A monitoring, evaluation, and learning (MEL) system will be established to monitor the performance, effectiveness, and resilience outcomes of the pilot adaptation and restoration interventions implemented under the project. The system will combine field assessments, GIS-based monitoring, environmental indicators, participatory monitoring approaches, and periodic evaluations to assess ecosystem restoration, watershed resilience, disaster risk reduction, and community adaptation outcomes. The monitoring process will support adaptive management, continuous learning, and technical improvement of the interventions while documenting lessons learned, good practices, and resilience impacts to support future replication and scaling-up across Jordan, Lebanon, and the Arab region.

**Activity 2.1.4.1: Establish the Monitoring, Evaluation, and Learning (MEL) system:** Develop 1 integrated MEL framework and 2 watershed-specific monitoring plans, including intervention baselines, indicators, targets, GIS-based tools, participatory monitoring arrangements, and environmental and social compliance requirements.

**Activity 2.1.4.2: Conduct multisectoral participatory monitoring and adaptive management:** Through the watershed governance mechanisms established under Activity 1.1.5.3, conduct joint monitoring involving relevant ministries, municipalities, watershed institutions, communities, academia, and civil society. Use the findings to assess intervention performance, address implementation challenges, and improve technical designs, maintenance practices, and risk-management measures.

**Activity 2.1.4.3: Document lessons learned and generate evidence to support scaling of the pilot interventions:** Prepare 2 watershed learning reports and 1 consolidated replication and scaling guide documenting intervention results, lessons learned, good practices, cost-effectiveness, and recommendations for wider application under Component 3.

**Component 3: Regional Cooperation & Knowledge Exchange:** This component focuses on strengthening regional cooperation, climate and water diplomacy, knowledge exchange, institutional collaboration, and cross-border learning to support coordinated climate adaptation and integrated watershed resilience across Jordan and Lebanon. The component promotes regional dialogue, technical cooperation, shared methodologies, and collective learning to strengthen long-term resilience, adaptive governance, and replication of integrated watershed management approaches across the region. The component is composed of the following outcome:

**Outcome 3.1: Strengthened Local, National, and Regional Water and Climate Diplomacy and Cooperation:** This outcome focuses on strengthening cooperation, dialogue, institutional coordination, and shared learning across local, national, and regional levels to support coordinated climate adaptation, integrated watershed management, and resilience-building efforts across the targeted watersheds. The outcome further supports the documentation, knowledge exchange, and replication of integrated watershed management and adaptation models across the Arab region, strengthening regional cooperation and promoting scalable resilience approaches for climate-vulnerable watershed.

**Output 3.1.1: Regional Dialogue, Coordination, and Knowledge Exchange Events and Forums Conducted:** Regional dialogue platforms, coordination meetings, technical exchanges, international missions and study visits, and knowledge-sharing forums will be organized to strengthen cooperation, exchange experiences and lessons learned, and support coordinated climate adaptation and watershed resilience efforts among stakeholders across Jordan and Lebanon.

**Activity 3.1.1.1: Organize regional forums on climate-resilient watershed management:** conduct 2 regional forums involving regional, national, and local governments, watershed institutions, municipalities, communities, academia, civil society, and development partners. A launching forum will establish shared priorities and cooperation arrangements, while a closing forum will showcase project results, exchange lessons, and promote replication and coordinated action on watershed management, ecosystem restoration, and nature-based solutions.

**Activity 3.1.1.2: Conduct regional technical exchanges:** organize 5 joint technical-exchange sessions between Jordanian and Lebanese institutions, municipalities, practitioners, and communities to share methodologies, tools, experiences, and lessons related to integrated watershed management, climate adaptation, ecosystem restoration, and nature-based solutions.

**Activity 3.1.1.3: Organize and participate in regional and international study visits and technical missions:** conduct 5 study visits or technical missions outside Jordan and Lebanon, within the Arab region and/or internationally (to be selected based on specific learning gaps identified throughout the project) to examine relevant practices in integrated watershed management, climate adaptation, ecosystem restoration, and nature-based solutions and support their adaptation and replication in the targeted watersheds.

**Output 3.1.2: “Peace through Water” Knowledge Series Produced and Disseminated:** A regional “Peace through Water” knowledge series will be developed and disseminated to position water, ecosystems, and shared climate challenges as catalysts for regional cooperation, peacebuilding, and collective resilience across Jordan, Lebanon, and the Arab region. The series will serve as a regional platform for documenting and exchanging lessons learned, adaptation experiences, ecosystem restoration approaches, nature-based solutions, and community-driven resilience practices emerging from the project. It will promote integrated watershed management as a pathway for strengthening environmental cooperation, social cohesion, climate diplomacy, and sustainable development while fostering a shared regional narrative around resilience, ecological stewardship, and peace through environmental collaboration. The series will include regional thematic concept papers and a consolidated publication showcasing project case studies, lessons learned, and practical guidance on nature-based solutions, ecosystem-based adaptation, climate-resilient watershed management, and water as a catalyst for regional cooperation and peacebuilding.

**Activity 3.1.2.1: Co-produce watershed evidence and community stories:** conduct 2 knowledge co-creation labs, one per watershed, and document technical evidence, community experiences, traditional knowledge, institutional perspectives, and impact stories.

**Activity 3.1.2.2: Produce the “peace through water” knowledge series:** produce 4 thematic knowledge papers, 1 flagship regional publication, 1 practical replication toolkit, 1 interactive bilingual story map, and short multimedia

stories. The products will present project results, lessons learned, practical tools, and policy recommendations related to watershed resilience, NbS, climate finance, governance, and environmental cooperation.

**Activity 3.1.2.3: Showcase and disseminate the knowledge series:** organize the “peace through water” knowledge exhibition as part of the regional forum conducted under output 3.1.1. the exhibitions will showcase project evidence, community stories, maps, multimedia materials, and practical tools from Jordan and Lebanon. the series will also be disseminated through the existing platforms and observatories leveraged under output 3.1.4 in accessible, visual, digital, and bilingual formats, and international and regional forums and conferences.

**Output 3.1.3: Regional Learning and Innovation Programme Delivered:** A regional learning programme will be designed and delivered to accommodate different learning approaches and strengthen technical knowledge, practical capacities, leadership, and peer-to-peer exchange related to climate adaptation, integrated watershed management, ecosystem restoration, nature-based solutions, resilience planning, climate finance, and MVA methodologies.

**Activity 3.1.3.1: Develop and deliver a regional watershed resilience learning track:** develop and implement 1 dedicated regional learning track through the Arab Knowledge Coalition, comprising modules for mayors, municipal teams, and practitioners from Jordan, Lebanon, and the wider Arab region. The track will combine technical dialogues, comparative case studies, scenario exercises, peer learning, and applied assignments, resulting in municipal action or replication plans.

**Activity 3.1.3.2: Organize a regional watershed resilience innovation competition:** organize 1 regional competition (hackathon) engaging municipalities, universities, youth, civil society, practitioners, and innovators from across the arab region for a selected priority action identified under component 1. Support shortlisted teams through mentoring and showcase at least 3 winning solutions addressing watershed management, ecosystem restoration, water security, and nature-based adaptation.

**Output 3.1.4: Existing Platforms and Initiatives Leveraged to Support Coordinated Climate Adaptation Efforts:** Existing regional and national platforms, partnerships, initiatives, competitions, knowledge products and approaches, institutional and knowledge networks, and national observatories will be leveraged and further strengthened to support coordinated climate adaptation and integrated watershed resilience efforts. The component operationalizes the regional approach by strengthening Jordan-Lebanon cooperation through joint knowledge platforms, municipal partnerships, the Arab Urban Resilience Collective, Urban Vulnerability Atlas, and a regional existing observatory to exchange data, lessons learned, and adaptation experiences, harmonize methodologies and tools, and support scaling-up of climate-resilient watershed management and nature-based solutions across the region. The component will contribute to water and climate diplomacy by strengthening regional dialogue, trust-building, and coordinated action around shared climate, ecosystem, and water-related challenges while promoting replication and scaling-up of successful ecosystem restoration and resilience-building approaches across Jordan, Lebanon, and the Arab region.

**Activity 3.1.4.1: Integrate project knowledge and tools in existing platforms:** Integrate project data, GIS layers, MVA profiles, watershed profiles, methodologies, knowledge products, and replication tools into existing platforms and relevant national or regional knowledge networks.

**Activity 3.1.4.2: Implement a regional watershed scale-up accelerator:** Support municipal or institutional teams from Jordan and Lebanon to apply the framework and prepare context-specific replication roadmaps or project concepts through technical mentoring, expert review, and structured application support.

In line with the Adaptation Fund (AF) Strategic Results Framework, TAWASUL contributes to the following AF Strategic Outcomes: Outcome 1 (Reduced exposure to climate-related hazards and threats), Outcome 2 (Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses), Outcome 3 (Strengthened awareness and ownership of adaptation and climate risk reduction processes), 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 (Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas), and Outcome 7 (Improved policies and regulations that promote and enforce resilience measures). Full alignment details, including corresponding indicators and grant allocations, are presented in Part III, in Table 8.

## **B. Promotion of innovative solutions**

The project will close critical gaps in planning and governance through innovative tools and approaches, pilot new models of resilience that serve as living laboratories for adaptation technologies and catalyze regional cooperation by transforming dialogue and knowledge exchange into drivers of change. Together, these efforts establish examples that can be scaled and replicated to accelerate climate adaptation. Under component 1, multi-layered vulnerability assessments will apply integrated analytics to capture complex social-ecological dimensional in new ways not previously applied. The establishment of GIS databases and decision-support systems will introduce dynamic scenario modeling and spatial tools that enable evidence-based planning. Adaptation and restoration frameworks will embed ecosystem-based and nature-based solutions, offering alternatives to conventional infrastructure responses. Most critically, the development of climate-mainstreamed watershed master plans responds to a gap identified by the DGUP in Lebanon, which has recognized the need but has not been able to undertake this work. This project provides the needed opportunity to pioneer the first climate-mainstreamed watershed master plans in Lebanon, setting a precedent and serving as a replicable example for other watersheds nationwide. Finally, by strengthening institutional capacities across sectors and governance levels, the project will foster innovative mechanisms for collaboration and adaptive financing, ensuring solutions are scalable, replicable, and transformative. Under component 2, priority pilot interventions will be identified and validated through site-specific assessments that integrate advanced data collection methods, participatory design, and climate-risk modeling, ensuring interventions are both evidence-based and context-responsive. Their design and implementation will introduce novel mechanisms including for nature-based solutions, adaptive infrastructure, and community-driven technologies that can be scaled and replicated across regions, informed by the initial gender assessment presented in Part I, Section 6. Strengthening local adaptive capacity and enhancing awareness will foster innovative governance models and empower communities to adopt forward-looking practices. Collectively, these outputs will not only deliver immediate resilience benefits but also serve as demonstration cases, showcasing how innovative adaptation measures can be mainstreamed into broader recovery and development planning. Under component 3, dialogue and coordination forums will use new participatory formats and digital tools to foster cross-border learning. The “Peace through Water” series will pioneer the link between climate resilience and peacebuilding, offering replicable models. Regional capacity-building will apply modern training

methods, while existing platforms will be leveraged to mainstream innovation into coordinated adaptation efforts. Together, these outputs will establish first-of-their-kind examples of how regional cooperation can accelerate resilience.

## C. Economic, social and environmental benefits

TABLE 2: ECONOMIC, SOCIAL AND ENVIRONMENTAL BENEFITS: BASELINE AND EXPECTED PROJECT RESULTS

| Type of Benefit | Baseline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | With/ After Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Economic        | <p><b>Wadi Al-Karak Watershed:</b> Severe water scarcity: ~79 liters per person/day. Affects ~133,005 people through reduced agricultural productivity and higher household costs. January 2026: three flash floods damaged ~60% of critical infrastructure, causing major losses in transport, agriculture, and housing.</p> <p><b>Awali Watershed:</b> Land degradation and desertification cost Lebanon ~USD 132 million annually in lost ecosystem productivity. Declining water availability and ecosystem degradation deepen rural economic precarity. Rural households face projected income reductions of 24% under climate scenarios—double the rate of urban households.</p> <p><b>Vulnerable groups:</b> Women-headed households and smallholder farmers disproportionately exposed due to reliance on water-sensitive agriculture. Jordan's unemployment rate (~21.4%), with youth and women most affected, further limits adaptive capacity.</p>                                                       | <p><b>Direct beneficiaries:</b> ~133,005 people in Wadi Al-Karak Watershed (Jordan). ~120,000 residents in Awali Watershed (Lebanon), including ~36,000 IDPs.</p> <p><b>Green jobs:</b> Created through reforestation, NbS infrastructure, and sustainable land management. Priority employment for women and youth.</p> <p><b>Water management:</b> Reduced household water costs. Increased agricultural water availability. Support for livelihood diversification.</p> <p><b>Flood risk reduction:</b> NbS and green infrastructure to avoid losses like January 2026 flash floods in Jordan.</p> <p><b>Climate investment:</b> Climate-mainstreamed master plans and financing models under Component 1 to attract further investment beyond the project period. Quantitative estimates to be refined and validated during full project preparation through site-specific assessments.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Social          | <p><b>Climate shocks:</b> Droughts, flash floods, and water scarcity drive rural-to-urban migration, livelihood insecurity, and social tension over scarce resources.</p> <p><b>Wadi Al-Karak Watershed:</b> Farmers abandon traditional crops. Declining agricultural diversity. Increasing youth out-migration due to worsening conditions.</p> <p><b>Awali Watershed:</b> Significant poverty and inequality between coastal urban and remote mountain areas. High economic dependency with weak institutional and infrastructure coping capacity.</p> <p><b>Gender inequality:</b> Women systematically underrepresented in governance and adaptation decision-making. Exclusion from resource governance compounds vulnerability.</p> <p><b>Displaced populations</b> ~36,000 IDPs in Awali Watershed add acute pressure on water, land, and sanitation infrastructure.</p>                                                                                                                                    | <p><b>Beneficiaries:</b> ~133,005 people in Wadi Al-Karak Watershed (Jordan). ~120,000 residents in Awali Watershed (Lebanon), including ~36,000 IDPs.</p> <p><b>Priority groups:</b> Displaced people. Women-headed households. Smallholder farmers. Youth are disproportionately exposed to climate risks.</p> <p><b>Capacity building:</b> Outputs 1.1.5 and 2.1.3 will benefit local authorities, civil society, women, and youth. Awareness activities across both countries to strengthen resilience.</p> <p><b>Gender responsiveness:</b> Informed by the initial gender assessment (Part I, Section 6). Engagement with national gender equality bodies: Higher Council for Women's Affairs (Jordan). National Commission for Lebanese Women (Lebanon). Ensures gender integration throughout project preparation and implementation.</p> <p><b>Community engagement:</b> Civil society organizations, cooperatives, and women's/youth associations to lead assessments, ecosystem restoration, and awareness. Community Climate Action Committees (CCACs) to support inclusive co-design, participatory monitoring, and accountability.</p> <p><b>Safeguards:</b> Full compliance with the AF's Environmental and Social Policy. Ensures equitable distribution of benefits and prevents adverse social impacts.</p>                           |
| Environmental   | <p><b>Shared pressures:</b> Accelerating ecosystem degradation driven by climate change, unsustainable land use, and governance fragmentation.</p> <p><b>Wadi Al-Karak Watershed:</b> Land degradation, soil erosion, declining vegetation productivity, and biodiversity loss weaken natural buffering capacity against climate hazards. Unsafe wastewater discharge and pollution further degrade water quality.</p> <p><b>Awali Watershed:</b> Wooded land decline and grassland contraction (~9.5%). Artificial footprint expansion (+22.5% since 2005). Reduced capacity for water regulation, natural filtration, and biodiversity support. Groundwater over-extraction: 0.7 BCM/year vs. 0.5 BCM recharge. River discharge declined by &gt;60% compared to long-term averages.</p> <p><b>Biodiversity threats:</b> Lebanese Cedar (IUCN near threatened) faces compounding pressures from drought, pest infestation, and wildfires, threatening the ecological integrity of the Shouf Biosphere Reserve.</p> | <p><b>NbS interventions:</b> Reforestation, wetland restoration, sustainable land management, and post-disaster ecological recovery. Direct restoration of degraded ecosystems, reduced soil erosion, enhanced water retention, and improved biodiversity connectivity.</p> <p><b>Governance &amp; planning:</b> Climate-mainstreamed master plans under Component 1 to strengthen watershed governance. More sustainable land use planning and reduced unplanned urban encroachment.</p> <p><b>Water management:</b> Water harvesting structures and green infrastructure to reduce surface runoff. Support groundwater recharge and increase water availability for agriculture and domestic use.</p> <p><b>Monitoring &amp; indicators:</b> Ecosystem health tracked through vegetation cover, water retention, and soil stability. At least 50% of targeted degraded ecosystem areas expected to show measurable improvement by project end.</p> <p><b>Policy alignment:</b> Benefits consistent with Jordan's NDC 3.0 (2025) and Lebanon's Updated NDC (2025) and NAP (2025-2035). Includes reduced erosion, enhanced water regulation, and restoration of biodiversity corridors.</p> <p><b>Safeguards:</b> Full compliance with the AF's Environmental and Social Policy. Ensures avoidance or mitigation of negative environmental impacts.</p> |

The project has been designed to ensure that its interventions do not constitute negative development or maladaptation, and that they do not increase the vulnerability of beneficiaries or non-beneficiaries, nor reduce the capacity of any group to adapt to climate change. All interventions are grounded in ecosystem restoration and nature-based solutions, which strengthen rather than substitute for natural regulatory functions, and are selected on the basis of the MVAs conducted under Component 1 so that measures respond to verified climate risks rather than transferring them. Specifically: interventions in the upstream sections of both watersheds are designed to reduce rather than displace downstream runoff, sediment and flood exposure, in recognition of the strong upstream–downstream hydrological connectivity documented in both systems; water harvesting, storage and reuse measures will be sized on the basis of the hydrological assessments to be undertaken at full proposal stage, so as to augment supply without adversely affecting environmental flows or downstream water users, including agricultural users in the lower Awali and in the Jordan Valley Authority areas of Wadi Al-Karak; restoration and land management measures will prioritise native and climate-appropriate species to avoid increasing water demand or introducing invasive species; and interventions are designed to avoid restricting existing community access to land, water or grazing resources. Where site screening identifies a potential effect on access, alternative arrangements will be agreed with affected users prior to implementation, and a project grievance mechanism accessible to both beneficiaries and non-beneficiaries will be established. Maladaptation risk is further assessed under the Climate Change principle in Part II Section L and will be addressed, with mitigation measures, in the Environmental and Social Management Plan at full proposal stage.

