



ADAPTATION FUND

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PROPOSAL FOR SERBIA



ADAPTATION FUND

ADAPTATION FUND BOARD SECRETARIAT
TECHNICAL REVIEW OF PROJECT PROPOSAL FOR
"ENHANCING CLIMATE RESILIENCE IN SERBIA THROUGH INTEGRATED WATER-DROUGHT
MANAGEMENT"

Project Title Enhancing Climate Resilience in Serbia through Integrated Water-Drought Management

Project ID AF00000564

Category Regular size project (over \$1 million)

Type Single country project

Stage Concept

Country Serbia

Implementing Entity UNDP

Financing Requested USD 10,000,000.00

Reviewer Una May Gordon

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Secretariat's Overall Comment

The project Enhancing Climate Resilience in Serbia through Integrated Water-Drought Management aims to reduce climate induced water scarcity risks through improved water drought management by improving the policy framework, supporting community pilots, strengthening capacities for EWS and an investment-ready pipeline.

The proposal includes a request for a project formulation grant and/or project formulation assistance grant of USD 150,000.

The initial technical review raises some issues, such as lack of an initial gender analysis and evidence of consultation reports, the E&S Principles checklist, issues with AF Alignment Table as is discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review.

Country Eligibility

Is the country party to the Kyoto Protocol, or the Paris Agreement?

Response: Yes

Secretariat: Yes.

Serbia ratified the Kyoto Protocol on 19 October 2007 and signed the Paris Agreement on 22 April 2016.

Is the country a developing country particularly vulnerable to the adverse effects of climate change?

Response: Yes

Secretariat: Yes.

Climate change is increasingly affecting the hydrological regime of Serbia's waters due to more frequent and prolonged droughts, reduced summer river flows, declining groundwater recharge, and more intense flood events, placing growing pressure on water availability

Project Eligibility

Has the designated government authority for the Adaptation Fund endorsed the project/programme?

Response: Yes

Secretariat: Yes.

As per the Endorsement letter dated 8 July 2026.

Does the length of the proposal amount to no more than Fifty pages for the project/programme concept, including its annexes?

Response: Not Cleared

Secretariat: Yes.

The total number of pages is 50.

Editorial notes

- Please ensure all tables and figures have captions.
- Please number each paragraph as this assist with reviewing
- Please include a Table of Contents

Response: Not Cleared

IE: Thank you, the editorial comments are addressed in the document.

Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?

Response: Pending

Secretariat: Yes.

However further clarification is needed.

As per Part I. A, the proposal provides a clear adaptation rationale. It does not appear to be business as usual because it introduces climate informed planning, impact based early warning, community-level adaptation measures and preparation of climate-resilient water-retention investments. As per Part II. A, the three components have strong cohesion. Component 2 remains the main evidence that the project finances concrete on-the-ground adaptation while Component 1 supports enabling environment and Component 3 support future investment. There is a potential for USPs under Component 2, though proposals will be solicited during project development, but it is noted that a second call will be undertaken during implementation in tandem with the

baseline studies.

The Theory of Change (ToC) is relatively coherent as the activities respond to the threat. However, the ToC diagram includes assumptions but does not include the risks. The Impact section of the ToC diagram is more a Theory of Change Statement rather than an impact statement.

CR1: Kindly address the following:

i. Please revise the project objective for clarity. Kindly consider beginning with "To reduce the vulnerability of communities, ecosystems and infrastructure to climate induced water scarcity, droughts, floods through improved integrated water and drought risk management and enhanced climate resilient water storage and supply, and the implementation of nature -based solutions."

ii. Please confirm whether the climate information and planning tools and institutional support under Component 1 will influence or inform Component 2 and Component 3. One sentence linking Component 1 to the two other components would be adequate.

iii. Please confirm that Component 3 relates to investment planning and not that investments will be financed during the project. If the latter, please rephrase to indicate the project will support scaling up.

iv. Under Component 2, Outcome 2 refers to adaptive capacity and climate-resilient livelihoods of local communities. However, livelihoods is not explicitly mentioned in the outputs. This can be addressed by amending Output 2.2. Please include 'climate-resilient livelihoods' in the statement of Output 2.2.

v. Outputs 1.2 and 1.3 in the Theory of Change reads like Outcomes. Please consider re-wording. For example, Output 1.3 could be Local institutions' capacity (tools etc...) strengthened to integrate adaptation measures into local planning, with focus on integrated water-drought management and NbS.

vi. In Part II. A page 12 in the paragraph beginning with 'By addressing climate vulnerabilities...' please list the AF Strategic Objectives which the project supports. This should also be in line with the Alignment Table in Part III.A (Page 47-48).

vii. Please ensure all changes above (where appropriate) are reflected in the Theory of Change and its diagram.