## D. Cost-effectiveness

The project adopts a strategic and integrated watershed resilience approach that enhances cost-effectiveness by starting with strengthening data availability, integrated assessments, and evidence-based planning systems to support long-term climate adaptation and investment prioritization across both watersheds. Through the establishment of shared GIS databases, decision-support systems, and multi-layered vulnerability assessments, the project creates a comprehensive understanding of interconnected climate, hydrological, ecosystem, biodiversity, urban, infrastructure, and socio-economic vulnerabilities across the watershed system. This integrated analytical approach reduces duplication of fragmented sectoral studies while ensuring that adaptation investments are directed toward priority hotspots where they can generate the highest resilience benefits and avoid future climate-related losses. The project further strengthens cost-effectiveness through the development of climate-responsive watershed master plans, ecosystem restoration frameworks, and integrated financing

models that guide long-term adaptation planning and implementation. By linking vulnerability analysis with investment planning and financing mechanisms, the project supports the mobilization of additional climate finance and future investments for priority interventions beyond the project duration. Pilot interventions are designed as scalable and replicable models across identified hotspot areas within the watershed. Nature-based solutions, ecosystem restoration, flood risk reduction, wastewater reuse, soil stabilization, wetland restoration, and climate-smart water management interventions are expected to reduce long-term infrastructure damage, disaster recovery costs, water scarcity pressures, and environmental degradation while simultaneously strengthening ecosystem functionality, livelihoods, and adaptive capacities. The regional approach further improves cost-effectiveness by creating economies of scale in the development of GIS tools, methodologies, knowledge products, and regional capacity-building programmes. Rather than developing these systems independently in each country, the project promotes joint technical development, peer-to-peer learning, and harmonized approaches that reduce duplication, facilitate replication, and maximize the long-term value of project investments across the wider region. At the concept stage, quantified dollar estimates of losses averted and economic gains are not yet available, as they require the site-specific technical, hydrological, and economic data that will only be generated through the detailed vulnerability assessments and design studies under Component 1. More details are presented below in Table 3.

TABLE 3: ASSESSMENT OF PRIORITY ADAPTATION INTERVENTIONS, BENEFICIARIES, FEASIBILITY AND SUSTAINABILITY

| Priority Concrete Interventions                                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Target areas and target communities                                                                                                                                                                                                                                                         | National/ local priority                                                                                                                                                                                                                                                                                                                                                                                                                          | Estimated number of Beneficiaries                                                                                                                                                                                                                                                                     | Studies and assessments needed (during full proposal)                                                                                                                                                                                                                                    | Challenges                                                                                                                                                                                                                                                                                                      | Cost and cost effectiveness                                                                                                                                                                                                                                                                      | Effectiveness in terms of water saving/collection                                                                                                                                                                                                                                                                                                                            | Maintenance arrangements                                                                                                                                                                                       |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GIS Databases, Spatial mapping &amp; Decision-support system</b> | <ul style="list-style-type: none"> <li>• Multisectoral geospatial database</li> <li>• Climate, urban, biodiversity &amp; ecosystem layers</li> <li>• Evidence-based spatial mapping, planning, &amp; decision-making tool</li> <li>• Relevant GIS hardware, software, and licenses</li> </ul>                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>• All 3 districts (Saida, Jezzine, Chouf) as part of the watershed</li> <li>• Municipalities, UoMs, DGUP, water establishments</li> <li>• All Wadi Alkarak Watershed areas and communities including municipalities, cities and villages.</li> </ul> | <ul style="list-style-type: none"> <li>• NWS 2024–2035; NPMP/LT 2009; NDC 3.0; NAP 2025–2035; LT-LEDS; Law 444/2002 in Lebanon</li> <li>• NWS 2023–2040; NCCP 2022–2050; NAP 2021–2030; NDC 3.0; GGAP; NBSAP 2023–2030; EMV; NDRRS 2023–2030; EPL No.6/2017; AS 2020–2025; LDN Targets; SCP Action Plan; WAJ &amp; JVA Laws; LA Law in Jordan</li> </ul>                                                                                          | <ul style="list-style-type: none"> <li>• ~120,000 watershed residents in Lebanon, and 133,005 in Jordan (indirect)</li> <li>• All water users &amp; ecosystem-dependent communities</li> </ul>                                                                                                        | <ul style="list-style-type: none"> <li>• Baseline spatial data collection</li> <li>• Climate risk &amp; hazard mapping</li> <li>• GIS infrastructure assessment</li> <li>• Interoperability assessment</li> </ul>                                                                        | <ul style="list-style-type: none"> <li>• Fragmented data across sectors</li> <li>• Weak data-sharing mechanisms</li> <li>• Limited municipal GIS capacity</li> <li>• No coordinated watershed monitoring</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>• Medium investment, very high long-term value</li> <li>• Reduces duplication; enables adaptive management</li> </ul>                                                                                                                                     | Indirect, improves targeting of water conservation, recharge & flood risk interventions                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Watershed data hub hosted by a designated lead institution</li> <li>• Coordination with municipalities</li> <li>• Periodic updates &amp; capacity-building</li> </ul> |
| <b>Multi-layered vulnerability assessments</b>                      | <ul style="list-style-type: none"> <li>• Integrated climate, urban, biodiversity &amp; ecosystem vulnerability assessments</li> <li>• Identify hotspots &amp; priority intervention zones</li> </ul>                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• All 3 districts (Saida, Jezzine, Chouf) as part of the watershed with a focus on high-risk cadastres (INFORM Lebanon 2024)</li> <li>• All Wadi Alkarak Watershed areas and communities including municipalities, cities and villages.</li> </ul>   | <ul style="list-style-type: none"> <li>• NWS 2024–2035; NPMP/LT 2009; NDC 3.0; NAP 2025–2035; LT-LEDS; Law 444/2002 in Lebanon</li> <li>• NWS 2023–2040; NCCP 2022–2050; NAP 2021–2030; NDC 3.0; GGAP; NBSAP 2023–2030; EMV; NDRRS 2023–2030; EPL No.6/2017; AS 2020–2025; LDN Targets; SCP Action Plan; WAJ &amp; JVA Laws; LA Law in Jordan</li> </ul>                                                                                          | <ul style="list-style-type: none"> <li>• ~120,000 watershed residents in Lebanon, and 133,005 in Jordan (indirect)</li> <li>• Downstream communities &amp; ecosystems in Lebanon</li> <li>• Three sections of watershed communities &amp; ecosystems in Jordan</li> </ul>                             | <ul style="list-style-type: none"> <li>• Climate risk &amp; vulnerability assessment</li> <li>• Hazard &amp; ecosystem mapping</li> <li>• Socio-economic &amp; livelihood analysis</li> <li>• Institutional &amp; governance assessment</li> </ul>                                       | <ul style="list-style-type: none"> <li>• Overlapping institutional mandates</li> <li>• Limited local technical capacity</li> <li>• Data gaps at cadastral level</li> <li>• Resistance to institutional change</li> </ul>                                                                                        | <ul style="list-style-type: none"> <li>• Low–medium cost, very high value</li> <li>• Reduces maladaptation; maximizes investment impact</li> </ul>                                                                                                                                               | Indirect, identifies priority zones for water conservation, recharge & ecosystem restoration                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• Periodic updates by ministries &amp; municipalities</li> <li>• Findings integrated into watershed planning systems</li> </ul>                                         |
| <b>Climate-mainstreamed watershed Master Plans</b>                  | <ul style="list-style-type: none"> <li>• Climate-mainstreamed master plans for the watershed</li> <li>• Integrating: flood risk, ecosystem restoration, water management, biodiversity conservation, sustainable land use, and other watershed resilience priorities.</li> </ul>                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• 77 cadastres included in the watershed</li> <li>• All Wadi Alkarak Watershed areas and communities including municipalities, cities and villages.</li> </ul>                                                                                       | <ul style="list-style-type: none"> <li>• NWS 2024–2035; NPMP/LT 2009; NDC 3.0; NAP 2025–2035; LT-LEDS; Law 444/2002; DGUP regulatory framework; Municipal Law Decree 118/77 in Lebanon</li> <li>• NWS 2023–2040; NCCP 2022–2050; NAP 2021–2030; NDC 3.0; GGAP; NBSAP 2023–2030; EMV; NDRRS 2023–2030; EPL No.6/2017; AS 2020–2025; LDN Targets; SCP Action Plan; WAJ &amp; JVA Laws; Local Administration Laws; CVBPL No.79/1966; NUP.</li> </ul> | <ul style="list-style-type: none"> <li>• ~120,000 residents in Lebanon, and 133,005 in Jordan, businesses &amp; farmers (indirect)</li> <li>• Downstream and coastal communities including Awali Estuary MPA</li> <li>• Three sections of watershed communities &amp; ecosystems in Jordan</li> </ul> | <ul style="list-style-type: none"> <li>• Baseline, climate risk &amp; flood risk assessment</li> <li>• LULC analysis</li> <li>• Hydrological and water resources assessment</li> <li>• Spatial Analysis</li> <li>• Socio-Economic Analysis</li> <li>• Infrastructure Analysis</li> </ul> | <ul style="list-style-type: none"> <li>• Fragmented institutional mandates</li> <li>• Weak inter-agency coordination</li> <li>• Challenges integrating across admin. boundaries</li> <li>• Long-term enforcement gap</li> <li>• Existing planning and land-use frameworks require updating in Jordan</li> </ul> | <ul style="list-style-type: none"> <li>• Medium cost, high value</li> <li>• Guides &amp; optimizes future investments</li> </ul>                                                                                                                                                                 | Indirect, improved land-use planning across the watersheds supports more sustainable patterns of urban development, protects ecological assets and hazard-prone areas, optimizes infrastructure investments, reduces development pressures on sensitive lands, and strengthens the watersheds' capacity to manage runoff, recharge groundwater, and adapt to climate change. | <ul style="list-style-type: none"> <li>• Led by DGUP in coordination with key ministries (MoE, MoEW) and municipalities and UoMs</li> </ul>                                                                    |
| <b>Ecosystem Restoration through NBS</b>                            | <ul style="list-style-type: none"> <li>• Reforestation, afforestation &amp; assisted natural regeneration</li> <li>• Riverbank and Wadi stabilization &amp; erosion control</li> <li>• Riparian corridor &amp; habitat restoration</li> <li>• Sustainable landscape management</li> <li>• Climate-resilient native seed banks and nurseries</li> <li>• Spring and groundwater recharge area restoration in Jordan</li> <li>• Rehabilitation of degraded rangelands and grazing areas in Jordan</li> </ul> | <ul style="list-style-type: none"> <li>• Upper catchment forests (Chouf Cedar NR)</li> <li>• Riparian zones &amp; erosion-prone slopes</li> <li>• Target: farmers, residents, municipalities</li> </ul>                                                                                     | <ul style="list-style-type: none"> <li>• NWS 2024–2035; NPMP/LT 2009; NDC 3.0; NAP 2025–2035; LT-LEDS; Law 444/2002; NBSAP 2025–2030; National Forest Fire Strategy (2024); Shouf BR framework in Lebanon</li> <li>• NBSAP 2025–2030; NFS 2024; NWS 2023–2040; NAP 2021–2030; NDC 3.0; GGAP; EPL No.6/2017; AS 2020–2025; LDN Targets; WAJ &amp; JVA Laws; CVBPL No.79/1966; NUP in Jordan</li> </ul>                                             | <ul style="list-style-type: none"> <li>• Direct: 15,000–25,000 (priority zones)</li> <li>• Indirect: ~120,000 watershed residents</li> </ul>                                                                                                                                                          | <ul style="list-style-type: none"> <li>• Ecosystem &amp; biodiversity assessments</li> <li>• Land degradation &amp; erosion mapping</li> <li>• Groundwater recharge assessment</li> <li>• Wildfire risk &amp; land tenure mapping</li> <li>• NBS site-suitability analysis</li> </ul>    | <ul style="list-style-type: none"> <li>• Land tenure complexities &amp; encroachment</li> <li>• Overgrazing &amp; wildfire risks</li> <li>• Limited long-term funding</li> <li>• Weak enforcement of protected area regulations</li> </ul>                                                                      | <ul style="list-style-type: none"> <li>• Medium–high cost, high long-term value</li> <li>• NBS generally require lower lifecycle costs than grey infrastructure while providing multiple co-benefits (water regulation, biodiversity, carbon sequestration, disaster risk reduction).</li> </ul> | High, improves infiltration, groundwater recharge, soil moisture, flood regulation & sediment control                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• MoE, MoA, municipalities &amp; protected area managers</li> <li>• Community-based co-management agreements</li> <li>• Monitoring beyond project cycle</li> </ul>      |
| <b>Flood risk reduction &amp; climate-resilient water</b>           | <ul style="list-style-type: none"> <li>• Green infrastructure: detention ponds, bioretention areas, riparian buffers</li> <li>• Multi-scale flood water detention and along Awali River and Wadi Alkarak</li> <li>• Supplementary non-conventional water resource for irrigation</li> </ul>                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>• Flood-prone hotspots (lower Awali, Saida &amp; Jezzine)</li> <li>• Communities &amp;</li> </ul>                                                                                                                                                    | <ul style="list-style-type: none"> <li>• NWS 2024–2035; NPMP/LT 2009; NDC 3.0; NAP 2025–2035; LT-LEDS; Law 444/2002; NCRS-L Flood Risk Assessment (Hdeib &amp; Abdallah, 2015);</li> </ul>                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• Direct: 5,000–10,000 (flood hotspot communities)</li> <li>• Indirect: ~50,000</li> </ul>                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• Hydrological study &amp; flood risk modelling</li> <li>• Topographic survey &amp; catchment assessment</li> </ul>                                                                                                                               | <ul style="list-style-type: none"> <li>• Overlapping institutional mandates</li> <li>• Variable flood flow rates</li> <li>• O&amp;M sustainability (sedimentation, clogging)</li> </ul>                                                                                                                         | <ul style="list-style-type: none"> <li>• Medium–high cost, high value</li> <li>• Green infrastructure solutions (detention ponds, bioretention areas, riparian buffers) typically cost 20–</li> </ul>                                                                                            | Direct — captures peak flows for irrigation; quantification pending hydrological study                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• O&amp;M by municipalities, water authorities &amp; community-based organizations</li> </ul>                                                                           |

|                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                     |                                                                                                                                                                                                                                     |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>managem<br/>nt</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | farmers in priority risk zones                                                                                                                                                                                                         | NEWSP hazard mapping in Lebanon<br><br>• NWS 2016–2025; CCPRS; Water Demand Management Plan (WDMP) in Jordan                                                                                                                                                                               | downstream water users                                                                                                                                                                                                             | • Environmental & social impact screening<br>• Cost-benefit analysis                                                                                                                                                                                                             | • Land acquisition constraints                                                                                                                                                                                                                                                                 | 40% less than equivalent grey infrastructure over the lifecycle while delivering additional ecosystem co-benefits. Precise cost estimates to be determined following hydrological study.                                                                                                                                                 |                                                                                                                                                                     | • Dedicated O&M budget<br>• Annual sedimentation & structural inspection                                                                                                                                                            |
| <b>Rainwater Harvesting Systems</b>                       | <ul style="list-style-type: none"> <li>• Rooftop collection, storage tanks, bioretention ponds &amp; farm ponds</li> <li>• Household, community, farmer &amp; municipal scales</li> <li>• Supplementary water resource across the watershed</li> </ul>                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>• Water-scarce communities</li> <li>• Agricultural areas in Jezzine &amp; Chouf</li> <li>• Hotspots from vulnerability assessment</li> </ul>                                                    | <p>NWS 2024–2035; NDC 3.0; NAP 2025–2035 in Lebanon</p> <p>NWS 2023–2040; NDC 3.0; NAP 2021–2030; WDMP; Building Bylaw for Rainwater Harvesting; NCCP 2022–2050; WAJ Laws in Jordan</p>                                                                                                    | <ul style="list-style-type: none"> <li>• Direct: 10,000–20,000</li> <li>• Households, farmers, schools &amp; institutions</li> </ul>                                                                                               | <ul style="list-style-type: none"> <li>• Hydrological study &amp; rainfall analysis</li> <li>• Demand assessment (household, agriculture, institutional)</li> <li>• Site-suitability assessment</li> <li>• Cost-benefit analysis per typology</li> </ul>                         | <ul style="list-style-type: none"> <li>• Variable &amp; declining rainfall reduces reliability</li> <li>• Limited community awareness</li> <li>• High upfront household system costs</li> <li>• Water quality concerns for domestic use</li> </ul>                                             | <ul style="list-style-type: none"> <li>• Low–medium cost, high value</li> <li>• Reduces groundwater reliance on groundwater and municipal networks, lowering water costs, and enhancing resilience to drought</li> </ul>                                                                                                                 | Direct, 20–40% reduction in household water demand; augments domestic & agricultural supply                                                                         | <ul style="list-style-type: none"> <li>• Training &amp; awareness programmes</li> <li>• Technical oversight by municipalities &amp; water authorities</li> </ul> <p>For both countries</p>                                          |
| <b>Climate-smart &amp; water-efficient agriculture</b>    | <ul style="list-style-type: none"> <li>• Modern &amp; precision irrigation systems</li> <li>• Drought-resistant crop varieties</li> <li>• Soil &amp; water conservation measures</li> <li>• Farmer capacity-building &amp; extension</li> </ul>                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Mid-catchment agricultural zones: Jezzine &amp; Chouf</li> <li>• Farmers, cooperatives &amp; water users in both countries</li> </ul>                                                         | <p>NWS 2024–2035; NDC 3.0; NAP 2025–2035; National Agriculture Strategy; MoA extension services in Lebanon</p> <p>National Strategy for Agricultural Development (NSAD) 2016–2025; NWS; Economic Modernization Vision (EMV) 2033 in Jordan</p>                                             | <ul style="list-style-type: none"> <li>• Direct: 3,000–8,000 (farmers, cooperatives &amp; households) in Lebanon</li> <li>• Targets in Jordan to be determined at a later stage.</li> </ul>                                        | <ul style="list-style-type: none"> <li>• Agricultural water demand &amp; irrigation efficiency assessments</li> <li>• Climate risk &amp; crop suitability analysis</li> <li>• Farmer survey &amp; needs assessment</li> <li>• Value chain &amp; cost-benefit analysis</li> </ul> | <ul style="list-style-type: none"> <li>• Limited farmer awareness &amp; resistance to change</li> <li>• Weak agricultural extension services</li> <li>• Water scarcity &amp; climate variability</li> <li>• Land tenure fragmentation</li> <li>• Climate Hazards and extreme events</li> </ul> | <ul style="list-style-type: none"> <li>• Medium cost, high value</li> <li>• ROI within 3–5 years</li> <li>• Reduces water consumption &amp; operational costs</li> <li>• Enhances food security in Jordan</li> </ul>                                                                                                                     | Direct, up to 40% reduction in agricultural water use; drip irrigation saves 30–50% vs. flood irrigation                                                            | <ul style="list-style-type: none"> <li>• Farmers &amp; cooperatives with MoA support</li> <li>• Training, monitoring &amp; technical assistance</li> <li>• Farmer-to-farmer knowledge transfer</li> </ul> <p>For both countries</p> |
| <b>Pollution reduction &amp; water quality management</b> | <ul style="list-style-type: none"> <li>• Wastewater collection &amp; treatment rehabilitation</li> <li>• Interception of untreated sewage discharges</li> <li>• Commercial &amp; tourism wastewater management</li> <li>• Pollution monitoring &amp; river and Wadi clean-up</li> <li>• Community awareness campaigns</li> <li>• Enhancing the quality/quantity of treated wastewater from Karak WWTP for irrigation.</li> <li>• Nature-based wetland systems for pollution reduction</li> </ul> | <ul style="list-style-type: none"> <li>• Awali River corridor: Saida &amp; Jezzine peri-urban zones</li> <li>• Communities, municipalities, businesses &amp; tourism establishments</li> <li>• Farmers around Al-Karak WWTP</li> </ul> | <p>National Environmental Strategy; Law 444/2002; NDC 3.0; NAP 2025–2035; Lebanon MPA Strategy (2012) — Awali Estuary MPA in Lebanon</p> <p>NWS 2023–2040; NCCP 2022–2050; NAP 2021–2030; NDC 3.0; EPL No.6/2017; WAJ &amp; JVA Laws; NSAD 2016–2025; WDMP; NBSAP 2025–2030. in Jordan</p> | <ul style="list-style-type: none"> <li>• Direct: 50,000–80,000 (improved water quality)</li> <li>• Indirect: Awali Estuary MPA &amp; coastal ecosystems</li> <li>• Targets in Jordan to be determined at a later stage.</li> </ul> | <ul style="list-style-type: none"> <li>• Wastewater infrastructure &amp; quality assessment</li> <li>• EIA (if required)</li> <li>• Pollution source mapping</li> <li>• River health &amp; ecosystem assessment</li> <li>• Monitoring framework development</li> </ul>           | <ul style="list-style-type: none"> <li>• Insufficient wastewater treatment infrastructure</li> <li>• High investment &amp; operational costs</li> <li>• Weak regulatory enforcement</li> <li>• Multiple diffuse pollution sources</li> <li>• Ongoing untreated sewage discharges</li> </ul>    | <ul style="list-style-type: none"> <li>• Medium–high cost, high value</li> <li>• Wastewater reuse value: USD 62.3M nationally at full capacity (Karam et al., 2013) in Lebanon</li> <li>• Treated wastewater reuse in Jordan exceeds 178 MCM/year, with more than 90% reused for agriculture</li> </ul>                                  | Direct; treated wastewater offsets 10–25% of agricultural irrigation demand; improves river water availability                                                      | <ul style="list-style-type: none"> <li>• O&amp;M by Water Establishments, municipalities &amp; MoEW/MoE</li> <li>• Regular water quality monitoring</li> <li>• Law enforcement mechanisms</li> </ul> <p>For both countries</p>      |
| <b>Soil Stabilization and Land Degradation Control</b>    | <ul style="list-style-type: none"> <li>• Erosion control and slope stabilization</li> <li>• Rehabilitation of degraded lands and rangelands</li> <li>• Terracing and contouring measures</li> <li>• Sediment and runoff management</li> </ul>                                                                                                                                                                                                                                                    | Local communities and municipal staff along the wadi corridor and upstream catchment areas and midstream                                                                                                                               | NBSAP; NFS; NWS 2016–2025 in Jordan                                                                                                                                                                                                                                                        | All Wadi Al Karak Watershed residents and communities                                                                                                                                                                              | Erosion risk mapping; hydrological study and soil assessment                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• Limited technical capacity for NbS implementation</li> <li>• Long-term maintenance requirements</li> <li>• Community awareness and engagement</li> <li>• Risk of damage from extreme flood events</li> </ul>                                          | <ul style="list-style-type: none"> <li>• Medium cost, high long-term resilience value</li> <li>• Reduces erosion, sedimentation, and infrastructure damage costs</li> <li>• Improves soil retention, groundwater recharge, and agricultural productivity</li> <li>• Reduces long-term restoration and disaster recovery costs</li> </ul> | Indirect; erosion control measures reduce sediment load, enhance soil water retention, and contribute to groundwater recharge and improved water quality downstream | Local CBOs and municipalities, with technical support from the Ministry of Agriculture                                                                                                                                              |

## E. Consistency with national or sub-national strategies

The TAWASUL project was developed in close coordination with national and sub-national government partners in both Jordan and Lebanon. In Jordan, the project design was developed step by step in consultation with the Ministry of Planning and International Cooperation (MOPIC) and other relevant governmental partners, ensuring full alignment with national development priorities and planning frameworks from the earliest stages of preparation. In Lebanon, consultations were conducted with the MoE, the DGUP, and the CNRS, among others. Both governments have formally endorsed the concept note, confirming alignment with national priorities. A detailed overview of project consistency with all relevant national and sub-national strategies will be further elaborated in the full proposal.

TABLE 4: ALIGNMENT WITH RELEVANT NATIONAL AND SUBNATIONAL PLANS, STRATEGIES AND POLICIES

| Plans/ strategies/ policies                                            | Description                                                                                                                                                                                                                                                                                                                                                                              | Relevant strategic points and alignment with the project                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lebanon</b>                                                         |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Updated NDC 3.0 (2025)                                                 | Lebanon's NDC 3.0 was formally launched in September 2025 as part of a national Climate Policy Package alongside the NAP 2025–2035 and the Long-Term Low Emission Development Strategy, providing Lebanon's most comprehensive climate roadmap to date covering mitigation, adaptation, governance, and financing strategies.                                                            | The NDC 3.0 covers eight priority adaptation sectors and aligns closely with the NAP 2025–2035. The project directly advances NDC 3.0 adaptation priorities through MVAs, watershed master plans, and NbS-based restoration in the Awali Watershed.                                                                                                                                                                                                                           |
| National Adaptation Plan (NAP) 2025–2035                               | Lebanon's NAP 2025–2035 provides a national roadmap for climate adaptation across water, ecosystems, forests, agriculture, and urban systems, aligned with Lebanon's NDC 3.0 and international frameworks including the Paris Agreement and the Kunming-Montreal Global Biodiversity Framework.                                                                                          | The project's vulnerability assessments, climate-mainstreamed watershed master plans, institutional capacity strengthening, and on-the-ground NbS interventions directly implement NAP adaptation priorities for the Awali Watershed.                                                                                                                                                                                                                                         |
| National Biodiversity Strategy and Action Plan (NBSAP) 2025–2030       | Lebanon's NBSAP 2025–2030 sets national targets for biodiversity conservation and ecosystem restoration.                                                                                                                                                                                                                                                                                 | The project's NbS interventions — reforestation, wetland restoration, and riparian vegetation recovery — directly contribute to NBSAP ecosystem restoration and conservation targets in the ecologically significant Awali Watershed.                                                                                                                                                                                                                                         |
| National Water Sector Strategy (NWSS) 2024–2035                        | Lebanon's updated NWSS 2024–2035 sets the national framework for water supply, wastewater management, groundwater governance, and climate-resilient water infrastructure, building on the Water Code (Law 77/2018) and aligned with Lebanon's NDC 3.0 and NAP 2025–2035.                                                                                                                 | The project's watershed master plans, wastewater and groundwater interventions, and climate-smart water management directly advance NWSS priorities for the Awali Watershed, while strengthening governance to help close the Water Code's enforcement gap.                                                                                                                                                                                                                   |
| National Physical Master Plan of the Lebanese Territory (NPMPLT 2009)  | Lebanon's overarching spatial planning framework, which designates the Bisri Valley as a cultural and ecological landscape and establishes land use and buffer zone regulations for river systems.                                                                                                                                                                                       | The project will develop climate-mainstreamed watershed master plans for the Awali consistent with the NPMPLT, responding to a gap explicitly identified by the DGUP in developing climate-responsive planning tools for the watershed.                                                                                                                                                                                                                                       |
| National Strategy for Forest Fire Management (2024)                    | Lebanon's National Strategy for Forest Fire Management (2024) addresses escalating wildfire risks in Lebanon's forest ecosystems, including the Chouf and Jezzine districts, and is one of the key national strategies that Lebanon's NAP 2025–2035 builds on.                                                                                                                           | The project's reforestation and ecosystem restoration activities in the upper Awali Watershed — including areas surrounding the Chouf Cedar Nature Reserve and the Bkassine pine forest — contribute to the objectives of this strategy.                                                                                                                                                                                                                                      |
| <b>Jordan</b>                                                          |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Economic Modernization Vision (EMV) 2022–2033                          | Jordan's EMV is the country's overarching 10-year development framework, which identifies sustainable resources and green growth as key economic drivers, placing water efficiency, agricultural modernization, and green investment at the core of Jordan's future economic growth and job creation.                                                                                    | The project's NbS interventions, water harvesting infrastructure, sustainable land management, and financing models directly align with the EMV's green growth and sustainable resources priorities, contributing to climate-resilient development in vulnerable watershed communities.                                                                                                                                                                                       |
| Karak Spatial Development Plan (2024–2028)                             | Sub-national planning framework for the Karak Governorate addressing land use, infrastructure, and environmental management for the period 2024–2028.                                                                                                                                                                                                                                    | The project's climate-mainstreamed watershed master plan for the Wadi Al-Karak Watershed will be developed in alignment with this sub-national plan, with the Greater Karak Municipality engaged as a key project partner.                                                                                                                                                                                                                                                    |
| NDC 3.0 (2025)                                                         | Jordan submitted its third NDC in September 2025, marking the beginning of a 2050 net-zero trajectory. The NDC adopts an economy-wide approach with key adaptation priorities including enhancing water security, boosting agricultural resilience, and implementing urban heat mitigation measures, deeply embedded as a central engine of the Economic Modernization Vision 2022–2033. | The project directly supports NDC 3.0 adaptation priorities through watershed-scale vulnerability assessments, water harvesting infrastructure, sustainable land management, and institutional capacity strengthening in the Wadi Al-Karak Watershed.                                                                                                                                                                                                                         |
| National Adaptation Plan (NAP) 2022                                    | Jordan's NAP provides a strategic framework for climate adaptation across agriculture, water, urban systems, and biodiversity and ecosystems. Key proposed interventions include improving rainfall early warning systems, reducing flood risks, protecting biodiversity and ecosystem services, supporting urban green infrastructure, and enhancing reforestation activities.          | The project's multi-layered vulnerability assessments, watershed master plans, flood risk reduction through NbS, reforestation, and ecosystem restoration interventions directly advance the NAP's sectoral adaptation priorities in the Wadi Al-Karak Watershed.                                                                                                                                                                                                             |
| Jordan Green Growth National Action Plan (2021 – 2025)                 | Identifies green growth pathways across water, agriculture, and environment sectors, prioritizing sustainable resource management, water efficiency, ecosystem restoration, and climate-resilient development.                                                                                                                                                                           | The project's NbS approach, green infrastructure for water harvesting, and sustainable land management are directly consistent with the green growth priorities of this plan across both the water and agriculture sectors.                                                                                                                                                                                                                                                   |
| Aligned National Action Plan (NAP) to Combat Desertification 2015–2020 | Jordan's national framework under the UN Convention to Combat Desertification (UNCCD), comprising a vision, logical framework, a monitoring programme on desertification, land degradation and drought and sustainable land management, and an integrated financial plan.                                                                                                                | The project's rangeland rehabilitation, erosion control and slope stabilisation, terracing and contouring measures, and sustainable land management interventions directly advance national objectives on combating desertification and land degradation in the Wadi Al-Karak Watershed, where bare soils and exposed rocks constitute approximately 41% of the watershed area.                                                                                               |
| National Water Strategy 2023–2040                                      | Jordan's overarching water sector framework, which emphasises the growing impacts of climate variability and rainfall fluctuation on water system capacity and supply reliability, and addresses water demand management, water use efficiency, and the development of non-conventional water resources.                                                                                 | The project's rainwater harvesting systems, multi-scale flood water detention, enhancement of the quality and quantity of treated wastewater from the Karak WWTP for irrigation, and restoration of spring and groundwater recharge areas directly support the Strategy's priorities on non-conventional water resources and demand management, in a watershed where per-capita water availability is approximately 79 litres per person per day.                             |
| National Agricultural Development Strategy (NSAD) 2016–2025            | Jordan's agriculture sector framework addressing agricultural productivity, food security, and the development of sustainable agricultural value chains.                                                                                                                                                                                                                                 | The project's climate-smart and water-efficient agriculture interventions — modern and precision irrigation systems, drought-resistant crop varieties, soil and water conservation measures, and farmer capacity building and extension — support the Strategy's food security and agricultural sustainability objectives, responding to consultation findings that farmers across the watershed are abandoning traditional crops under prolonged drought and water scarcity. |
| <b>Regional</b>                                                        |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Arab Strategy for Water Security (2010 – 2030)                         | Regional framework adopted by the Arab Ministerial Water Council of the League of Arab States, providing a guide for joint Arab action on water security to 2030 and addressing water scarcity, shared water resources, and the impacts of climate change on water availability across the Arab region.                                                                                  | The project contributes to the Strategy's objectives on regional cooperation through Component 3, including the "Peace through Water" dialogue and joint Jordan–Lebanon knowledge exchange platforms, and to its water sustainability objectives through the integrated watershed management, water harvesting, and water quality interventions under Components 1 and 2.                                                                                                     |

## F. Compliance with relevant national or sub-national strategies

The project will fully align with national technical standards, including standards for environmental and social impacts, land use planning, water supply / harvesting / reuse, etc. If environmental and social impacts are required for proposed interventions, this will be done during the full project development phase.

TABLE 5: COMPLIANCE OF PROJECT COMPONENTS WITH RELEVANT LAWS, REGULATIONS AND TECHNICAL STANDARDS

| Component                                                                                                                                                  | Relevant rules, regulations and standards (to comply to AF principle 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Compliance procedure and authorizing offices                                                                                                                                                                                                                                                                                                                                                                     | Measures to ensure compliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Component 1: Multi-layered vulnerability assessments, climate-mainstreamed master plans, restoration frameworks, and financing models                      | <p><b>Lebanon:</b> The Urban Planning decree-law of 1983, Municipal Law decree 118/77, Construction Law decree 646/2004, Environment Code, Law 444/2002, Strategic Environmental Assessment (SEA) decree 8213/2012</p> <p><b>Jordan:</b> Environmental Protection Law No. 6/2017, Cities, Villages and Buildings Planning Law No. 79/1966, Local Administration Law No. 22/2021, Jordan National Building Law and relevant planning bylaws, Jordan Environmental Impact Assessment Regulation No. 37/2005 and amendments.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>Lebanon:</b> Ministry of Interior and Municipalities (MoIM), MoE, DGUP, Municipalities in the watershed</p> <p><b>Jordan:</b> MoEnv, Ministry of Water and Irrigation (MoWI), Water Authority of Jordan (WAJ), Jordan Valley Authority (JVA), Ministry of Agriculture (MoA) Ministry of Local Administration (MoLA), Municipalities in the watershed</p>                                                   | Planning outputs will be developed in coordination with the relevant national and local authorities, including MoIM, MoE, DGUP and concerned municipalities in Lebanon, and MoEnv, MoLA, MoWI, WAJ, JVA, MoA and concerned municipalities in Jordan, as relevant, and in accordance with applicable national urban planning, land use, construction, municipal and environmental requirements. Where proposed activities trigger environmental assessment requirements, the applicable screening and assessment procedures will be followed and submitted to the competent authorities for review and approval, as required. Draft plans will be validated through participatory workshops with institutional and community stakeholders prior to submission for formal endorsement. GIS databases and data collection will comply with national data-sharing and confidentiality requirements agreed with the relevant data custodians.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Component 2: Implementation of adaption and restoration interventions with a focus on nature-based solutions and post-disaster risk reduction and recovery | <p><b>Lebanon:</b> Law 444/2002: Environmental protection, Law 251/2014: Appointing prosecutors and investigative judges for environmental affairs, Initial Environmental Examination (IEE) decree 8633/2012, Decree 8213/2012: SEA of policy, plan and program proposals in the public sector, Decree 8471/2012: Environmental compliance of establishments, Decree 8633/2012: Fundamentals of EIA, Law 221/2000 (amendment 241/2000) and law 77/2018: Water Code, The National Guideline for Rainwater Harvesting Systems in Lebanon (2016) MoE/UNDP Lebanon.</p> <p><b>Jordan:</b> Environmental Protection Law No. 6/2017, Environmental Impact Assessment Regulation No. 37/2005 and amendments, Agriculture Law No. 13/2015, Water Authority Law No. 18/1988 and amendments, Jordan Valley Development Law No. 19/1988 and amendments, Public Health Law No. 47/2008, National Water Strategy 2023–2040 - National Forest Strategy 2024, NBSAP 2025–2030, National Climate Change Policy 2022–2050, National Adaptation Plan (NAP) 2021–2030, Jordan NDC 3.0 - Water Demand Management Policy, National Guideline for Rainwater Harvesting Systems in Jordan</p> | <p><b>Lebanon:</b> MoIMs MoE, MoEW, MoA, South Lebanon Water Establishment, Beirut and Mount Lebanon Water Establishment, LRA, municipalities in the watershed.</p> <p><b>Jordan:</b> MoEnv, Ministry of Water and Irrigation (MoWI), Water Authority of Jordan (WAJ), Jordan Valley Authority (JVA), Ministry of Agriculture (MoA) Ministry of Local Administration (MoLA), Municipalities in the watershed</p> | <p>All physical interventions in both countries will undergo environmental and social screening at design stage, in line with the AF Environmental and Social Policy and UN-Habitat safeguards requirements, and applicable national environmental regulations. Where environmental assessment requirements are triggered, the required assessments and documentation will be prepared and submitted to the competent environmental authorities for approval prior to implementation.</p> <p>Depending on the type and location of the interventions, the necessary sector-specific permits and clearances will also be obtained from the relevant authorities. These may include water-related approvals from MoEW, LRA and the relevant Regional Water Establishment in Lebanon, and from MoWI, WAJ and JVA in Jordan, as well as coordination and clearances from the respective Ministries of Agriculture for agricultural, forestry, rangeland and land-management interventions. Additional requirements related to protected areas, treated wastewater reuse, rainwater harvesting, pollution control, land restoration, or other site-specific interventions will be applied in accordance with the relevant national legislation, standards and guidelines listed in the preceding column.</p> <p>In both countries, all required site-specific permits and clearances will be obtained before works commence. Contractors will be bound by UN-Habitat procurement requirements incorporating applicable labour and occupational health and safety standards. Environmental and social compliance will be monitored throughout implementation, with the relevant environmental and social management instruments further developed at the full proposal stage.</p> |
| Component 3: Regional cooperation & knowledge exchange                                                                                                     | - Not relevant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Not relevant                                                                                                                                                                                                                                                                                                                                                                                                     | Not Relevant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## G. Duplication with other funding sources

The project has been designed to avoid overlap with other initiatives active in the Wadi Al-Karak Watershed and the Awali Watershed. During the concept note development phase, a mapping of existing and ongoing projects, studies, and initiatives in both watersheds was conducted, covering sectors including water, climate resilience, ecosystem management, and livelihoods. For Jordan, this mapping identified a number of relevant initiatives in the Karak Governorate, including projects funded by the Green Climate Fund, the World Bank, KfW, AECID, BMZ, and USAID, as well as initiatives led by IUCN, GIZ, and the JVA. A full overview of this mapping is available on request and will be included in the full proposal. Furthermore, for Lebanon, TAWASUL is one of four complementary climate finance initiatives under UN-Habitat Lebanon's climate-resilient water portfolio. While the other projects focus on groundwater management, urban water-loss reduction, and national climate finance readiness at both the local and institutional levels, TAWASUL uniquely targets the Awali Watershed. The MoE has strongly endorsed TAWASUL, recognizing it as a pioneering project within Lebanon's climate resilience agenda.