Response:

Not Cleared

IE: CR1

i. Thank you for the advice. The project objective has been revised as suggested. The new objective is: "To reduce the vulnerability of communities, ecosystems, and infrastructure to climate-induced water scarcity, droughts, and floods through improved integrated water and drought risk management, enhanced climate-resilient water storage and supply, and the implementation of nature-based solutions."

ii. Confirmed. We have added a dedicated section in the Theory of Change narrative to explicitly describe these causal links. The climate information and planning tools developed under Component 1 (e.g., upgraded hydro-meteorological models by the Republic Hydrometeorological Service - RHMZ) provide the foundational data layer. This data informs the geographic targeting and design specifications for the community-level Nature-based Solutions (NbS) implemented in Component 2. Also, proceedings of the policy dialogue and stakeholder consultations will guide the community-level adaptation measures. Furthermore, the institutional capacity built in Component 1, as well as technical guidelines developed for cross-sectoral water-drought management, will be used to prioritize and design larger scale, bankable pre-feasibility studies under Component 3, ensuring all

future infrastructure investments are based on localized, future-looking climate risk models rather than historical averages.

iii. Confirmed. The narrative now clearly states that Component 3 will not finance physical infrastructure or construction works. Its sole focus is on project preparation and investment planning. By financing comprehensive pre-feasibility studies, environmental impact assessments (EIAs), and cost-benefit analyses, Component 3 aims to create a mature pipeline of "investment-ready" climate-resilient water infrastructure projects. The project will support the Government/Ministry of Environmental protection and other competent institutions, to unlock and mobilize future capital from the national budget, the EIB, the Green Climate Fund, and commercial blended-finance mechanisms. To clarify this, the component title will be amended to "Investment Planning for Scaling Up Climate-Resilient Infrastructure."

iv. This has been corrected. Output 2.2 is amended to explicitly include livelihoods: "Community-driven climate adaptation measures implemented through challenge calls to strengthen climate-resilient livelihoods, with evidence generated for scaling up."

v. Agreed. The outputs have been rephrased to be more activity-focused:

Revised Output 1.2: "Capacity of the Republic Hydrometeorological Service of Serbia strengthened through upgraded monitoring systems and development of enhanced climate information products."

Revised Output 1.3: "Local institutions equipped with tools and technical capacity to integrate adaptation measures into local planning, with a focus on integrated water-drought management and NbS."

vi. Under the Theory of Change section, we have mapped the project explicitly to the AF Strategic Results Framework aligned with Part III.A.

vii. Well noted and ToC amended.

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

Response: Pending

Secretariat: Yes.

However further information is required.

As per Part II. B (pages 28-30), the proposal outlines some qualitative and/or quantitative benefits in all three areas (economic, social and environmental). Notably the project indicates that "this targeted infrastructure intervention mathematically yields hundreds of millions of euros in avoided infrastructure recovery costs and agricultural asset protection". The expected beneficiaries (direct and indirect) have been identified. The project indicates how it will ensure equitable distribution of benefits, particularly through a beneficiary selection criteria and continuous monitoring. The meaningful participation of women in all project phases and promote equal access to resources, training, and economic opportunities is reflected. A report was attached labelled as initial gender analysis but it is inadequate.

CAR2: Please quantify the social benefits. For example, include the total number of persons that benefit under social benefits, breaking down the percentage of women vs men that will benefit. When exact figures are not available, kindly include estimates or proxies to support the identified project's impact alongside a brief

explanation of the method used for these calculations. The latter applies to economic and environmental benefits.

CAR3: Please include an initial gender analysis which focuses on opportunities/entry points for equal participation, general gender statistics which help highlight differences and disparities between men, women, in areas such as education, employment, health, income, and political participation, a description of local norms and cultural practices that could shape gender relations in the project.

- a. Please ensure the analysis has both quantitative and qualitative information
- b. Please ensure references to reports/studies are included in footnotes.

CAR4: Please include in Part II. B in paragraph 1 that there are no concerns of negative development and the project does not increase the vulnerability of beneficiaries or non-beneficiaries, nor reduce their capacity to adapt to climate change.

Response: Not Cleared

IE: CAR2: A socio-economic baseline assessment will inform final site selections during full proposal development. Preliminary estimates indicate the project will directly benefit 45,500 individuals across targeted vulnerable river basins. This includes approximately 15,000 smallholder farmers whose livelihoods are threatened by intensifying agricultural droughts, and 30,500 local residents (including elderly and marginalized rural populations) who will benefit from improved flood early-warning systems and secured local water supplies. Over 2.5 million people will indirectly benefit from improved basin-wide water security and EWS.

Summary of Methodology & Justification for Beneficiary Estimates

- The preliminary beneficiary figures were calculated using a proxy-based spatial and demographic modeling approach. This method overlays national census data with historical climate hazard maps in Serbia's most vulnerable watersheds:

Indirect Beneficiaries (Over 2.5 Million People):

- Justification: Represents the population protected by basin-wide improvements and EWS.
- Methodology: Calculated by using GIS mapping to overlay national census data with the river basins (e.g., the Morava River basin) that will be fully covered by the upgraded, national-level hydro-meteorological forecasting and early-warning systems (Component 1).

Direct Beneficiaries – Smallholder Farmers (15,000 People):

- Justification: 5,000 Rural households receiving direct support to combat agricultural droughts through local pilot projects.
- Methodology: Multiplying this by the national approx. of 3 members per agricultural household yields approximately 15,000 direct beneficiaries.

Direct Beneficiaries – Local Residents (30,000 People):

- Justification: High-risk flood-zone residents who will benefit from localized nature-based flood barriers and community-level warning systems.
- Methodology: Based on targeting 3 to 5 highly vulnerable local settlements situated in high-risk "red zones," with a typical cluster size of 7,000 to 10,000 residents per area.

Direct Beneficiaries – capacity building (500 People):

- Justification: Targeted, hand-on training sessions, agricultural extension workshops, and institutional capacity-building programs will directly train at least 500 key stakeholders, including municipal planners, local farmers, water managers, and members of the national Coordination Mechanism.

Validation Phase: These preliminary estimates will be replaced by a Detailed Socio-Economic Baseline Assessment during the full proposal stage. This will use household surveys and gender-disaggregated municipal data to establish exact, audit-ready baselines.

CAR3: A comprehensive initial gender analysis is annexed to the Concept Note (supplementary annex 1) and will

be further elaborated into Gender Assessment and Action Plan for the purpose of the full proposal. Additional text on gender analysis is added in this section (Part II.B). The analysis highlights that women in rural Serbia face disproportionate climate vulnerabilities due to structural inequalities (e.g., low rates of agricultural land ownership, which limits access to commercial credit for adaptive technologies like drip irrigation). During water scarcity, the burden of securing household water falls predominantly on women. Consequently, the project will mandate a minimum of 40% female participation in all capacity-building activities and prioritize funding for women-led agricultural cooperatives in the Component 2 challenge calls.

CAR4: The following statement is added to Part II.B: "The project is designed to ensure there are no concerns of negative development impacts. In line with national EIS&SEA regulation, as well as UNDP SESP standards, all activities will be screened to confirm they do not increase the vulnerability of either beneficiaries or non-beneficiaries, nor reduce their existing capacity to adapt to climate change."

Is the project / programme cost effective?

Response: Pending

Secretariat: Yes.

However further information is required.

As per Part II. C (pages 30-33), the proposal provides some justification for cost-effectiveness but at a qualitative level. It highlights a logical explanation of the scope and approach. The proposal also reflect cost-effectiveness from a sustainability perspective through, for example, avoided disaster-response and rehabilitation costs, strengthened institutional and community capacities.

CR2: Please include a statement that acknowledges a detailed cost-effectiveness analysis will be undertaken during the full proposal development (e.g. comparison of feasible alternative, detailed costing, life cycle assessment and quantification of expected benefits and avoided losses).

CR3: Regarding sustainability, please share a bit more in relation to investment planning (e.g. ensure that future infrastructure is appropriately sized and climate-resilient).

Response: Not Cleared

IE: CR2: The proposed statement is added in section II.C. A detailed cost-effectiveness analysis will be included in the full proposal, in particular for the purpose of prioritizing the climate adaptation investments and pipeline development. It will include comparison of feasible alternative, detailed costing, life cycle assessment and quantification of expected benefits and avoided losses. The concept note additionally integrates this principle by prioritizing Nature-based Solutions (NbS) over traditional grey infrastructure for localized adaptation. Evidence shows that restoring riparian buffer zones and utilizing natural floodplains provides a competitive return-on-investment for flood attenuation compared to concrete embankments, offering massive co-benefits for biodiversity and carbon sequestration.

CR3: Additional text is added in section II.J. Economic sustainability is incorporated into the project through all components. Under Component 1, the climate adaptation measures related to integrated water-drought management, will be integrated into regulatory and policy amendments, as well as technical sector-level guidelines and standards; In the Component 2, the project will make sure that pilot investments and measures

are aligned with national and local planning documents (including e.g. National Climate Change Adaptation Programme, Green Agenda Strategy, etc.), ensure that competent institutions and LSGs are involved into maintenance upon project completion. The key criteria for selecting appropriate local small-scale interventions will be their alignment with the observed and projected climate change for Serbia.

Component 3: The current bottleneck in Serbia is not a lack of international climate finance, but a lack of technically mature, bankable project documentation. The project will apply participatory investments planning approach. This will ensure engagement of competent stakeholders and institutions (e.g. in the field of climate change adaptation, infrastructure planning, water management, DRR etc.) already in early investment identification phase. Furthermore, by climate-risk-informed planning (using most updated climate projections data – e.g. closely engaging with RHMSS and the Institute for Meteorology), it will prevent both over-engineering (unnecessary costs) and under-engineering (risk of failure). The infrastructure investments will be appropriately sized and climate resilient. This directly bridges the gap between local climate resilience needs and major international credit lines (e.g. the EUR 160M EIB credit line, EBRD over EUR 60M for supporting Serbia's efforts to strengthen climate resilience, protect communities from flooding and improve long-term water security), creating a durable pipeline for adaptation investments beyond the project's lifespan.

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?

Response: Pending

Secretariat: Yes.

However further information is needed.