The analysis confirms that TAWASUL occupies a distinct niche focusing on watershed-scale nature-based solutions, ecosystem restoration, post-disaster recovery, sustainable water management, sustainable climate financing, and integrated climate-resilient planning that is not addressed by existing initiatives, which predominantly focus on water infrastructure, irrigation efficiency, wastewater management, or dam protection. Where thematic or geographic proximity exists, the project is designed to complement rather than duplicate, with coordination mechanisms to be established during full project preparation.

UN-Habitat's Regional Office for Arab States (ROAS) will coordinate with UN-Habitat Country Offices in Jordan and Lebanon to ensure alignment with ongoing UN-Habitat initiatives and to draw on relevant lessons learned. Coordination with other active projects, government ministries, municipalities, and technical partners will continue throughout the full proposal development phase and project implementation. MOPIC in Jordan, which was consulted step by step during concept note preparation, will play a key role in ensuring coordination and avoiding duplication across nationally registered projects and programmes. Geographic overlap has been addressed through government consultations, UN agency coordination, and the stakeholder engagement process conducted during concept note preparation. This coordination will be further formalized through the project's governance structure, including the Regional Project Steering Committee and National Technical Advisory Groups, which will include representatives from relevant ministries and implementing partners. Please see **Annex C** for the summary table of related national and regional projects.

## H. Learning and knowledge management

Knowledge management, learning, and monitoring are treated as cross-cutting functions embedded throughout the project at community, national, and regional levels. At the community level, participatory monitoring will be embedded through Community Climate Action Committees (CCACs), with capacity building activities tracked through pre- and post-training evaluations to ensure lessons inform implementation. At the national level, GIS databases and decision-support systems under Component 1 will serve as continuously updated knowledge repositories for both countries.

At the regional level, Component 3 will operationalize structured knowledge exchange through regional forums, technical exchanges, and study visits, a cross-country Community of Practice, the "Peace through Water" knowledge series (comprising knowledge co-creation labs, thematic papers, a flagship regional publication, a replication toolkit, and an interactive bilingual story map), and Municipal Climate Finance Forums. Progress will be monitored against the project's results framework through a shared UN-Habitat Country Office-led reporting system, complemented by quarterly regional meetings, a mid-term review, and a terminal evaluation drawing on the multisectoral watershed coordination mechanisms established under Component 1 to keep knowledge management and oversight integrated. Lessons learned will be disseminated through regional platforms including those led by UNESCWA and the League of Arab States, as well as through the existing platforms, the Urban Vulnerability Atlas, and the regional observatory leveraged under Component 3. The project team brings demonstrated experience in delivering knowledge management at regional scale, drawing on the previous UN-Habitat-led Adaptation Fund project "Resilient Water Solutions Against Climate Change in Jordan and Lebanon," which developed the dedicated platform [rws-ccaf.com](http://rws-ccaf.com) — hosting a regional Community of Practice and delivering multiple webinar series on climate finance, urban planning, and water resilience across Jordan and Lebanon. Appropriate knowledge management mechanisms for TAWASUL will be further defined during full project preparation.

## I. Consultative process

The CN was developed through a structured multi-level stakeholder consultation process conducted in Lebanon and Jordan between April and May 2026, in alignment with the AF Environmental and Social Policy (ESP), particularly the principles of Access and Equity, Marginalized and Vulnerable Groups, and Gender Equity and Women's Empowerment. The consultation process was designed as an iterative and cumulative process linking community-level perspectives, national technical analysis, and sub-national validation to ensure that local realities informed project design and intervention priorities.

**Lebanon:** At the concept development stage, consultations were conducted with a wide range of stakeholders, including government representatives, UoMs, NGOs, local community representatives (Almane), technical experts, and other specialists. Three workshops were held with key government entities (MoE, DGUP, and CNRS) while the remaining consultations were conducted through bilateral phone interviews between 11 May and 2 June 2026 due to the prevailing security situation at the time. These discussions followed a semi-structured questionnaire and aimed to (1) Ensure alignment with government priorities and development plans, (2) Avoid duplication with ongoing or planned initiatives, (3) Ensure compliance with relevant standards, regulations, and policies, (4) Identify the needs and concerns of vulnerable groups, and (5) Assess potential environmental and social risks and impacts. Discussions also explored a range of technical aspects, including (1) Local context and river system characteristics, (2) Environmental and climate risks, (3) Socio-economic conditions and vulnerabilities, (4) Existing needs, priorities, and ongoing efforts, (5) Stakeholder participation and governance arrangements, (6) Implementation risks, barriers, and safeguard considerations, (7) Relevant social and cultural factors.

Not all questions were asked to every stakeholder; rather, discussions were tailored to each participant's expertise, role, and knowledge. The findings from these consultations informed the development and prioritization of the proposed interventions.

**Jordan:** The consultations followed a three-phase sequence. First, a community-level consultation was held in Wadi Al-Karak on 5 May 2026 with 20 participants, including local residents, farmers, cooperatives, village representatives, and community-based organizations from across Wadi Al-Karak Watershed. Through participatory discussions and mapping exercises, participants identified key climate hazards, vulnerability hotspots, livelihood pressures, and adaptation priorities. Second, a national-level consultation was conducted in Amman on 11 May 2026 with 34 representatives from key



FIGURE 45: PICTURES FROM STAKEHOLDERS' CONSULTATION SESSIONS IN JORDAN

governmental, technical, and institutional stakeholders. Building on the community consultation findings, the session applied Problem Tree and Solution Tree methodologies to analyse root causes, impacts, and potential intervention pathways related to climate vulnerability, watershed degradation, and resilience-building. Third, a sub-national validation workshop was held in Al-Karak on 13 May 2026 with 28 participants representing municipalities, governorate-level institutions, universities, technical directorates, and local stakeholders. The workshop validated the findings, proposed interventions, and project components developed during the national consultation to ensure alignment with local priorities and conditions in the Wadi Al-Karak Watershed. In parallel, bilateral meetings and technical working sessions were conducted with key partners including MOPIC, WADI NGO, IUCN, RSCN, and other technical stakeholders to ensure policy alignment, validate findings, strengthen institutional coordination, and implementation readiness. The consultation process was designed to ensure meaningful participation of vulnerable and climate-exposed groups, including women, farming communities, underserved households facing severe water stress, and communities affected by the January 2026 flash floods. All sessions were conducted in Arabic using participatory and non-exclusionary approaches to ensure equitable participation and integration of local knowledge, gender perspectives, and community priorities into project design and intervention planning.

TABLE 6: SUMMARY OF THE CONSULTATIONS UNDERTAKEN IN EACH COUNTRY

| Country | Entity/ Stakeholder                                            | No of participants | Engagement tool       | Date                                |
|---------|----------------------------------------------------------------|--------------------|-----------------------|-------------------------------------|
| Lebanon | Ministry of Environment                                        | 3 (F:3)            | Workshop              | 1 June 2026                         |
|         | Directorate General of Urban Planning                          | 4 (F:2/M:2)        | Workshop              | Recurring during May to July 2026   |
|         | National Council for Scientific Research (CNRS)                | 3 (F:1/M:2)        | Workshop              | Recurring during May to July 2026   |
|         | Litani River Authority                                         | 2 (M:2)            | Bilateral meeting     | Recurring during June 2026          |
|         | UoM of Iklim El-Kharroub El-Janoubi                            | 1 (M:1)            | Bilateral meeting     | 8 May 2026                          |
|         | UoM of Iklim El-Kharroub El-Chemali                            | 1 (M:1)            | Bilateral meeting     | 13 May 2026                         |
|         | UoM of Chouf El-Aala                                           | 1 (M:1)            | Bilateral meeting     | 12 May 2026                         |
|         | UoM Of Chouf El Swayjani                                       | 1 (M:1)            | Bilateral meeting     | 13 May 2026                         |
|         | UoM of Caza Jezzine                                            | 1 (M:1)            | Bilateral meeting     | 12 May 2026                         |
|         | SPNL                                                           | 1 (F:1)            | Bilateral meeting     | 3 June 2026                         |
| Jordan  | Nohye El-Ared NGO                                              | 1 (M:1)            | Bilateral meeting     | 13 May 2026                         |
|         | Ministry of Environment                                        | 5 (F:2/ M: 3)      | National Workshop     | 11 May 2026                         |
|         |                                                                |                    | Sub-National Workshop | 13 May 2026                         |
|         |                                                                |                    | Meetings              | Recurring during April to July 2026 |
|         | Ministry of Agriculture                                        | 2 (F:0 / M: 2)     | Meetings              | Recurring during April to July 2026 |
|         | Ministry of Interior                                           | 2 (F:0 / M: 2)     | National Workshop     | 11 May 2026                         |
|         | Ministry of Tourism and antiquities                            | 1 (F:0 / M: 1)     | National Workshop     | 11 May 2026                         |
|         | Ministry of Local Administration                               | 1 (F:1 / M:0)      | National Workshop     | 11 May 2026                         |
|         | Ministry of Public Works and Housing                           | 1 (F:1 / M:0)      | National Workshop     | 11 May 2026                         |
|         | Ministry of Planning and International Cooperation (MOPIC)     | 5 (F:3 / M: 2)     | National Workshop     | 11 May 2026                         |
|         |                                                                |                    | Sub-National Workshop | 13 May 2026                         |
|         |                                                                |                    | Meetings              | Recurring during April to July 2026 |
|         | Department of Lands and Survey                                 | 2 (F:0 / M: 2)     | National Workshop     | 11 May 2026                         |
|         | ERADA                                                          | 5 (F:3 / M: 2)     | National Workshop     | 11 May 2026                         |
|         |                                                                |                    | Sub-National Workshop | 13 May 2026                         |
|         |                                                                |                    | Bilateral Meeting     |                                     |
|         | Royal Jordanian Geographic Centre                              | 1 (F:1 / M: 0)     | National Workshop     | 11 May 2026                         |
|         | Department of Statistics (DoS)                                 | 1 (F:1 / M:0)      | National Workshop     | 11 May 2026                         |
|         | Ministry of Interior                                           | 2 (F:0 / M:2)      | National Workshop     | 11 May 2026                         |
|         | Greater Karak Municipality                                     | 4 (F:2 / M:2)      | National Workshop     | 11 May 2026                         |
|         |                                                                |                    | Sub-National Workshop | 13 May 2026                         |
|         |                                                                |                    | Local Workshop        | 5 May 2026                          |
|         |                                                                |                    | Bilateral meeting     | Recurring during April to July 2026 |
|         | The National Center for Security and Crises Management (NCSCM) | 2 (F:0 / M: 2)     | National Workshop     | 11 May 2026                         |
|         | WADI for Sustainable Ecosystems Development                    | 4 (F:1 / M: 3)     | National Workshop     | 11 May 2026                         |
|         |                                                                |                    | Meetings              | Recurring during April to July 2026 |
|         | Royal Society for the Conservation of Nature                   | 2 (F:0 / M: 2)     | National Workshop     | 11 May 2026                         |
|         | IUCN                                                           | 2 (F:0 / M: 2)     | National Workshop     | 11 May 2026                         |
|         | GIZ                                                            | 1 (F:1 / M: 0)     | National Workshop     | 11 May 2026                         |
|         | UNDP                                                           | 1 (F:1 / M: 0)     | National Workshop     | 11 May 2026                         |
|         | The National Agricultural Research Center (NARC)               | 2 (F:2 / M: 0)     | National Workshop     | 11 May 2026                         |
|         | Royal Scientific Society RSS                                   | 1 (F:1 / M: 0)     | National Workshop     | 11 May 2026                         |
|         | University of Jordan                                           | 2 (F:1 / M: 1)     | National Workshop     | 11 May 2026                         |
|         | Two Design Firms                                               | 2 (F:1 / M: 1)     | National Workshop     | 11 May 2026                         |
|         | The Joint Services Council                                     | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Civil Defense Directorate                                      | 2 (F:0 / M: 2)     | Sub-National Workshop | 13 May 2026                         |
|         | Karak Governorate Council                                      | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Karak Directorate of Antiquities                               | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Karak Directorate of Tourism                                   | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Aqaba Water Company                                            | 2 (F:0 / M: 2)     | Sub-National Workshop | 13 May 2026                         |
|         | Karak Water Directorate                                        | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Mutah Municipality                                             | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Ghor Al-Mazra Municipality                                     | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Karak Agriculture Directorate                                  | 2 (F:0 / M: 2)     | Sub-National Workshop | 13 May 2026                         |
|         |                                                                |                    | Local Workshop        | 5 May 2026                          |
|         | Karak Environment Directorate                                  | 1 (F:1 / M:0)      | Sub-National Workshop | 13 May 2026                         |
|         | Karak Directorate of Municipal Affairs                         | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Mutah University                                               | 4 (F:1 / M: 3)     | Sub-National Workshop | 13 May 2026                         |
|         | Karak Development Foundation                                   | 1 (F:0 / M: 1)     | Sub-National Workshop | 13 May 2026                         |
|         | Karak Governorate                                              | 2 (F:0 / M: 2)     | Sub-National Workshop | 13 May 2026                         |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |                       |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------|-------------|
| Jordan Valley Authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 (F:0 / M: 1)  | Sub-National Workshop | 13 May 2026 |
| Community-based organizations in Al Karak Watershed (12 CBOs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 12 (F:1 / M:11) | Local Workshop        | 4 May 2026  |
| Local farmers and community representatives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8 (F:1 / M:11)  | Local Workshop        | 4 May 2026  |
| <b>Topics Discussed</b> <ul style="list-style-type: none"> <li>- National and local climate, water, agriculture, biodiversity, land-use, tourism, infrastructure, and development priorities.</li> <li>- Historical and emerging climate hazards, including drought, water scarcity, flash flooding, extreme heat, erosion, and land degradation.</li> <li>- Seasonal water availability, spring and surface-water conditions, environmental flows, water quality, pollution sources, and upstream–downstream relationships.</li> <li>- Urban expansion, agricultural practices, ecosystem degradation, biodiversity loss, and pressures on heritage and culturally significant sites.</li> <li>- Socioeconomic vulnerabilities affecting farmers, women, youth, low-income households, communities near the wadi, and other resource-dependent groups.</li> <li>- Institutional mandates, coordination gaps, available datasets, regulations, safeguards, enforcement, and operation and maintenance responsibilities.</li> <li>- Existing and planned initiatives, potential duplication, institutional roles, and opportunities for complementarity.</li> <li>- Priority adaptation, restoration, and nature-based interventions, together with their feasibility, sustainability, and potential environmental and social risks.</li> </ul>                                                                                                                                                  |                 |                       |             |
| <b>Key Outcomes:</b> Stakeholders confirmed that vulnerability in Wadi Al-Karak and Al-Awali watershed results from an interconnected cycle rather than individual climate hazards. Increasing rainfall variability, drought, extreme heat, and intense rainfall events contribute simultaneously to water scarcity and flash-flood risk. These pressures are compounded by vegetation loss, soil erosion, land degradation, urban expansion, pollution, and inadequate land and water management. Ecosystem degradation reduces infiltration, water retention, and natural flood regulation, while increasing runoff, sedimentation, and damage to agricultural land, infrastructure, settlements, and heritage assets. Declining water availability and quality affect agricultural productivity, livelihoods, household wellbeing, and the adaptive capacity of vulnerable groups, creating additional pressure on already stressed land and water resources. Consultations also identified fragmented institutional responsibilities, limited coordination, data gaps, inconsistent data-sharing, and challenges related to enforcement and maintenance as factors reinforcing the vulnerability cycle. Stakeholders emphasized the need for integrated upstream–downstream planning, stronger coordination among national and local institutions, meaningful community participation, and combined nature-based, water-management, ecosystem-restoration, and livelihood-support measures. |                 |                       |             |
| <b>Integration of Consultation Outcomes:</b> Consultation findings were used to triangulate the spatial assessment, available datasets, literature review, and climate and socioeconomic research. Stakeholder knowledge helped verify hazard trends, seasonal changes, exposed communities and assets, ecosystem pressures, institutional constraints, and upstream–downstream relationships that were not fully captured through existing datasets. The consultation findings were systematically translated into the project's components, outputs, and activities. The identified links between climate hazards, urban vulnerability, biodiversity vulnerability, and fragmented governance shaped an integrated pathway from evidence generation and planning, through financing and institutional coordination, to locally led implementation, monitoring, learning, and regional replication. This ensures that the project responds not only to individual risks, but also to their underlying causes and interdependencies, thereby enabling systemic and sustained change.                                                                                                                                                                                                                                                                                                                                                                                                            |                 |                       |             |

## J. Justification for funding request

As documented in the problem statement and country context sections above, both the Wadi Al-Karak Watershed and the Awali Watershed are experiencing compounding and accelerating climate risks from flash floods and prolonged droughts to ecosystem collapse and institutional fragmentation against a baseline of chronically underfunded adaptation and weak watershed governance. In both Jordan and Lebanon, the gap between the scale of climate change impacts and the capacity of national systems to respond continues to widen. Without targeted intervention, vulnerabilities will deepen, ecosystems that could otherwise buffer communities against climate hazards will continue to degrade, and the cost of future recovery will rise with every year of inaction. The TAWASUL project requests USD 29,996,361 from the Adaptation Fund to address this gap directly, at the watershed scale, and through an integrated approach that links knowledge to action. The funding reflects the full cost of adaptation. Both Jordan and Lebanon have explicitly acknowledged in their NDCs and National Communications that financial constraints are among the primary barriers to adaptation implementation and that existing national resources are insufficient to deliver watershed-scale climate adaptation without external climate finance support. Lebanon's BTR1 confirms that resilience sectors remain relatively underfunded and that fragmented governance continues to undermine coordination, while actual climate investment falls far short of the estimated USD 7.6 billion needed between 2024 and 2030. In Jordan, responsibilities for water management, land-use planning, environmental protection, and disaster risk reduction are distributed across multiple institutions with overlapping mandates, compounding the challenge of mobilizing integrated watershed-scale adaptation without dedicated external financing. Component 1, at USD 4,150,000, invests in the knowledge and planning foundations without which adaptation action remains piecemeal and ineffective. MVAs, spatial mapping, GIS-based decision-support systems, climate-mainstreamed watershed master plans, adaptation and restoration frameworks, and evidence-based financing models are not overhead they are the infrastructure of informed decision-making that neither watershed currently has. Local authorities, line ministries, and community actors cannot make sound choices about where to restore, where to hold water, or where to channel investment without this evidence base. This component builds it, and without AF support it would remain beyond the reach of both governments given current fiscal constraints and institutional capacity gaps. Component 2, at USD 19,839,350, is where the adaptation happens on the ground. Reforestation, wetland restoration, sustainable land management, post-disaster ecological recovery, and green infrastructure for water harvesting directly reduce the exposure of approximately 133,005 people in the Wadi Al-Karak Watershed and the communities of the Awali Watershed to the climate hazards already reshaping their lives. This component is deliberately weighted as the largest share of the budget because physical adaptation outcomes — not the plans for them — ultimately determine whether people are safer. These interventions require the kind of patient, grant-based, technically supported investment that aligns with the mandate of the AF. Component 3, at USD 1,000,000, recognizes that the Awali and Wadi Al-Karak are part of a shared regional hydrological system and that the climate pressures affecting them do not stop at borders. The "Peace through Water" dialogue, joint knowledge platforms, and cross-country cooperation mechanisms this component finances a region where water has historically been a source of tension. Investing in collaborative climate governance is itself an adaptation measure that creates the regional architecture needed to sustain and scale the project's ambition. Project execution costs of USD 2,282,798 and the UN-Habitat IE fee of USD 2,727,214 are included within the total funding request. These cover the fiduciary oversight, technical quality assurance, coordination, and AF policy compliance management that are necessary conditions for the accountable delivery of adaptation outcomes across two national contexts over four years. Taken together, the requested resources reflect a realistic, evidence-based, and community-grounded investment in watershed resilience calibrated to what is needed to achieve measurable change within the project period, and justified on the basis that without Adaptation Fund financing, none of the planned outcomes would be achievable within the timeframes that the climate trajectory demands. The project components described in this concept note are designed to be fully achievable through the requested Adaptation Fund grant alone, without reliance on additional co-financing or parallel funding from other donors. Should complementary financing become available during implementation, it would serve to enhance scale or accelerate replication beyond the project's core targets, but is not a precondition for achieving the stated objectives, outcomes, and outputs.

## K. Sustainability

Sustainability is embedded across institutional, financial, environmental, and social dimensions to ensure the long-term continuity, ownership, and resilience of project outcomes beyond the project lifetime. The project will establish clear operation and maintenance arrangements for all supported adaptation and restoration interventions, which will be further detailed during the full proposal stage and reflected in the Environmental and Social Management Plan (ESMP), ensuring continued compliance with the Adaptation Fund's Environmental and Social Policy through defined institutional responsibilities, monitoring mechanisms, and maintenance frameworks. Institutional sustainability will be strengthened by integrating vulnerability assessments, restoration frameworks, GIS-based monitoring systems, and decision-support tools into existing municipal, watershed, and sectoral planning and adaptation processes in Jordan and Lebanon. NbS, ecosystem restoration measures, and green infrastructure interventions will be mainstreamed within municipal and sectoral systems, with responsibilities assigned to municipalities, relevant ministries, watershed authorities, and local stakeholders. The project will further strengthen institutional capacity and political ownership through targeted capacity building, on-the-job training, technical guidelines, and standard operating procedures (SOPs) to support the long-term management and replication of interventions. **Social sustainability** will be promoted through participatory and community-led approaches that actively engage local communities, women, vulnerable groups, and local organizations in assessments, planning, implementation, monitoring, and maintenance activities. This approach aims to strengthen local ownership, improve awareness and adaptive capacities, and support community leadership in climate adaptation, watershed management, and ecosystem stewardship. Knowledge products, technical guidance, and regional knowledge-sharing mechanisms will further support the replication and scaling up of successful practices across both countries and the wider region. **Financial sustainability** will be supported through gender-responsive financing approaches, integration of climate adaptation priorities into municipal budgeting and planning systems, and the development of green recovery and resilience pathways that encourage long-term investment in adaptation and ecosystem restoration. By investing in resilient infrastructure, ecosystem restoration, and climate-adaptive livelihoods, the project will contribute to reducing future disaster recovery costs, protecting vulnerable assets, and strengthening local economic resilience. **Environmental sustainability** will be ensured through integrated watershed management approaches that restore ecosystem functionality, strengthen biodiversity and habitat connectivity, improve water retention and soil stability, and reduce climate-related risks including flooding, drought, erosion, and land degradation. Risks associated with project interventions will be managed in accordance with the Adaptation Fund's Environmental and Social Policy to ensure long-term functionality, resilience, and sustainability of adaptation investments. **Operation and maintenance sustainability:** As the exact Component 2 interventions will be identified during implementation, site-specific operation and maintenance arrangements will be prepared for every approved intervention before implementation and handover. Each plan will identify the asset owner and operator, institutional responsibilities, maintenance tasks and schedules, required skills and equipment, performance and safeguard requirements, lifecycle costs, and confirmed sources of recurrent funding. These arrangements will be formalized through handover agreements or other appropriate institutional commitments. **Replication and scaling up:** The project's frameworks, master plans, financing models, investment portfolios and documented pilot results will provide a basis for mobilizing follow-on financing from national and municipal budgets, climate funds, development partners and private-sector sources. This will support the replication and scaling up of successful interventions in other watersheds and municipalities after the project ends.

## L. Environmental and social impacts and risks

The project has been screened against the environmental and social principles of the Adaptation Fund Environmental and Social Policy. The screening confirms that the project is designed to generate positive environmental and social outcomes through ecosystem restoration, nature-based solutions and improved watershed governance, and that no activities are expected to result in significant adverse impacts. The principal risks identified are limited in scale, site-specific, and largely reversible. They relate primarily to the implementation of physical interventions under Component 2, and include temporary and localised construction-related disturbance; the potential for inappropriate species selection or the introduction of invasive species in restoration works; the possibility that interventions could indirectly affect existing community access to land, water or grazing resources; risks of unequal access to project benefits for women, women-headed households, displaced populations and other vulnerable groups; and the risk of inconsistent handling of community concerns and grievances across multiple intervention sites. On this basis, the project is classified as **Category B** under the Adaptation Fund Environmental and Social Policy: potential adverse environmental and social impacts are fewer in number, smaller in scale, less widespread, and reversible or easily mitigated. No activities are proposed that would have significant adverse impacts that are diverse, large-scale, widespread or irreversible. A full environmental and social impact assessment will be completed prior to submission of the full proposal, including site-specific screening of all proposed interventions, with findings presented in the proposal document. An Environmental and Social Management Plan will be prepared setting out mitigation measures, institutional responsibilities, monitoring arrangements, and a grievance mechanism accessible to beneficiaries and non-beneficiaries alike.

TABLE 7: PRELIMINARY ENVIRONMENTAL AND SOCIAL RISK SCREENING

| Checklist of environmental and social principles | No further assessment required for compliance | Potential impacts and risks – further assessment and management required for compliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Compliance with the Law</i>                   |                                               | The project will be implemented in Jordan and Lebanon in close coordination with national and local authorities and in compliance with applicable environmental, land use, water management, and planning laws and regulations. UN-Habitat, as the Implementing Entity, will ensure compliance with the Adaptation Fund Environmental and Social Policy. Potential risks relate primarily to site-specific permits and approvals required for NbS interventions, including possible delays in confirming permitting requirements during project preparation. The full proposal phase will include a detailed review of relevant legal and policy frameworks to ensure compliance with national regulations and AF requirements. |
| <i>Access and Equity</i>                         |                                               | The project targets vulnerable and underserved communities in the Wadi Al-Karak Watershed supporting approximately 133,005 people, where per-capita water availability is approximately 79 liters per person per day, well below national adequacy levels.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                     |   | There is a low to moderate risk that benefits may not reach the most marginalized if targeting mechanisms are not carefully considered. During full project preparation, targeting mechanisms will be refined drawing on vulnerability and community consultation findings to support equitable access and distribution of benefits across gender, income, and geographic lines.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>Marginalized and Vulnerable Groups</i>           |   | There is a moderate risk that vulnerable groups, including smallholder farmers, women-headed households, and flood-affected communities, may not fully participate in or benefit from project activities. The full proposal phase will assess potential exclusion risks and identify measures to ensure inclusive participation and equitable benefit-sharing across project interventions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>Human Rights</i>                                 |   | There is a low risk that project interventions could indirectly affect access to land, water, or other resources that communities depend on. Direct risks are expected to be limited; indirect risks include concerns about fair access to resources or benefits and the need for clear grievance mechanisms. No material transboundary risks are expected. Cumulative risks could arise if concerns and grievances are not handled consistently across different locations and activities. A project grievance mechanism, accessible to beneficiaries and non-beneficiaries alike, will be established in line with the Adaptation Fund Environmental and Social Policy and UN-Habitat requirements, with detailed arrangements defined at full proposal stage. Further assessment will confirm consistency with national human rights commitments in Jordan and Lebanon and ensure that project activities respect the rights of affected communities. |
| <i>Gender Equity and Women's Empowerment</i>        |   | There is a low-to-moderate risk that women's participation in restoration and NbS activities may be constrained by social norms, mobility limitations, or time burdens. The project prioritizes women-headed households. An initial gender assessment has been undertaken (Part I, Section 6), and a full gender assessment and costed Gender Action Plan will be prepared during full proposal development to identify barriers and inform gender-responsive measures, in collaboration with national women's institutions in Jordan and Lebanon.                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Core Labour Rights</i>                           |   | There is a low-to-moderate risk related to occupational health and safety and labour practices during implementation of NbS interventions. UN-Habitat procurement and contracting standards, including core labour principles including prohibition of child and forced labour and non-discrimination, will apply to all contracts. The full proposal phase will assess labour-related risks and identify measures to ensure compliance with national labour standards and safe working conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>Indigenous Peoples</i>                           | X | No risk. There are no Indigenous Peoples, as defined under the Adaptation Fund Environmental and Social Policy, present in the Awali or Wadi Al-Karak Watersheds. Project activities will therefore not affect Indigenous Peoples or their lands, territories or resources.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>Involuntary Resettlement</i>                     | X | No risk. The project will not involve land acquisition, physical relocation or economic displacement. All interventions will be implemented on public land or on private land with the documented consent of landowners and users.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Protection of Natural Habitats</i>               |   | There is a low-to-moderate risk of localized disturbance to natural habitats from NbS interventions if activities are implemented near ecologically sensitive areas. The full proposal phase will include site screening and mitigation measures to avoid impacts on sensitive habitats and ecological corridors, with technical support from IUCN to ensure ecologically sound design.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <i>Conservation of Biological Diversity</i>         |   | There is a low risk that NbS and restoration activities could affect local biodiversity through localized habitat disturbance or inappropriate species selection. The full proposal phase will assess potential impacts and define measures to protect biodiversity and ecosystem integrity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <i>Climate Change</i>                               |   | There is a low risk that project activities could marginally increase resource use or result in maladaptation if not appropriately designed. The project is fully aligned with national climate policies and adaptation priorities in Jordan and Lebanon, and the full proposal phase will ensure interventions contribute to long-term climate resilience.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>Pollution Prevention and Resource Efficiency</i> |   | There is a low risk of localized pollution or waste generation from materials used in NbS and small-scale infrastructure works. The full proposal phase will identify potential pollution sources and define appropriate mitigation and waste management measures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Public Health</i>                                | X | No risk. The project is expected to deliver net positive public health outcomes through improved water quality, reduced exposure to untreated wastewater and solid waste, reduced flood risk, and improved access to safe water.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>Physical and Cultural Heritage</i>               |   | There is a low risk that interventions could affect cultural or archaeological resources during site works. The full proposal phase will include heritage screening and the application of a chance finds procedure to all physical interventions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Lands and Soil Conservation</i>                  |   | There is a low risk of localized soil disturbance during implementation of NbS interventions. As soil conservation is a core project objective, the full proposal phase will assess potential impacts and identify appropriate soil and land management measures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

### PART III: IMPLEMENTATION ARRANGEMENTS

The project will be implemented through a coordinated regional governance structure led by UN-Habitat's Country Offices in Lebanon and Jordan (COs) in coordination with the ROAS, responsible for fiduciary oversight, coordination, reporting, and compliance with AF policies. Dedicated Project Management Units (PMUs) will be established within UN-Habitat COs in Jordan and Lebanon to coordinate and oversee day-to-day project implementation. The PMUs will be responsible for project planning, financial management, procurement, monitoring and reporting, safeguards compliance, knowledge management, and stakeholder coordination. The PMUs will serve as the operational link between UN-Habitat, the Executing Entities, national institutions, municipalities, and local partners and community to ensure effective and coordinated implementation across both countries. National implementation will be carried out by designated EEs under the COs strategic and technical guidance. These EEs are expected to include, in Lebanon, UN-Habitat Lebanon, CNRS for knowledge management and data-driven-related components, National academic institutions and NGOs with relevant expertise in watershed management and cultural heritage (e.g., the Society for the Protection of Nature in Lebanon [SPNL], the American University of Beirut – Nature Conservation Center [AUB-NCC], Nohye Alard, etc.) may also serve as sub-executing partners and will be confirmed at full proposal stage. Partners will include MoE, which will serve as the national lead institution, and local governments within the districts of Saïda, Jezzine and Chouf. In Jordan, the Executing Entities are expected to include the UN-Habitat Jordan, IUCN, Wadi NGO, the Ministry of Environment, the MoA, and the Ministry of Planning and International Cooperation, along with UN-Habitat ROAS. The MoEnv, in collaboration with other line ministries, will oversee execution in partnership with the Greater Karak Municipality along with Jordan Valley Authority. Jordanian universities and research may also be engaged for technical support and capacity building. In both countries, civil society, local cooperatives, and women/youth associations will lead community-based assessments, ecosystem restoration, and awareness activities, selected through a competitive process to ensure inclusiveness, sustainability, and community ownership. The project will establish a Regional Project Steering Committee (RPSC) supported by a National Technical Advisory Groups (NTAGs) led by Ministries of environment and UN-Habitat, ensuring policy alignment, adaptive management, and compliance with national climate policies and NDCs. Local implementation will be led by municipalities and unions of municipalities through Municipal Project Coordination Units (MPCUs) will lead local implementation, supported by Community Climate Action Committees (CCACs) to ensure inclusive co-design, participatory monitoring, and accountability. A shared UN-Habitat-led knowledge and reporting system will enable monitoring and learning, complemented by quarterly rotating regional meetings to support coordination, transparency, cross-country learning, and replication.