As per Part II. D (pages 32-35), the proposal identified plans and strategies including the country's NAP framework and elaborates on how the project links to it. It refers to the Strategy of Agriculture and Rural Development and Water Management.

CR4: Kindly include the identified plans/instruments/policies/strategies in a table listing. The table should include at least the following columns:

- (i) specific name of the plan/strategy,
- (ii) years of implementation,
- (iii) goals/objectives,
- (iv) relevance with the proposed project, and
- (v) project's compliance status.

Response: Not Cleared

IE: CR4: A table is added to Part II.D listing all relevant national strategies (e.g., National Adaptation Programme, Water Management Strategy) with columns for Name, Implementation Period, Key Objectives, and Relevance & Compliance with the Project.

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 further information is needed.

As per Part II. E (pages 35-36), the proposal identifies relevant national technical standards, including sector-specific laws. However, there are some areas that can be strengthened.

CAR5: Kindly provide a comprehensive table listing of all specific national technical standards applicable to the proposed project. . The columns in the table should include:

- (i) specific name/number of the standard/regulation,
- (ii) goals/objectives of the standard/regulation, and
- (iii) how it is related to the proposed project and the project's compliance status.
- (iv) Briefly mentions the steps involved to be compliant
- (v) The name of the competent authority responsible for reviewing and issuing/granting approval

Response: Not Cleared

IE: CAR5: A comprehensive compliance table is added to Part II.E. It explicitly lists the Law on Waters, the Law on Environmental Impact Assessment, the Law on Planning and Construction, and the newly adopted Law on Climate Change. The table details the competent authorities (e.g., Ministry of Agriculture, Forestry and Water Management; Ministry of Environmental Protection; Srbijavode) and the exact procedural steps the project will take to ensure all physical NbS interventions secure necessary water acts, location conditions, and building permits.

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

Response: Pending

Secretariat: Not sure

As per Part II. F (pages 36-38), the proposal provides a list of projects from which the proposed project builds upon and coordinates with & scales up successful elements of other projects to avoid duplication. It includes the key interventions and in some cases list complementary activities. However, this section can be strengthened

CR5: Please ensure that the key projects identified in Part II. A are included in the list.

CR6: Please rename the final column to reflect complementarity and lessons learned. Thereafter, please draw on lessons learned from earlier initiatives during the project design, learning from their problems and mistakes.

Response: Not Cleared

IE: CR5 & CR6: The table in Part II.F is updated to include all key baseline projects originally mentioned in Part II.A. The final column renamed to "Complementarity and Lessons Learned," explicitly stating how lessons from past projects have informed this proposal.

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

Response: Pending

Secretariat: Yes.

However further information is needed.

As per Part II.G (Pages 38-39), the proposal adequately identifies different types of knowledge products and defines how they will be disseminated. Notably there is no dedicated knowledge management and learning component with a dedicated budget.

CAR6: Please ensure the project reflects a Knowledge Management and Learning component or sub-component which will have a clear budget line.

CR7: Kindly clarify or include details in Part II.G to respond to the following:

- specific activities for Learning and Knowledge Management of the proposed project.
- who will be responsible for tracking the experiences gained, how this will be done, and when ,or how often, will the tracking will take place.
- what type of information will be collected throughout this process and what and how will be disseminated.
- how the knowledge generated will be sustained after the project concludes.
- will there be dedicated personnel such as a KM Specialist?

Response: Not Cleared

IE: CAR6: The project moves beyond standard KM by integrating its outputs directly into the state's digital infrastructure. A dedicated Output for Knowledge Management and Learning (with a part-time KM specialist) is included as suggested under Component 1. Tools, vulnerability maps and technical guidelines/manuals for and practical examples of small scale investments (e.g. including NbS) will be hosted on permanent national portals (e.g., the National Climate Change web platform and RHMZ's open-data systems). This ensures the knowledge generated outlives the project cycle and becomes standard operational procedure for policy, infrastructure and urban planners across Serbia. Also, such KM system will support further replication and potential scaling of implemented measures.

CR7: The project structure has been revised to include a dedicated Knowledge Management (KM) and Learning Output under Component 1, accompanied by a specific budget line. To ensure that lessons learned are systematically captured, disseminated, and sustained, the project will implement the following:

- **Dedicated KM Responsibility:** A part-time Knowledge Management and Communications Specialist will be hired within the Project Management Unit (PMU). This expert will be exclusively responsible for tracking project milestones, documenting best practices, and ensuring continuous knowledge sharing throughout the project lifecycle.
- **Targeted Knowledge Products:** The project will capture lessons learned from the on-the-ground pilot projects

(Component 2) and translate them into concrete knowledge products, including:

- **Technical Manuals & Guidelines:** Step-by-step guides on designing and implementing Nature-based Solutions (NbS) tailored to Serbia's specific climate and geographical conditions.
- **Case Studies & Policy Briefs:** Documents highlighting the cost-effectiveness and social benefits of the community-led interventions, designed specifically for national policymakers to inform future funding allocations.
- **Active Dissemination & Peer-to-Peer Learning:** The project will actively disseminate knowledge through:
 - **Annual Peer-to-Peer Exchange Workshops with Standing Conference of Towns and Municipalities (SCTM - municipal network organization):** Gathering representatives from the participating municipalities, local self-governments (LSGs), and CSOs to share successes, implementation barriers, and solutions.
 - **Capacity-Building Seminars in cooperation with SCTM:** Training local urban planners on how to integrate the newly developed climate vulnerability maps and NbS guidelines into their municipal spatial plans.
- Digital outputs will be permanently integrated into the state's existing infrastructure:
- Hydrometeorological models and drought mapping will be hosted on the Republic Hydrometeorological Service (RHMZ) systems.
- NbS manuals and policy briefs will be hosted on the National Climate Change web platform (<https://www.klimatskepromene.rs/>), managed by the Ministry of Environmental Protection, ensuring they become standard operational procedure for urban planners across Serbia.

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.

However further information is required.

As per Part II.H, a multistakeholder consultation occurred on 12 May 2026 as well as many meetings with various stakeholders. However, the report is lacking evidence of said consultations.

CAR7: The CN highlights consultations that have occurred. However, there are no consultation reports or summaries of consultations with a breakdown of participants engaged.

CAR8: Kindly provide detailed information on the consultative process described in the proposal, covering at least the following elements:

- (i) the participants of each meeting, including the total number of attendees disaggregated by sex,
- (ii) date and location for each meeting,
- (iii) brief summary of the subjects discussed, and any agreements reached, where applicable,
- (iv) explanation of the gender considerations (and those related to other vulnerable groups) addressed during the process, including how their interests were reflected in the proposed project. Please also clarify whether this information has been documented elsewhere.
- (v) Please confirm that a representative from the national gender machinery was presented at the consultations, as well as the youth groups
- (vi) limited evidence is provided to demonstrate how vulnerable groups have informed the project design – were vulnerable groups were consulted during concept development and, if so, how their views were incorporated into the proposed interventions.

(vii) please consider including these details in a tabular format in Part II. H or in the Annex. If inserted in the Annex, please be sure to reference it appropriately in the narrative in Part II.H..

Response: Not Cleared

IE: CAR7: A detailed annex summarizing all consultations (disaggregated by sex and stakeholder group) is shared with the CN as a supplementary material (Annex 2). Additional text on stakeholder consultations has also been added in the Concept Note. It explicitly links stakeholder feedback to project design (see below). For example, consultations with local agricultural cooperatives revealed that complex bureaucratic procedures prevent them from accessing climate finance. In direct response, Component 2 is designed as a simplified "Challenge Call" mechanism, specifically tailored to lower administrative barriers for local communities and CSOs. Also, competent institutions, such as Republic Directorate for Waters and Republic Hydrometeorological Serbia of Serbia indicated urgent need for better data on the observed and projected climate change for the purpose of climate resilient water-drought planning and management. This need is particularly addressed under the project Component 1. The outcomes of consultative processes conducted during Serbia's GCF NAP project implementation significantly informed the concept note development, in particular related to the climate vulnerabilities and resilience concerns of local self-government units.

CAR8: Response: Due to the page limits for the Concept Note template the requested detailed information on the stakeholder consultations is provided in a supplementary Annex 2 shared with the Concept Note. Additional text was also added in the Section II.H. The design of this project is country-driven and informed by an extensive, continuous consultative process involving national competent institutions, the scientific community, local self-governments (LSGs), and vulnerable agricultural producers. To build on established priorities, the project design utilized findings and proceedings from workshops consultations conducted under recent major climate initiatives:

1. Consultations with Competent Institutions (Informing Components 1 & 3)

- GCF Readiness Proposal & NAP Development: Extensive consultations and validation workshops were held with the Ministry of Environmental Protection, the Ministry of Agriculture, Forestry and Water Management (Water Directorate), and public water management enterprises (Srbijavode and Vode Vojvodine) during the formulation of the National Adaptation Programme (NAP) and the recent GCF Readiness proposal.
- How it shaped the project: These institutional stakeholders explicitly identified that while national climate targets exist, there is a critical lack of mature, "investment-ready" technical documentation for large-scale water resilience infrastructure. This feedback directly informed the creation of Component 3, which focuses exclusively on investment planning and preparing bankable pre-feasibility studies to unlock future international financing.

2. Consultations with Science and Academia (Informing Component 1 & 2)

- Water Availability Study: In recent months, UNDP and the Ministry of Environmental Protection conducted targeted technical consultations and expert roundtables to prepare inputs for the future assessment of Water Availability in Serbia under Climate Change. These sessions engaged leading hydrologists, climatologists, geologists and researchers from national institutes and universities.
- How it shaped the project: The proceedings of these workshops highlighted that historical water management data is no longer reliable due to accelerating drought cycles. This justified the critical need for Component 1—upgrading the Republic Hydrometeorological Service's (RHMZ) impact-based forecasting—and validated the selection of Nature-based Solutions (NbS) over grey infrastructure for localized flood and drought integrated management, needs for data for informed water storage planning, etc.