TABLE 8: ALIGNMENT WITH THE ADAPTATION FUND STRATEGIC RESULTS FRAMEWORK

| Project Outcomes(s) <sup>69</sup>                                                                                                                                          | Project Outcomes Indicator(s)                                                                                                                                                                                                                                                                                                       | Fund Outcome                                                                                                                             | Fund Outcome Indicator                                                                                                                                                                                                                                                                                                    | Grant Amount (USD) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Outcome 1.1: Enhanced governance through data-driven and gender-responsive planning and strengthened institutional capacity                                                | Percentage of institutions that have adopted data-driven planning in official decision-making processes                                                                                                                                                                                                                             | Outcome 1: Reduced exposure to climate-related hazards and threats                                                                       | Indicator 1: People using climate-related threat and hazard information [# of people, by sex, by sector, and by hazard]                                                                                                                                                                                                   | 3,450,000          |
|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                     | Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses    | Indicator 2: Institutions with strengthened capacity to understand and better address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]                                                                                                                     |                    |
|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                     | Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes                                       | Indicator 3A: People with strengthened awareness of climate change risks and how to better address them [# of people, disaggregated by sex, by vulnerable groups, and by sector]                                                                                                                                          |                    |
|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                     | Outcome 7: Improved policies and regulations that promote and enforce resilience measures                                                | Indicator 7: Policies, strategies, and/or plans adopted, implemented, and/or enforced that integrate climate risk and resilience considerations [# , disaggregated by scale, by policy step, and by sector]                                                                                                               |                    |
| Outcome 1.2: Strengthened evidence-based financing for adaptation and ecosystem restoration                                                                                | Percentage of identified priority adaptation and restoration investments with completed cost estimates, financing strategies, and investment portfolios ready for submission to climate funds and investors by end of project                                                                                                       | Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses    | Indicator 2: Institutions with strengthened capacity to understand and better address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]                                                                                                                     | 700,000            |
| Outcome 2.1: Improved community-led ecosystem restoration and climate-resilient risk reduction, with strengthened adaptive capacity of local authorities and civil society | Percentage of targeted local authorities and civil society organizations that demonstrate improved capacity to plan and implement ecosystem-based adaptation and disaster risk reduction measures.<br><br>Hectares of ecosystems restored, rehabilitated, or brought under improved management through nature-based solutions (NbS) | Impact: Increased resiliency and reduced vulnerability at the community, national, and regional levels to climate variability and change | Core Indicator 1: Number of beneficiaries [# of people, disaggregated by direct and indirect beneficiaries, by sex, by vulnerable groups, and by sector]                                                                                                                                                                  | 19,839,350         |
|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                     | Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes                                       | Indicator 3A: People with strengthened awareness of climate change risks and how to better address them [# of people, disaggregated by sex, by vulnerable groups, and by sector]<br><br>Indicator 3B: People implementing new or improved adaptation actions [# of people, disaggregated by sex and by vulnerable groups] |                    |
|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                     | Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets                             | Indicator 4 (Core Indicator 3): Physical assets improved or constructed to withstand climate variability and change [disaggregated by km of linear infrastructure and # of point infrastructure, and by sector]                                                                                                           |                    |
|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                     | Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress                                   | Indicator 5 (Core Indicator 4): Ecosystems and natural resources brought under protection, restoration, or improved management in response to climate variability and change [# of hectares, disaggregated by type of ecosystem / natural resource area and by protection, restoration, and management]                   |                    |
|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                     | Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas                        | Indicator 6A: People adopting improved and/or new climate-resilient livelihood practices [# of people, disaggregated by sex and by vulnerable groups]                                                                                                                                                                     |                    |
|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                     | Outcome 3.1: Strengthened local, national and regional water and climate diplomacy and cooperation                                       | Number of joint institutional decisions, protocols, or coordinated action plans developed between Lebanon and Jordan institutions as a direct result of project-supported dialogue and knowledge exchange mechanisms                                                                                                      |                    |
| Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes                                                                         | Indicator 3A: People with strengthened awareness of climate change risks and how to better address them [# of people, disaggregated by sex, by vulnerable groups, and by sector]                                                                                                                                                    |                                                                                                                                          |                                                                                                                                                                                                                                                                                                                           |                    |
| Total outcome level grant amount                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                          |                                                                                                                                                                                                                                                                                                                           | 24,989,350         |
| Project output(s)                                                                                                                                                          | Project output Indicator(s)                                                                                                                                                                                                                                                                                                         | Fund Output                                                                                                                              | Fund Output Indicator                                                                                                                                                                                                                                                                                                     | Grant Amount (USD) |

<sup>69</sup> The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology, but the overall principle should still apply

| Component 1: Multi-layered vulnerability assessments, climate-mainstreamed master plans, restoration frameworks, and financing models                                      |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Outcome 1.1: Enhanced governance through data-driven and gender-responsive planning and strengthened institutional capacity                                                |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| Output 1.1.1: GIS databases, spatial mapping and decision-support systems established                                                                                      | Number of integrated GIS-based decision-support systems established                                                                                                                                                                                                         | Output 1.1: Risk and vulnerability assessments conducted and updated                                                                                                                                                                      | Indicator 1.1: Risk and vulnerability assessments conducted or updated [# of assessments, by sector and by scale]                                                                                                                                                                                                                                                                                                                                                                                                                                      | 750,000    |
| Output 1.1.2: Multi-layered vulnerability assessments conducted and priority areas identified                                                                              | Number of MVAs completed and disseminated, incorporating sex-disaggregated data                                                                                                                                                                                             | Output 1.1: Risk and vulnerability assessments conducted and updated                                                                                                                                                                      | Indicator 1.1: Risk and vulnerability assessments conducted or updated [# of assessments, by sector and by scale]                                                                                                                                                                                                                                                                                                                                                                                                                                      | 600,000    |
| Output 1.1.3: Adaptation and restoration frameworks developed.                                                                                                             | Number of adaptation and restoration frameworks and implementation and monitoring plans developed.                                                                                                                                                                          | Output 7.1: Improved integration of climate-resilience strategies into country development plans.                                                                                                                                         | Indicator 7.1A (Core Indicator 6): Policies, strategies, and/or plans developed or adjusted to integrate climate risk and resilience considerations [# of policies, strategies, and/or plans, disaggregated by scale and by sector]                                                                                                                                                                                                                                                                                                                    | 400,000    |
| Output 1.1.4: Climate-mainstreamed watershed master plans developed.                                                                                                       | Number of climate-mainstreamed watershed master plans and implementation programmes endorsed by relevant institutions                                                                                                                                                       | Output 7.1: Improved integration of climate-resilience strategies into country development plans                                                                                                                                          | Indicator 7.1A (Core Indicator 6): Policies, strategies, and/or plans developed or adjusted to integrate climate risk and resilience considerations [# of policies, strategies, and/or plans, disaggregated by scale and by sector]                                                                                                                                                                                                                                                                                                                    | 1,500,000  |
| Output 1.1.5: Institutional capacities, governance systems and awareness enhanced across relevant sectors and governance levels                                            | Number of institutions receiving capacity-development support, disaggregated by scale, sector and country<br><br>Number of people participating in capacity-building activities                                                                                             | Output 2.1: Strengthened capacity of institutions to understand and better address climate risks<br><br>Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities                        | Indicator 2.1: Institutions supported to strengthen capacity to understand and address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]<br><br>Indicator 3.1: People participating in activities to improve awareness of climate risks and how to address them [# of people, disaggregated by sex and by vulnerable groups]                                                                                                                                                             | 200,000    |
| Outcome 1.2: Strengthened evidence-based financing for adaptation and ecosystem restoration                                                                                |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| Output 1.2.1: Evidence-based and climate-responsive financing models developed                                                                                             | Number of climate-responsive financing models developed and validated                                                                                                                                                                                                       | Output 2.1: Strengthened capacity of institutions to understand and better address climate risks                                                                                                                                          | Indicator 2.1: Institutions supported to strengthen capacity to understand and address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]                                                                                                                                                                                                                                                                                                                                                 | 200,000    |
| Output 1.2.2: Priority adaptation and restoration investments identified, cost-estimated and developed into investment portfolios                                          | Number of watershed investment portfolios prepared                                                                                                                                                                                                                          | Output 2.1: Strengthened capacity of institutions to understand and better address climate risks                                                                                                                                          | Indicator 2.1: Institutions supported to strengthen capacity to understand and address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]                                                                                                                                                                                                                                                                                                                                                 | 200,000    |
| Output 1.2.3: Financing mechanisms and resource mobilization strategies developed and presented to relevant stakeholders                                                   | Number of financing and resource-mobilisation packages developed and presented to financing actors                                                                                                                                                                          | Output 2.1: Strengthened capacity of institutions to understand and better address climate risks                                                                                                                                          | Indicator 2.1: Institutions supported to strengthen capacity to understand and address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]                                                                                                                                                                                                                                                                                                                                                 | 100,000    |
| Output 1.2.4: Capacity strengthened and awareness enhanced for planning and managing adaptation finance                                                                    | Number of institutions receiving training on adaptation finance planning and management, disaggregated by scale and sector<br><br>Number of people participating in adaptation finance capacity-building activities                                                         | Output 2.1: Strengthened capacity of institutions to understand and better address climate risks<br><br>Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities                        | Indicator 2.1: Institutions supported to strengthen capacity to understand and address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]<br><br>Indicator 3.1: People participating in activities to improve awareness of climate risks and how to address them [# of people, disaggregated by sex and by vulnerable groups]                                                                                                                                                             | 200,000    |
| Component 2: Implementation of adaption and restoration interventions with a focus on nature-based solutions and post-disaster risk reduction and recovery                 |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| Outcome 2.1: Improved community-led ecosystem restoration and climate-resilient risk reduction, with strengthened adaptive capacity of local authorities and civil society |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| Output 2.1.1: Priority pilot interventions identified, validated and prepared through site-specific assessments and studies                                                | Number of candidate pilot interventions cleared through site-specific technical, environmental, social and gender assessments<br><br>Number of local institutions and communities participating in the identification, prioritization and validation of pilot interventions | Output 5.1: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability<br><br>Output 3.3: Increased ownership of adaptation and climate risk reduction processes | Indicator 5.1: There: Ecosystems and natural resources targeted by activities to improve protection, restoration, and/or management [# of resources, disaggregated by type of ecosystem / natural resource area and by protection, restoration, and management]<br><br>Indicator 3.3: Number of local institutions and/or communities responsible for decision-making over how adaptation solutions are defined, prioritized, designed, and/or implemented [# of local institutions and/or communities, disaggregated by institutions and communities] | 800,000    |
| Output 2.1.2: Priority pilot interventions designed and implemented                                                                                                        | Hectares of ecosystems and natural resource areas brought under restoration, protection or improved management, disaggregated by type                                                                                                                                       | Output 5.1: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability<br><br>Output 4.1: Vulnerable development sector services and                             | Indicator 5.1: Ecosystems and natural resources targeted by activities to improve protection, restoration, and/or management [# of resources, disaggregated by type of ecosystem / natural resource area and by protection, restoration, and management]<br><br>Indicator 4.1: Development sector services strengthened to respond to climate variability and                                                                                                                                                                                          | 18,439,350 |

|                                                                                                              |                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                              |            |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|                                                                                                              | Number of water and land management services strengthened through climate-resilient interventions, disaggregated by sector and scale                                                                                                                           | infrastructure assets strengthened in response to climate change impacts, including variability                                                                                                                                                                 | change [# of sector services, disaggregated by sector and by scale]                                                                                                                                                                                                                                                                                          |            |
| Output 2.1.3: Local adaptive capacity strengthened and awareness enhanced                                    | Number of people completing capacity-development and stewardship programmes, disaggregated by sex and by vulnerable group<br><br>Number of people participating in community awareness and engagement activities, disaggregated by sex and by vulnerable group | Output 6.1: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability<br><br>Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities | Indicator 6.1: People receiving targeted support for new and/or improved livelihoods to manage climate risk [# of people, disaggregated by sex and by vulnerable groups]<br><br>Indicator 3.1: People participating in activities to improve awareness of climate risks and how to address them [# of people, disaggregated by sex and by vulnerable groups] | 200,000    |
| Output 2.1.4: Monitoring, evaluation and learning for pilot interventions                                    | Number of learning products documenting intervention results and replication guidance produced                                                                                                                                                                 | Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning                                                                                                                       | Indicator 3.2: Climate resilience knowledge products and/or tools developed and shared with stakeholders [# of products/tools, by sector]                                                                                                                                                                                                                    | 400,000    |
| <b>Component 3: Regional cooperation &amp; knowledge exchange</b>                                            |                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                              |            |
| <b>Outcome 3.1: Strengthened local, national and regional water and climate diplomacy and cooperation</b>    |                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                              |            |
| Output 3.1.1: Regional dialogue, coordination and knowledge exchange events and forums conducted             | Number of institutions participating in regional forums, technical exchanges and study visits, disaggregated by scale and type                                                                                                                                 | Output 2.1: Strengthened capacity of institutions to understand and better address climate risks                                                                                                                                                                | Indicator 2.1: Institutions supported to strengthen capacity to understand and address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]                                                                                                                                                       | 500,000    |
| Output 3.1.2: "Peace through Water" knowledge series produced and disseminated                               | Number of climate resilience knowledge products produced                                                                                                                                                                                                       | Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning                                                                                                                       | Indicator 3.2: Climate resilience knowledge products and/or tools developed and shared with stakeholders [# of products/tools, by sector]                                                                                                                                                                                                                    | 200,000    |
| Output 3.1.3: Regional Learning and Innovation Programme delivered                                           | Number of mayors, municipal leaders and practitioners completing the regional learning track, disaggregated by sex and by scale                                                                                                                                | Output 2.1: Strengthened capacity of institutions to understand and better address climate risks                                                                                                                                                                | Indicator 2.1: Institutions supported to strengthen capacity to understand and address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]                                                                                                                                                       | 100,000    |
| Output 3.1.4: Existing platforms and initiatives leveraged to support coordinated climate adaptation efforts | Number of existing regional and national platforms into which project data and tools are integrated<br><br>Number of municipal or institutional teams supported to prepare replication roadmaps or project concepts                                            | Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning<br><br>Output 2.1: Strengthened capacity of institutions to understand and better address climate risks               | Indicator 3.2: Climate resilience knowledge products and/or tools developed and shared with stakeholders [# of products/tools, by sector]<br><br>Indicator 2.1: Institutions supported to strengthen capacity to understand and address climate risks and resilience [# of institutions, disaggregated by scale, by sector, and by type of institution]      | 200,000    |
| <b>Total Output level grant amount</b>                                                                       |                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                              | 24,989,350 |

## PART IV: ENDORSEMENT BY GOVERNMENTS AND CERTIFICATION BY THE IMPLEMENTING ENTITY

### A. Record of endorsement on behalf of the government<sup>70</sup>

|                                                                           |                        |
|---------------------------------------------------------------------------|------------------------|
| <i>Dr. Tamara el Zein, Minister, Ministry of Environment, Lebanon</i>     | Date: (May, 13, 2026)  |
| <i>Dr. Aiman A. Soleiman, Minister, Ministry of Environment of Jordan</i> | Date: (June, 22, 2026) |

### B. Implementing Entity certification

<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.

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 (NDCs) emphasize ecosystem-based adaptation (EbA) in both countries, integrated water resource management, and gender-responsive climate resilience. Lebanon's Updated NDC 3.0 (2025) commits to reducing GHG emissions by up to 31% and highlights adaptation across water, agriculture, and ecosystems. It identifies the restoration of degraded land and watershed management as key national priorities. Similarly, Jordan's NDC 3.0 (2025) advances an economy-wide climate framework that integrates mitigation, adaptation, and resilience across sectors, with strong emphasis on water security, climate-resilient agriculture, urban systems, public health, and nature-based solutions, while progressing toward a net-zero pathway by 2050.<sup>71</sup> Both NDCs and associated strategies stress the importance of stakeholder engagement, public awareness, institutional coordination, and science-policy integration—all principles embedded in this project's approach ) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.



**Rafael Tuts**  
**Director, Global Solutions Division, UN-Habitat**  
**Implementing Entity Coordinator**

Date: (June, 24, 2026)

Tel. and email: +254-20-7623726 | raf.tuts@un.org

Project Contact Person: Yasmine Mostafa

Tel. And Email: yasmine.mostafa@un.org | +20 2 33380588 – 33380589

<sup>71</sup> Jordan and Lebanon NDCs – climatepromise.undp.org; UNFCCC submissions, 2025 (Lebanon), 2025 (Jordan).

# Annexes

## Annex A: Letters of Endorsements



Ref.No **7.2. 4143**  
Date **22. 6. 2026**

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

**Subject: Endorsement for "Transboundary Adaptation for Watershed Sustainability and Livelihoods – A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (TAWASUL)" Project Concept Note**

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

Accordingly, I am pleased to endorse the above concept note with support from the Adaptation Fund. If approved, the project will be implemented by UN-Habitat and executed by IUCN, Wadi NGO, the Ministry of Environment, the Ministry of Agriculture, and the Ministry of Planning and International Corporation.

Notwithstanding the foregoing, the Ministry of Environment expects that during the implementation, UN-Habitat will support the Ministry in ensuring the sustainable environmental impact of the project.

Kind regards,

**Minister of Environment**

**Dr. Aiman Abdalla Sleiman**



**REPUBLIC OF LEBANON  
MINISTRY OF ENVIRONMENT**

**THE MINISTER**

Beirut, **13/5/2026**  
Ref.: 1505/B

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

**Subject : Endorsement for "Transboundary Adaptation for Watershed Sustainability and Livelihoods – A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (TAWASUL)" Project**

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

Accordingly, I am pleased to endorse the above project proposal for submission the Adaptation Fund. If approved, the project will be implemented in Lebanon by UN-Habitat and executed by the National Council for Scientific Research - Lebanon (CNRS-L), the union of municipalities and the Society for the Protection of Nature in Lebanon (SPNL).

Notwithstanding the foregoing, the Ministry of Environment expects that during the implementation, the UN-Habitat will support the Ministry in ensuring sustainable environmental impact of the project.