3. Consultations with Local Self-Governments (Informing Component 1)

- NAP Workshops with local self-governments: During the NAP development process, workshops were held with representatives from dozens of LSGs across Serbia's most vulnerable districts.
- How it shaped the project: LSG representatives consistently reported a severe lack of local technical capacity and downscaled climate data required to integrate climate risks into their mandatory municipal spatial and urban plans. This feedback directly shaped the capacity-building outputs in Component 1, ensuring that local

institutions are equipped with accessible tools and training to mandate NbS in local planning.

4. Consultations with Vulnerable Communities & Farmers (Informing Component 2)

- GCF Small-Scale Agricultural Producers Proposal: During the development of the GCF proposal targeting smallholder farmers, extensive field consultations and focus groups were held with local communities, local agricultural services, public water companies, female-headed rural households, and civil society organizations (CSOs) in drought-prone regions.
- How it shaped the project: A key lesson learned from these vulnerable groups was that complex bureaucratic procedures and strict co-financing requirements often prevent smallholders and local communities from accessing climate finance. In direct response to this feedback, Component 2 was designed around a "Challenge Call" mechanism. This agile granting modality is specifically structured to lower administrative barriers, ensuring that funding for localized adaptation (e.g., drip irrigation, riparian buffer restoration) reaches the most vulnerable end-users efficiently.

5. Youth involvement

- Through interactive dialogue and educational program (undertaken under the UNDP lead Climate Box project), UNDP indirectly, through the work with educators, increased the awareness of young people on how climate change alters precipitation patterns and intensifies water scarcity.

N.B. More details also provided in the Annex 2 on Stakeholder Consultations

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

Response: Pending

Secretariat: Yes.

As per Part II. I (pages 40-42), the proposal demonstrates that the project activities are relevant to addressing its adaptation objectives noting that the current measures are insufficient to address the scale and complexity of climate risks. The proposal describes the scenario with and without AF financing by component. It highlights the change along with the adaptation benefit.

CAR9: Please include a statement that The Adaptation Fund resources will finance the additional measures required to shift from a business-as-usual development pathway to a climate-resilient pathway.

CAR10: Please indicate that the project is designed to deliver its intended outputs and outcomes independently, without reliance on additional donor funding or co-financing and that the AF-financed activities, taken on their own, are sufficient to deliver the proposed adaptation results.

Response: Not Cleared

IE: CAR9: The following statements added to Part II.I: "The Adaptation Fund resources will finance the additional measures required to shift from a business-as-usual development pathway to a climate-resilient pathway."

CAR10: The following statements added: "The project is designed to deliver its intended outputs and outcomes independently, without reliance on additional donor funding or co-financing. The AF-financed activities, taken on their own, are sufficient to deliver the proposed adaptation results "

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

Response: Pending

Secretariat: Yes.

However further information is required.

As per Part III. A (pages 47-49), the Alignment Table is completed aligning Project Objectives and Outcomes with AF's Outcomes and Outputs and their corresponding indicators. At least one AF outcome indicator and one AF output indicator has been identified at the project design stage. Budget disaggregation is largely correct. The total objectives and outcome level grant amounts are the same and exclude the IE and EE fees. However, there are some discrepancies. Reference is made to AF Output Indicator 3.2.1 for AF Output 3.1. However, these do not align.

CR8: Please address the following queries:

- i. The incorrect pairing of AF Output 3.1 with AF Indicator 3.2.1 must also be corrected or clarified. Outcome Indicator 3.2 'application of appropriate adaptation responses' is likely stronger and more defensible than relying only on Indicator 3.1 on awareness. Please amend accordingly.
- ii. In the lower section of the table (Outcome level), the AF Output Indicator 7.2 was selected vs 7.1. Please clarify if project will support implementation. If not, please re-consider as the project refers to "Number of planning and policy documents prepared for integrated climate risks management which focuses on preparation and not enforcement."
- iii. Note that the preparation of investment pipelines does not automatically demonstrate an innovation has been accelerated or scaled. Component 3 is setting the conditions for investment readiness with pre-feasibility studies etc. Please re-consider the most appropriate indicator.
- iv. Please consider an objective indicator that reflects institutional policy and early warning.

CR8.1: Kindly follow the guidance: <https://www.adaptation-fund.org/document/alignment-with-adaptation-fund-results-framework-template-and-guidance-dec-2025/>

Response: Not Cleared

IE: CR8: Thank you for your advice. The Alignment Table (Part III.A) has been revised completely in line with the most recent guidance and the Adaptation Fund Results Framework (<https://www.adaptation-fund.org/document/alignment-with-adaptation-fund-results-framework-template-and-guidance-dec-2025/>):

i. The pairing of AF Outputs and Indicators under AF Outcome 3 has been corrected in line with the most recent guideline. Additional Output indicator is added.

ii. The AF Output/indicator under Outcome 7 has been revised in line with the recent guidance/AF Results Framework.

iii. We reviewed the updated AF Results Framework to identify the most appropriate AF output indicator representing project Component/Outcome 3. The revised AF Outcome 8, Outcome Indicator 8B, Output indicator 8.1A refer to encouraging/enabling innovations and identification of adaptation innovations. This appears to be relevant to the project Component 3:

AF Outcome 8: Innovation for effective, long-term adaptation to climate change accelerated, encouraged, and enabled to scale up.

Indicator 8B: Institutions created and/or enabled that lead on innovation for adaptation to climate change

Indicator 8.1A: Innovations identified that demonstrate local innovation participation and/ or local innovation benefit.

The other AF Result Framework indicators are not appropriate for the proposed Component 3. For example, under the AF Output 2.2: Increased readiness and capacity of national and sub-national entities to directly access and programme adaptation finance, the only available indicator refers solely to direct support under the locally led adaptation modality.

iv. A new objective indicator is added as suggested.

CR8.1: Thank you, we have followed this guidance for Part III, section A.

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

Response: Pending

Secretariat: Yes.

However further information is required.

The CN proposal broadly highlights sustainability across the key dimensions (institutional, technical & operational, social, environment and knowledge management which is linked to replication). It mentions a credible arrangement of the early warning system being transferred to competent government authority and included in regular budget planning. However operational maintenance of other physical measures (e.g. ecosystem-based flood protection), economic and financial sustainability and specifics for financing and institutional arrangements for replication and scaling should be further detailed in the full proposal.

CR9: Kindly include a brief paragraph on economic sustainability.

Response: Not Cleared

IE: CR9 Response: A paragraph on economic sustainability has been added to Part II.J (Sustainability) of the Concept Note to explicitly address the economic sustainability of the project at the national, municipal, and community levels.

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: Yes.

However further information is needed

As per Part II.K (pages 43-46), the project is categorised as a Category B. Some potential E&S risks have been identified on page 44 but the project will undergo further screening during the proposal development stage. The check list has been completed but there are some amendments to be made, including ensuring that the risks identified previously are also considered. The proposal highlights that the development of a GAP and GRM, a Stakeholder Engagement Plan and a ESMP will ensure compliance with AF's ESP requirements.

CAR11: Please review table in Part II.K and make the following amendments

1. In the third column “Potential impacts and risks” state and expand, - all potential impacts (direct, indirect, transboundary and cumulative), after stating whether the risk is low, medium or high, please explicitly state the risk for all relevant principles by starting the statement as “There is a risk of ...”. ii) If no risk is identified for a given principle, then state ‘no risk’ but a clear justification must be provided.
2. After stating the risks, please explicitly state the planned mitigation measures to manage each risk.
3. Whether the second column is marked with an ‘X’ depends on whether further assessment for compliance is required. Column 2 should have an X if no further assessment is required.
4. Please note that Adaptation Fund Principles 1, 4 and 6 always apply. For more information, please visit: AF’s ESP guidance. Therefore please uncheck ESP 1 (Compliance with law), ESP4 (Human Rights) and ESP 6 I Core Labour Rights). Note Indigenous has no risk because there are no indigenous people, therefore an X can be placed as no further assessment is needed. Kindly review all ESP as those which Medium to Substantial Risk would likely require further assessment.
5. For climate change please indicate whether or not there is a risk of increase in GHG emissions.

CAR12: Since the initial gender assessment does not provide qualitative and quantitative data for gender roles, activities, needs, and available opportunities and challenges or risks for men and women. In Part II. J, please provide information on the gender analysis and indicate the gender-specific cultural and/or legal context in which the project/programme will operate.

Response: Not Cleared

IE: CAR: In alignment with the Adaptation Fund’s Environmental and Social Policy (ESP), Principles 1 (Compliance with the Law), 4 (Human Rights), 6 (Core Labour Rights), 11 (Climate Change), and 15 (Lands and Soil Conservation) will be marked as 'Requiring further assessment' rather than 'No risk'. Because Component 2 involves a grant/challenge mechanism where the exact locations and designs of the NbS interventions (Unidentified Sub-Projects - USPs) will be determined during implementation, a comprehensive Environmental and Social Management Framework (ESMF) will be developed during the full proposal stage. The ESMF will contain strict screening checklists to ensure no sub-project violates national laws, relies on inadequate labor practices, causes maladaptation, or degrades soil quality. More details provided in the amended CN.

CAR12: The initial gender analysis is shared as a supplementary Annex 1. Also, additional text is included in the Concept, Part II, section B as follows.

The Legal and Cultural Context in Serbia

- Legal Framework: Serbia has a robust statutory framework for gender equality, anchored by the Law on Gender Equality (2021) and the National Strategy for Gender Equality (2021–2030), which mandate equal opportunities in economic development and environmental planning.
- Cultural Reality in Rural Areas: Despite progressive laws, deeply entrenched patriarchal norms persist in rural Serbia. Traditional cultural practices often dictate that property is inherited by and registered to male head-of-households. Consequently, women in rural communities are largely excluded from formal financial decision-making and are culturally assigned to unpaid domestic and care work.

2. Quantitative Data on Gender Disparities

- Land Ownership & Agriculture: According to the Republic Statistical Office (RZS), women constitute only about 19% of agricultural landowners and manage merely 15.9% of agricultural holdings in Serbia.
- Economic Participation: In rural areas, the formal employment rate for women is significantly lower than for men, with women comprising over 60% of the unpaid family workforce in agriculture.