Sincerely,

**Minister of Environment  
Tamara ElZein, PhD**



Cc: – UN-HABITAT - Country Office – Lebanon  
– MoE - Service of Environmental Technology – Department of Air Quality  
– MoE - Climate Change Projects

Ministry of Environment, Lazarieh Center, 8<sup>th</sup> Floor, Block A-4 New  
P.O.Box: 11/2727; Beirut-Lebanon. Tel: +(961)-1-976555 or 4-Digit Number: 1789; Fax: +(961)-1-976534  
Home Page: [www.moe.gov.lb](http://www.moe.gov.lb)

## Annex B: Jordan Request for IE to be EE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| <div data-bbox="487 147 558 261"></div> <div data-bbox="426 264 615 287" data-label="Text"><p>Ministry of Environment</p></div> <div data-bbox="117 313 329 373" data-label="Text"><p>Ref.No 7-2-5636<br/>Date 11-8-2026</p></div> <div data-bbox="178 370 501 448" data-label="Text"><p>The Adaptation Fund Board<br/>c/o Adaptation Fund Board Secretariat<br/>Email: Secretariat@Adaptation-Fund.org<br/>Fax: 202 522 3240/5</p></div> <div data-bbox="178 482 873 545" data-label="Text"><p>Subject: Request and Justification for the Implementing Entity "UN-Habitat Jordan" to Provide Execution Services for the Project "Transboundary Adaptation for Watershed Sustainability and Livelihoods – A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (TAWASUL)"</p></div> <div data-bbox="178 573 877 639" data-label="Text"><p>In my capacity as designated authority for the Adaptation Fund in Jordan, and further to our endorsement letter to the above concept note with support from the Adaptation Fund, dated June 22, 2026, I hereby, submit an explicit request regarding its implementation arrangements.</p></div> <div data-bbox="178 647 877 769" data-label="Text"><p>On behalf of the Government of Jordan, I request the Adaptation Fund Board to approve that <b>UN-Habitat</b> (the selected Implementing Entity) also act as the Executing Entity, or provide direct execution services, through UN-Habitat's Jordan Country Office for the Jordan-related activities under Component 1: Multi-Layered Vulnerability Assessments, Climate-Mainstreamed Master Plans, Restoration Frameworks and Financing Models; and UN-Habitat's Regional Office for Arab States (ROAS) for Component 3: Regional Cooperation and Knowledge Exchange.</p></div> <div data-bbox="178 777 399 800" data-label="Section-Header"><h3>1. Context and Justification</h3></div> <div data-bbox="178 799 875 841" data-label="Text"><p>Per the operational policies and guidelines of the Adaptation Fund, we have determined that this dual role is necessary due to the following specific country-level circumstances:</p></div> <div data-bbox="197 854 875 1122" data-label="List-Group"><ul style="list-style-type: none"><li>• <b>Specific Technical Expertise:</b> UN-Habitat Jordan possess a proven track record, strong contextual experience, and readily deployable technical personnel specializing in multi-layered vulnerability assessments, spatial data management and analysis, the UN-Habitat RISE-UP MVA methodology for resilience action planning, and climate-responsive adaptation and master planning. This expertise has been demonstrated through locally led initiatives; the Climate-Smart Pathways for an Agile and Resilient Economy (CARE) programme in Madaba; and the global programme Accelerating the Implementation of the Paris Agreement by Building for Climate Resilience of the Urban Poor (RISE UP) in Bolivia, Colombia, Ethiopia, Jordan, and Tunisia, including its application in Sahab, Jordan.</li><li>• <b>Urgency and Readiness:</b> Utilizing <b>UN-Habitat Jordan</b> for execution services ensures immediate project start-up. It eliminates the extended delays associated with UN and/or national competitive bidding for an alternative administrative entity.</li></ul></div> <div data-bbox="401 1263 638 1282" data-label="Text"><p>THE HASHEMITE KINGDOM OF JORDAN</p></div> <div data-bbox="203 1284 840 1305" data-label="Text"><p>TEL : +962 6 5560113 FAX : +962 6 5516377 P.O.Box : 1408 AMMAN 11941 JORDAN www.moenv.gov.jo</p></div> | <div data-bbox="1432 147 1503 261"></div> <div data-bbox="1369 264 1560 287" data-label="Text"><p>Ministry of Environment</p></div> <div data-bbox="1066 313 1270 373" data-label="Text"><p>Ref.No 7-2-5636<br/>Date 11-8-2026</p></div> <div data-bbox="1178 357 1824 505" data-label="Text"><p><b>Regional Mandate and Convening Capacity:</b> UN-Habitat ROAS has the regional mandate, technical networks, existing regional platforms, accumulated knowledge, and established tools required to facilitate regional cooperation, policy dialogue, peer learning, knowledge exchange, and dissemination across Jordan, Lebanon, and the wider Arab region. Its direct involvement will ensure that the project builds on existing resources and that the knowledge, tools, and lessons it generates are effectively documented, shared through established platforms, and promoted for replication and scaling-up.</p></div> <div data-bbox="1123 518 1512 544" data-label="Section-Header"><h3>2. Cost-Effectiveness and Budgetary Compliance</h3></div> <div data-bbox="1123 539 1822 633" data-label="Text"><p>Allowing the IE to perform these execution services offers exceptional cost-effectiveness. In strict compliance with Adaptation Fund guidelines for an IE acting as an EE, the requested execution costs for these services have been strictly capped at <b>1.5%</b> of the total project budget before the implementing entity fees. The Concept Note budget breakdown reflects this statutory ceiling</p></div> <div data-bbox="1123 647 1455 672" data-label="Section-Header"><h3>3. Separation of Functions and Oversight</h3></div> <div data-bbox="1123 669 1822 708" data-label="Text"><p>To safeguard against conflicts of interest, <b>UN-Habitat Jordan</b> ensures a clear separation of functions within its institutional structure:</p></div> <div data-bbox="1148 706 1822 820" data-label="List-Group"><ul style="list-style-type: none"><li>• The personnel handling <b>project cycle management and oversight (IE functions)</b> are completely independent of the team managing <b>day-to-day project execution (EE functions)</b></li><li>• Separate internal reporting lines and financial accounts will be maintained to guarantee transparent tracking and independent monitoring</li></ul></div> <div data-bbox="1123 833 1822 876" data-label="Text"><p>We believe this arrangement maximizes the impact of the grant funds and ensures the successful, timely delivery of climate resilience benefits to our vulnerable communities.</p></div> <div data-bbox="1123 888 1640 912" data-label="Text"><p>Thank you for your continued support of our national adaptation efforts.</p></div> <div data-bbox="1123 943 1260 969" data-label="Text"><p>Yours Sincerely,</p></div> <div data-bbox="1123 990 1356 1016" data-label="Text"><p>Minister of Environment</p></div> <div data-bbox="1123 1062 1339 1086" data-label="Text"><p>Dr. Aiman A. Soleiman</p></div> <div data-bbox="1346 1258 1589 1278" data-label="Text"><p>THE HASHEMITE KINGDOM OF JORDAN</p></div> <div data-bbox="1150 1278 1785 1300" data-label="Text"><p>TEL : +962 6 5560113 FAX : +962 6 5516377 P.O.Box : 1408 AMMAN 11941 JORDAN www.moenv.gov.jo</p></div> |
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## Lebanon Request for IE to be EE

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**Annex C: Mapping Of National and Regional Initiatives, Projects & Studies**

# MAPPING OF NATIONAL AND REGIONAL INITIATIVES, PROJECTS & STUDIES

| Project / Initiative / Study                                                                                                                                                        | Donor / Funder                                                      | Start and End Dates      | Status        | Location                                                                                       | Sector/ Focus                                                                                             | Implementing Entity                                                           | Brief Description on objective and interventions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Synergy/ Lessons learned/ Complementarities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Notes/Links                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------|---------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Building Resilience to Cope with Climate Change in Jordan through Improving Water Use Efficiency in the Agriculture Sector</p> <p><b>Jordan</b></p>                              | Green Climate Fund (GCF)                                            | 2021–2028                | Ongoing       | Dead Sea Basin: Karak, Madaba, Tafleh, Ma'an                                                   | Climate, Water and agriculture                                                                            | FAO/ UNDP / ministries of Environment, Agriculture, and Water and Irrigation. | <p><b>Objective:</b> The objective of the project is to support the objectives of the Hashemite Kingdom of Jordan's climate change policy (2013-2020) by building the adaptive capacity of communities and institutions in Jordan, addressing the needs of vulnerable groups, increase the resilience of water management systems as well as agricultural resources to climate change.</p> <p><b>Interventions:</b></p> <p><b>Water Harvesting &amp; Storage:</b> Installing 120 rooftop rainwater harvesting systems and building storage for treated wastewater.</p> <p><b>Irrigation Technology:</b> Introducing modern irrigation systems and water-saving technologies in farming.</p> <p><b>Treated Wastewater Use:</b> Upgrading infrastructure to safely use treated wastewater for agriculture, specifically expanding its application to farms.</p> <p><b>Groundwater Management:</b> Reducing pressure on aquifers by promoting alternative water sources.</p> <p><b>Capacity Building:</b> Training farmers on drought-tolerant crops and providing skills to rural women (the "climate-wise women" initiative).</p> | TAWASUL has been designed to complement the ongoing GCF project in A-Karak by building on its investments in community capacity development while addressing broader watershed governance, ecosystem restoration, and climate-resilient planning needs that are not covered under the GCF project. TAWASUL will build on the GCF projects established Farmer Field Schools (FFS), e-extension platform, and network of Women Climate Change Agents to disseminate knowledge on watershed management, nature-based solutions (NbS), sustainable land and water management, and climate adaptation.                                                                                                                                                                                                                                                                                                                                                                                                                                         | <a href="https://jordan.un.org/en/122755-jordan-receives-25-million-grant-enhance-climate-change-adaptation">https://jordan.un.org/en/122755-jordan-receives-25-million-grant-enhance-climate-change-adaptation</a>                                                                                                                                                                                                                                                                                                                    |
| <p>Cash for Work: Protection of Water Dams in Jordan</p> <p><b>Jordan</b></p>                                                                                                       | German Government (BMZ)                                             | 2018-2027                | Ongoing       | the King Talal, Mujib, Wala, Zeglab, Kofraja, Wadi Arab, Karak, Zarqa Ma'een and Alwehedi dams | Water                                                                                                     | Jordan Valley Authority                                                       | <p><b>Objective:</b> Labour-intensive measures preserve the storage capacities of the dams and reduce erosion in the dam catchment areas. The short-term employment opportunities improve living conditions in host communities.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | TAWASUL complements the GIZ project by building on its practical experience in implementing soil erosion control and watershed protection measures. While the GIZ project focused on restoring dam catchments and implementing labour-intensive interventions, TAWASUL addresses complementary gaps by advancing integrated watershed governance through GIS-based decision-support systems, vulnerability assessments, climate-mainstreamed watershed master plans, and long-term ecosystem restoration approaches. Lessons learned from the GIZ project on erosion control and community engagement will guide the prioritization and design of TAWASUL's nature-based solutions and restoration interventions.                                                                                                                                                                                                                                                                                                                         | <a href="https://www.giz.de/en/projects/protection-water-dams-jordan-through-labor-intensive-activities">https://www.giz.de/en/projects/protection-water-dams-jordan-through-labor-intensive-activities</a>                                                                                                                                                                                                                                                                                                                            |
| <p>Sustainable Wastewater Management in Jordan</p> <p><b>Jordan</b></p>                                                                                                             | German Government / KfW                                             | Project approved in 2024 | -             | Nationwide (incl. Karak & southern governorates)                                               | Water                                                                                                     | Ministry of Water & Irrigation / WAJ                                          | <p><b>Objective:</b> Improve and expand wastewater services, particularly reducing reliance on cesspits and improving infrastructure in underserved areas.</p> <p>In A-Karak, the project involves construction of sewer networks, pumping stations, and force mains</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TAWASUL complements the KfW Sustainable Wastewater Management Project by contributing to Jordan's broader efforts to enhance water security, climate resilience, and sustainable management of water resources. While the KfW project focuses on expanding centralized wastewater collection and treatment systems, improving sanitation services, and increasing the reuse of treated wastewater, TAWASUL addresses complementary aspects of water resilience through broader climate adaptation and sustainable water management approaches. Both projects include interventions in Karak Governorate; however, they pursue different objectives and target distinct areas of support, ensuring complementarity and avoiding duplication. Together, the two initiatives contribute to increasing the availability and sustainable use of alternative water resources, reducing pressure on limited conventional water supplies, and strengthening Jordan's capacity to respond to growing water scarcity and climate change challenges. | <a href="https://jordantimes.com/news/local/new-wastewater-project-improve-sanitation-services-environmental-conditions-jordan">https://jordantimes.com/news/local/new-wastewater-project-improve-sanitation-services-environmental-conditions-jordan</a>                                                                                                                                                                                                                                                                              |
| <p>Jordan Water Sector Efficiency Project</p> <p><b>Jordan</b></p>                                                                                                                  | World Bank + AFD + GCF                                              | 2023-2028                | Ongoing       | Multiple governorates incl. Karak                                                              | Water                                                                                                     | Ministry of Water & Irrigation / Water Companies                              | <p><b>Objective:</b> Reduces non-revenue water losses, improves energy efficiency in utilities, and builds climate resilience across Jordan's water infrastructure.</p> <p><b>Components:</b></p> <ul style="list-style-type: none"> <li>-Sustainable Non-Renewable Water Reduction (\$209 million): Modernizing supply networks and distribution reservoirs to reduce water loss.</li> <li>-Increased Energy Efficiency (\$54 million): Reducing electricity costs and greenhouse gas emissions in the water sector.</li> <li>-Water Security Measures (\$27 million): Strengthening drought management systems and water allocation planning.</li> <li>-Project Management (\$10 million): Support for implementation and coordination between national water agencies.</li> </ul>                                                                                                                                                                                                                                                                                                                                             | Both projects address the increasing impacts of climate change on water availability and recognize the need for sustainable management of limited water resources. Although both initiatives include activities in Karak Governorate, their objectives and interventions are distinct. The Jordan Water Sector Efficiency Project targets improvements in water sector operations and infrastructure performance, whereas TAWASUL focuses on strengthening climate resilience through measures that enhance water retention, reduce climate-related risks, and support sustainable water management at community and ecosystem levels.                                                                                                                                                                                                                                                                                                                                                                                                    | <a href="https://documents1.worldbank.org/curated/en/099052623124518529/pdf/BO380047860310db097bc069722e980ee3.pdf">https://documents1.worldbank.org/curated/en/099052623124518529/pdf/BO380047860310db097bc069722e980ee3.pdf</a>                                                                                                                                                                                                                                                                                                      |
| <p>Guidance for using the IUCN Global Standard for Nature-based Solutions</p> <p><b>World wide</b></p>                                                                              | IUCN                                                                | 2024                     | First edition | World wide                                                                                     | Framework/ Guidance on NBS management                                                                     | IUCN                                                                          | This Guidance for using the IUCN Global Standard for Nature-based Solutions accompanies the Global Standard to provide the scientific basis and guidance for user                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | The guidance provides a valuable framework for designing and assessing NbS interventions, ensuring environmental integrity, and long-term sustainability. TAWASUL complements this framework by translating NbS principles into practical climate adaptation measures addressing water-related risks in Jordan, while benefiting from IUCN's guidance on quality assurance, adaptive management, and effective implementation of nature-based approaches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <a href="https://portals.iucn.org/library/node/51562">https://portals.iucn.org/library/node/51562</a>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>Sustainable Use of Ecosystem Services (Jordan Rift Valley)</p> <p><b>Jordan</b></p>                                                                                              | BMZ                                                                 | 2014-2019                | Completed     | Jordan Rift Valley — northern border to Karak                                                  | Ecosystem                                                                                                 | GIZ / Ministry of Environment                                                 | <p><b>Objective:</b> To embed the value of biodiversity and ecosystem services (such as water regulation, erosion control, and pollination) into Jordanian policies, land-use planning, and economic decisions.</p> <p><b>Key Activities:</b></p> <ul style="list-style-type: none"> <li>-<b>Capacity Building:</b> Creating networks between ministries, NGOs, scientists, and the agricultural sector.</li> <li>-<b>Strategy Development:</b> Developing ecological climate change adaptation strategies (Resistance, Resilience, Transition) for protected areas</li> <li>-<b>Sustainability:</b> Promoting Green Infrastructure (GI) and the sustainable use of ecosystem services to enhance community resilience against climate change.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                        | TAWASUL builds on the knowledge and frameworks developed through the GIZ project, including guidelines for integrating ecosystem services into national biodiversity planning. While avoiding duplication, TAWASUL applies these principles through climate adaptation interventions, focusing on ecosystem restoration, sustainable water management, and enhancing resilience to climate-related risks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <a href="https://www.giz.de/en/projects/sustainable-use-ecosystem-services-jordan~:text=Info2addition%20to%20these%20components%2C%20the%20project,for%20ecosystems%20services%20measuring%2C%20awareness%20and%20policy">https://www.giz.de/en/projects/sustainable-use-ecosystem-services-jordan~:text=Info2addition%20to%20these%20components%2C%20the%20project,for%20ecosystems%20services%20measuring%2C%20awareness%20and%20policy</a>                                                                                          |
| <p>Second Greater Beirut Water Supply (SGBWSP)</p> <p><b>Lebanon</b></p>                                                                                                            | World Bank                                                          | 2025 – 2032              | Ongoing       | Awali to Greater Beirut / Mount Lebanon                                                        | Infrastructure / Water                                                                                    | CDR / BMLWE                                                                   | Completion of the bulk water conveyor system, tunnels (24km), and Wardanieh Water Treatment Plant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | TAWASUL creates synergies with the SGBWSP by addressing the broader climate and environmental resilience of the Awal Watershed. While the SGBWSP focuses on major water supply infrastructure and service delivery, TAWASUL adopts an integrated watershed-scale approach to climate risk, ecosystem restoration, biodiversity conservation, sustainable land and water management, and nature-based solutions, thereby strengthening watershed resilience and supporting long-term water security.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <a href="https://documents.worldbank.org/od/publication/document/s-reports/documentdetail/09911232164520542">https://documents.worldbank.org/od/publication/document/s-reports/documentdetail/09911232164520542</a><br><br><a href="https://www.worldbank.org/en/news/press-release/2025/01/15/new-world-bank-program-to-improve-water-supply-and-quality-and-advance-water-sector">https://www.worldbank.org/en/news/press-release/2025/01/15/new-world-bank-program-to-improve-water-supply-and-quality-and-advance-water-sector</a> |
| <p>Eshmoun Valley Archaeological Survey</p> <p><b>Lebanon</b></p>                                                                                                                   | Academic / Gov                                                      | 2004 – 2008 (Archives)   | Completed     | Lower and Middle Awali Basin                                                                   | Cultural Heritage                                                                                         | Polish-Lebanese Mission (PCMA UW / DGA)                                       | Systematic mapping of 110+ archaeological sites from the river mouth to the upper valley.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The Eshmoun Valley Archaeological Survey provides useful baseline knowledge on cultural heritage assets within the Lower and Middle Awali Basin. TAWASUL can take this existing information into account in watershed planning, vulnerability assessments, and the identification of restoration or adaptation interventions, helping to avoid impacts on known heritage assets and supporting an integrated approach that considers environmental and cultural values.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <a href="https://pcma.uw.edu.pl/badania/sezon-po-sezonie/es/moun-lebanon">https://pcma.uw.edu.pl/badania/sezon-po-sezonie/es/moun-lebanon</a><br><br><a href="https://digi.ub.uni-heidelberg.de/diglit/pam/6/0443/image.info">https://digi.ub.uni-heidelberg.de/diglit/pam/6/0443/image.info</a>                                                                                                                                                                                                                                       |
| <p>Enhance Conservation of the Unique Biodiversity in the Bisi River Basin – Lebanon</p> <p><b>Lebanon</b></p>                                                                      | Critical Ecosystem Partnership Fund (CEPF) / BirdLife International | 2023 – 2024              | Completed     | Bisri Valley & Lower Awali                                                                     | Biodiversity conservation / Water resources / Ecosystem protection                                        | TERRE Liban                                                                   | Community-based conservation areas (Hima) to protect migratory bird corridors and aquatic life.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TAWASUL can build on the biodiversity, water and socio-economic knowledge generated through this initiative while expanding the approach from site-level biodiversity conservation to integrated watershed-scale climate resilience. Existing assessments and lessons can inform TAWASUL's vulnerability analysis and prioritization of ecosystem restoration and nature-based solutions, while TAWASUL will further integrate climate risk, spatial planning, sustainable water and land management, and investment-oriented restoration across the Awali Watershed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <a href="https://d2910ur8ql1q1.cloudfront.net/sites/default/files/fin-al-report-112308.pdf">https://d2910ur8ql1q1.cloudfront.net/sites/default/files/fin-al-report-112308.pdf</a>                                                                                                                                                                                                                                                                                                                                                      |
| <p>HawkaMaa-EU (Research Grant Program)</p> <p><b>Lebanon</b></p>                                                                                                                   | European Union                                                      | 2022 – 2026              | Ongoing       | National (including Awali watershed)                                                           | Water Governance                                                                                          | ACTED / LEWAP / AUE                                                           | Research on groundwater threats, phytoremediation, and GIS-based water sustainability policies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TAWASUL can build on the methodologies, lessons learned and knowledge generated through HawkaMaa-EU on integrated river basin management, water balance modeling, stakeholder engagement and evidence-based water governance. While HawkaMaa-EU interventions targeted other Lebanese river basins, these experiences can inform TAWASUL's integrated planning and decision-support approach for the Awali Watershed, while TAWASUL expands the scope to climate vulnerability, ecosystem and biodiversity restoration, nature-based solutions, and investment-oriented watershed resilience planning.                                                                                                                                                                                                                                                                                                                                                                                                                                    | <a href="https://bdi.pseau.eu/outils/ouvrages/hawkamaa_eu_low_ark_an_improved_integrated_understanding_of_the_risks_on_groundwater_in_karst_water_catchment_importance_of_monitoring_water_systems_in_decision_making_2023.pdf">https://bdi.pseau.eu/outils/ouvrages/hawkamaa_eu_low_ark_an_improved_integrated_understanding_of_the_risks_on_groundwater_in_karst_water_catchment_importance_of_monitoring_water_systems_in_decision_making_2023.pdf</a>                                                                              |
| <p>"Nohye el Ared" (Let's Revive the Land)</p> <p><b>Lebanon</b></p>                                                                                                                | Various                                                             | Ongoing                  | Ongoing       | Upper Awali (Bisri) and coastal river mouth                                                    | Agroecology / Urban agriculture / Community engagement                                                    | Community-led initiative                                                      | Promoting community-based agroecology, sustainable food production, and rehabilitation of underused urban land.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TAWASUL can draw on the initiative's experience in community-based agroecology, sustainable land management, and local engagement, particularly for participatory and climate-resilient agricultural approaches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <a href="https://www.kfpc-lebanon.com/les/revive-territoire/10917?interactions...&amp;fbclid=IwAR17boell.org/at/nhww-alard-fy-syda-hdygt-ahdyt">https://www.kfpc-lebanon.com/les/revive-territoire/10917?interactions...&amp;fbclid=IwAR17boell.org/at/nhww-alard-fy-syda-hdygt-ahdyt</a>                                                                                                                                                                                                                                              |
| <p>Blessed Valley Initiative</p> <p><b>Lebanon</b></p>                                                                                                                              | Crowdfunded / Private                                               | Ongoing                  | Ongoing       | Bisri Valley                                                                                   | Nature conservation / Cultural heritage / Local livelihoods                                               | Local Community / NGOs                                                        | Safeguarding the cultural landscape and supporting indigenous livelihoods in the valley.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TAWASUL can build on the initiative's local knowledge and community engagement in the Bisri Valley, particularly for ecosystem restoration, native vegetation, cultural landscape conservation, and participatory watershed planning.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <a href="https://blessedvalley.org/about-us">https://blessedvalley.org/about-us</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>Implementing the 2030 Agenda for Water Efficiency/Productivity and Water Sustainability in NENA Countries (WEPS-NENA)</p> <p><b>Lebanon (as one of eight NENA countries)</b></p> | Swedish International Development Cooperation Agency (SIDA)         | 2017 – 2022              | Completed     | National / Regional Basin scale                                                                | Agriculture / Water                                                                                       | FAO                                                                           | Improving sustainable water management through water accounting, water governance, irrigation efficiency and agricultural water productivity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | TAWASUL can build on the project's methodologies, data and lessons on water accounting, water governance and efficient water use, adapting relevant approaches to support integrated climate-resilient planning and water management in the Awali Watershed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <a href="https://www.fao.org/neareast/news/details/FAO-hosts-the-final-steering-committee-for-the-Water-Efficiency-Productivity-and-Sustainability-project-for-the-NENA-region/en">https://www.fao.org/neareast/news/details/FAO-hosts-the-final-steering-committee-for-the-Water-Efficiency-Productivity-and-Sustainability-project-for-the-NENA-region/en</a>                                                                                                                                                                        |
| <p>BioConnect – Improving biodiversity conservation and landscape connectivity in Lebanon</p> <p><b>Lebanon</b></p>                                                                 | European Union                                                      | 2022–2025                | Completed     | National (Multiple areas in Lebanon)                                                           | Biodiversity conservation / Ecosystem restoration / Landscape connectivity / Community-based conservation | SPNL                                                                          | Strengthening biodiversity conservation, ecosystem connectivity, and community-based conservation through the Hima approach.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | TAWASUL can build on the approaches, methodologies and lessons generated through BioConnect on biodiversity monitoring, ecosystem restoration, ecological connectivity, community-based conservation and local environmental governance. Although BioConnect targeted specific conservation sites across Lebanon rather than the Awali Watershed as a whole, its experience can inform TAWASUL's biodiversity-sensitive watershed planning, nature-based solutions and participatory restoration approaches, while TAWASUL expands these practices within an integrated climate-resilient watershed framework.                                                                                                                                                                                                                                                                                                                                                                                                                            | <a href="https://www.spnl.org/bioconnect">https://www.spnl.org/bioconnect</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## Annex A: Letters of Endorsements



Ministry of Environment

Ref.No **7.2.4143**  
Date **22.6.2026**

The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: [Secretariat@Adaptation-Fund.org](mailto:Secretariat@Adaptation-Fund.org)  
Fax: 202 522 3240/5

**Subject:** Endorsement for "Transboundary Adaptation for Watershed Sustainability and Livelihoods – A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (TAWASUL)" Project Concept Note

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

Accordingly, I am pleased to endorse the above concept note with support from the Adaptation Fund. If approved, the project will be implemented by UN-Habitat and executed by IUCN, Wadi NGO, the Ministry of Environment, the Ministry of Agriculture, and the Ministry of Planning and International Cooperation.

Notwithstanding the foregoing, the Ministry of Environment expects that during the implementation, UN-Habitat will support the Ministry in ensuring the sustainable environmental impact of the project.

Kind regards,

Minister of Environment

Dr. Aiman Abdalla Saleiman



REPUBLIC OF LEBANON  
MINISTRY OF ENVIRONMENT  
THE MINISTER

Beirut, **13/5/2026**  
Ref.: 1505/B

The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: [Secretariat@Adaptation-Fund.org](mailto:Secretariat@Adaptation-Fund.org)  
Fax: 202 522 3240/5

**Subject:** Endorsement for "Transboundary Adaptation for Watershed Sustainability and Livelihoods – A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (TAWASUL)" Project

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

Accordingly, I am pleased to endorse the above project proposal for submission to the Adaptation Fund. If approved, the project will be implemented in Lebanon by UN-Habitat and executed by the National Council for Scientific Research - Lebanon (CNRS-L), the union of municipalities and the Society for the Protection of Nature in Lebanon (SPNL).

Notwithstanding the foregoing, the Ministry of Environment expects that during the implementation, the UN-Habitat will support the Ministry in ensuring sustainable environmental impact of the project.

Sincerely,

Minister of Environment  
Tamara ElZein, PhD



Cc: – UN-HABITAT - Country Office – Lebanon  
– MoE - Service of Environmental Technology – Department of Air Quality  
– MoE - Climate Change Projects

Ministry of Environment, Lazarieh Center, 8<sup>th</sup> Floor, Block A-4 New  
P.O.Box: 11/2727; Beirut-Lebanon. Tel: +(961)-1-976555 or 4-Digit Number: 1789; Fax: +(961)-1-976534  
Home Page: [www.moe.gov.lb](http://www.moe.gov.lb)

## Annex B: Jordan Request for IE to be EE



Ministry of Environment

Ref.No 7-2-5636  
Date 11-8-2026

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

Subject: Request and Justification for the Implementing Entity "UN-Habitat Jordan" to Provide Execution Services for the Project "Transboundary Adaptation for Watershed Sustainability and Livelihoods – A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (TAWASUL)"

In my capacity as designated authority for the Adaptation Fund in Jordan, and further to our endorsement letter to the above concept note with support from the Adaptation Fund, dated June 22, 2026, I hereby, submit an explicit request regarding its implementation arrangements.

On behalf of the Government of Jordan, I request the Adaptation Fund Board to approve that **UN-Habitat** (the selected Implementing Entity) also act as the Executing Entity, or provide direct execution services, through UN-Habitat's Jordan Country Office for the Jordan-related activities under Component 1: Multi-Layered Vulnerability Assessments, Climate-Mainstreamed Master Plans, Restoration Frameworks and Financing Models; and UN-Habitat's Regional Office for Arab States (ROAS) for Component 3: Regional Cooperation and Knowledge Exchange.

### 1. Context and Justification

Per the operational policies and guidelines of the Adaptation Fund, we have determined that this dual role is necessary due to the following specific country-level circumstances:

- **Specific Technical Expertise:** UN-Habitat Jordan possess a proven track record, strong contextual experience, and readily deployable technical personnel specializing in multi-layered vulnerability assessments, spatial data management and analysis, the UN-Habitat RISE-UP MVA methodology for resilience action planning, and climate-responsive adaptation and master planning. This expertise has been demonstrated through locally led initiatives; the Climate-Smart Pathways for an Agile and Resilient Economy (CARE) programme in Madaba; and the global programme Accelerating the Implementation of the Paris Agreement by Building for Climate Resilience of the Urban Poor (RISE UP) in Bolivia, Colombia, Ethiopia, Jordan, and Tunisia, including its application in Sahab, Jordan.
- **Urgency and Readiness:** Utilizing **UN-Habitat Jordan** for execution services ensures immediate project start-up. It eliminates the extended delays associated with UN and/or national competitive bidding for an alternative administrative entity.

THE HASHEMITE KINGDOM OF JORDAN

TEL : +962 6 5560113 FAX : +962 6 5516377 P.O.Box : 1408 AMMAN 11941 JORDAN www.moenv.gov.jo



Ministry of Environment

Ref.No 7-2-5636  
Date 11-8-2026

**Regional Mandate and Convening Capacity:** UN-Habitat ROAS has the regional mandate, technical networks, existing regional platforms, accumulated knowledge, and established tools required to facilitate regional cooperation, policy dialogue, peer learning, knowledge exchange, and dissemination across Jordan, Lebanon, and the wider Arab region. Its direct involvement will ensure that the project builds on existing resources and that the knowledge, tools, and lessons it generates are effectively documented, shared through established platforms, and promoted for replication and scaling-up.

### 2. Cost-Effectiveness and Budgetary Compliance

Allowing the IE to perform these execution services offers exceptional cost-effectiveness. In strict compliance with Adaptation Fund guidelines for an IE acting as an EE, the requested execution costs for these services have been strictly capped at 1.5% of the total project budget before the implementing entity fees. The Concept Note budget breakdown reflects this statutory ceiling

### 3. Separation of Functions and Oversight

To safeguard against conflicts of interest, **UN-Habitat Jordan** ensures a clear separation of functions within its institutional structure:

- The personnel handling **project cycle management and oversight (IE functions)** are completely independent of the team managing **day-to-day project execution (EE functions)**
- Separate internal reporting lines and financial accounts will be maintained to guarantee transparent tracking and independent monitoring

We believe this arrangement maximizes the impact of the grant funds and ensures the successful, timely delivery of climate resilience benefits to our vulnerable communities.

Thank you for your continued support of our national adaptation efforts.

Yours Sincerely,

Minister of Environment

Dr. Aiman A. Soleiman

THE HASHEMITE KINGDOM OF JORDAN

TEL : +962 6 5560113 FAX : +962 6 5516377 P.O.Box : 1408 AMMAN 11941 JORDAN www.moenv.gov.jo



**Revised PFG Submission Form<sup>1</sup> (additions in red)**

**Project Formulation Grant (PFG)**

**Submission Date:** 12<sup>th</sup> of August 2026

**Adaptation Fund Project ID:**

**Country/ies:** Lebanon and Jordan

**Title of Project/Programme:** Transboundary Adaptation for Watershed Sustainability and Livelihoods"–  
A Regional Nature-Based Solutions Initiative in Lebanon and Jordan (Project acronym: TAWASUL)

**Type of IE (NIE/RIE/MIE):** MIE

**Implementing Entity:** UN-Habitat

**Executing Entity/ies:** UN-Habitat

**A. Project Preparation Timeframe**

|                               |                                  |
|-------------------------------|----------------------------------|
| <b>Start date of PFG</b>      | 1 <sup>st</sup> of December 2026 |
| <b>Completion date of PFG</b> | 30 <sup>th</sup> of August 2027  |

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

| <b>List of Proposed Project Preparation Activities</b>                                                                                 | <b>Output of the PFG Activities</b>                                                                                                        | <b>US\$ Amount</b> | <b>Budget note<sup>2</sup></b>                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Development of the analytical framework, methodology, and key indicators for vulnerability assessment, intervention prioritization. | Analytical framework, assessment methodology, and indicators established to guide project design, prioritization, and results measurement. | 10,000 USD         | Covers technical expertise, methodology development, indicator selection, and validation and will be executed through UN-Habitat in cooperation with local/ regional/ international consultants if necessary. |
| 2. Technical studies, required assessments and analysis including environmental,                                                       | Technical feasibility studies and assessments                                                                                              | 35,000 USD         | Covers technical studies, field investigations, feasibility assessments, environmental and social safeguards, gender                                                                                          |

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

<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.

|                                                                |                                                                                                                                                                                                                      |              |                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| social, gender, and safeguard assessments                      |                                                                                                                                                                                                                      |              | assessment, and preparation of required AF safeguard documents and will be executed through UN-Habitat in cooperation with local/ regional/ international consultants if necessary.                                                                                                                           |
| 3. Stakeholders Consultations & Validation meetings, workshops | Consultation meetings and validation workshops are organized at the national, regional, and local levels in both countries, consultation reports, stakeholder inputs, and validated project intervention priorities. | 20,000 USD   | Covers national, local, and regional consultations, workshops, focus groups, and validation meetings with key stakeholders and vulnerable groups and will be executed through UN-Habitat support teams.                                                                                                       |
| 4. Translation and Interpretation Services                     | Bilingual project documentation and consultation materials produced to support stakeholder engagement, validation, and proposal submission.                                                                          | 8,000 USD    | Covers translation, editing, proofreading, interpretation services, and the production of bilingual project documents, consultation materials, and proposal outputs required for stakeholder engagement, validation, and submission processes.                                                                |
| 5. Full Proposal Preparation & Endorsement                     | Adaptation Fund Full Proposal, results framework, implementation arrangements, M&E framework, and endorsement package finalized and submitted.                                                                       | 35,000 USD   | Covers drafting, coordination with local, national and regional stakeholders and designated authorities, validation consultations, and finalization and submission of the full proposal, and will be executed through UN-Habitat in cooperation with local/ regional/ international consultants if necessary. |
| IE Fees                                                        | Project formulation oversight, technical guidance                                                                                                                                                                    | 12,000       |                                                                                                                                                                                                                                                                                                               |
| <b>Total Project Formulation Grant</b>                         |                                                                                                                                                                                                                      | 120, 000 USD |                                                                                                                                                                                                                                                                                                               |

**PFG activities and justifications:**

1. **Development of the analytical framework, methodology, and key indicators for vulnerability assessment and intervention prioritization:** This activity will develop a harmonized analytical framework, methodology, and indicator system to guide vulnerability assessments, hotspot identification, intervention prioritization, and project monitoring across both watersheds. It will ensure a consistent, evidence-based approach that integrates climate, ecosystem, urban, governance, and gender dimensions. **Funding justification:** Covers technical expertise, methodology development, indicator selection, coordination meetings, and stakeholder validation workshops in both countries.
2. **Technical studies required assessments and analysis including environmental, social, gender, and safeguard assessments:** This activity will undertake the technical studies, feasibility assessments, and analyses required to inform project design and intervention prioritization. It will include environmental and social assessments, gender analysis, climate risk assessments, safeguard screening, and the preparation of required Adaptation Fund safeguard instruments. The activity will ensure that proposed interventions are technically feasible, socially inclusive, environmentally sustainable, and compliant with Adaptation Fund requirements. **Funding justification:** covers technical studies, field investigations, feasibility assessments, environmental and social safeguards, gender assessment, and preparation of required AF safeguard documents and will be executed through UN-Habitat in cooperation with local/regional/ international consultants if necessary.
3. **Stakeholder Consultations and Validation:** This activity will engage national and local stakeholders in Jordan and Lebanon to validate project priorities, proposed interventions, implementation arrangements, and safeguard considerations. Consultations will ensure that the project reflects local needs, incorporates stakeholder feedback, and aligns with national priorities and Adaptation Fund requirements, with particular attention to vulnerable groups and gender considerations. **Funding justification:** Covers national, local, and regional consultations, workshops, focus groups, and validation meetings with key stakeholders and vulnerable groups and will be executed through UN-Habitat teams in both countries.
4. **Translation and Interpretation Services :** This activity will support the translation of project documents, technical studies, consultation materials, and proposal documents between Arabic and English, as well as interpretation services during consultations, workshops, and validation meetings if needed. The activity will ensure effective communication and meaningful participation of all stakeholders throughout the project formulation process. **Funding justification:** Covers translation, editing, proofreading, interpretation services, and the production of bilingual project documents, consultation materials, and proposal outputs required for stakeholder engagement, validation, and submission processes.
5. **Full Proposal Preparation and Endorsement:** This activity will support the preparation, review, validation, and submission of the Adaptation Fund Full Proposal, including the results framework, implementation arrangements, budget, workplan, monitoring and evaluation framework, sustainability strategy, and all supporting documentation. The activity will also support consultations and coordination with national stakeholders and Designated Authorities to secure the required endorsements. **Funding justification:** covers drafting, coordination with local, national and regional stakeholders and designated authorities, validation consultations, and finalization and submission of the full proposal, and will be executed through UN-Habitat in cooperation with local/ regional/ international consultants if necessary.

**For LLA Projects only:**

If requesting additional funding for LLA projects to enable devolving decision making to the local level, please specify the activities that would directly serve to enable devolving decision making to the lowest

appropriate level and enable local actors to make informed decisions on how adaptation actions are defined, prioritized, designed, and implemented:

Please provide justifications for their need and for the amount of additional funding required:

### 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<br>Entity<br>Coordinator,<br>IE Name | Signature                                                                         | Date<br>(Month,<br>day, year) | Project<br>Contact<br>Person | Telephone      | Email<br>Address       |
|---------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------|------------------------------|----------------|------------------------|
| Raf Tuts                                          |  | June, 24,<br>2026             | Yasmine<br>Mostafa           | 00201092051217 | Yasmine.mostafa@un.org |