3. Qualitative Data: Roles, Needs, and Climate Risks

- Differentiated Climate Risks: Because women in rural Serbia are primarily responsible for household management, cooking, and hygiene, they bear a disproportionate physical and psychological burden during

periods of climate-induced water scarcity and droughts.

- **Financial and Adaptive Barriers:** The most critical challenge for women is that lack of land ownership directly restricts their access to commercial credit, state agricultural subsidies, and adaptation finance (which often require land deeds as collateral). Therefore, male farmers are more likely to afford adaptive technologies (e.g., drip irrigation, hail nets), while women-led households are left highly vulnerable to crop failures.

4. Opportunities and Project Interventions (Addressing the Needs)

The project actively addresses these disparities by transforming the climate-finance landscape for rural women:

- **Tailored Financial Access:** Under Component 2, the "Challenge Call" criteria will be specifically designed to lower the barriers to entry for women. For instance, evaluation matrices will award bonus scoring to women-led households, female agricultural cooperatives, and projects specifically addressing household water security.
- **Capacity Building Quotas:** Recognizing that women are often excluded from local water governance, the project will enforce a minimum 40% female participation quota in all capacity-building workshops and municipal planning consultations (Component 1).
- **Gender-Responsive Early Warnings:** The early warning systems will be designed taking into account the different communication channels used by men and women, ensuring that emergency alerts regarding floods or droughts reach women, who are often at home managing dependents during crises.

N.B. More details provided in the supplementary Annex 1 "Gender Analyses – key findings and implications for the project"

Resource Availability

Is the requested project / programme funding within the cap of the country?

Response: Cleared

Secretariat: Yes

Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?

Response: Pending

Secretariat: Yes.

The figures match across the Components Table and the AF Alignment Table. The IE fee is US\$783,410 which is 8.5% of the total budget. The IE fees for PFG are capped at 8.5%. The project is within range for PFG at US \$150,000 for a single country project.

Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?

Response: Pending

Secretariat: Yes.

The figures match across the Components Table and the AF Alignment Table. The EE fee is US\$722,037 which is 7.8% of the total budget which is below the cost of 9.5%. Note that the IE will not be acting as an EE.

Eligibility of IE

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

Response: Pending

Secretariat: Yes.

The Implementing Entity is UNDP. The agency's accreditation will expire on 10 October 2029.

CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme: Enhancing Climate Resilience in Serbia through Integrated Water-Drought Management

Country: Serbia

Thematic Focal Area: Water management, Agriculture, Ecosystem based adaptation and Disaster Risk Reduction and early warning systems

Type of Implementing Entity: Multilateral Implementing Entity

Implementing Entity: UNDP

Executing Entities: Ministry of Environmental Protection of the Republic of Serbia

Amount of Financing Requested: 10,000,000 (in U.S Dollars Equivalent)

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

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

Letter of Endorsement (LOE) signed: Yes ☒ No ☐

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

Stage of Submission:

- ☒ This concept has been submitted before
- ☐ This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: 8/28/2026

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

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Project/Programme Background and Context:

Serbian Water Management Sector

1. Climate change is increasingly affecting the hydrological regime of Serbia's waters due to more frequent and prolonged droughts, reduced summer river flows, declining groundwater recharge, and more intense flood events, placing growing pressure on water availability¹².
2. The country is part of the Danube River Basin, with the Danube, Sava, and Tisa rivers as its principal watercourses, alongside numerous tributaries and important groundwater aquifers. A significant share of Serbia's renewable water resources originates outside its borders, making the country highly dependent on transboundary river flows [3]. According to the Water Management Strategy of the Republic of Serbia up to 2034, the country possesses limited natural water storage capacity, relying heavily on a network of 28 primary multi-purpose reservoirs (with storage capacities exceeding 10 million m³ each) to balance seasonal water availability for municipal supply, hydropower, and agriculture³. However, as highlighted in Serbia's National Climate Change Adaptation Programme 2023–2030 (NAP) and the Third National Communication to the UNFCCC, the vast majority of this hydraulic infrastructure was built over 30 to 50 years ago. It was structurally engineered under historical stationary climate assumptions that do not reflect today's hydrological realities under climate change. Consequently, these aging systems lack the operational flexibility and physical storage volume required to buffer against the rapid-onset flash floods and severe, prolonged summer droughts predicted under modern climate projections. On the demand side, public water supply is the largest municipal use, while agriculture remains the sector with the greatest potential for increasing water demand due to the need for expanded irrigation under changing climatic conditions. Water is also essential for hydropower generation, thermal power plant cooling, industrial production, fisheries, tourism, and the maintenance of freshwater ecosystems³. Despite the importance of water for agricultural productivity, only a small proportion of Serbia's arable land is currently equipped for irrigation, leaving much of the sector dependent on increasingly variable rainfall. At the same time, competing demands from domestic, industrial, energy, and environmental users are expected to intensify as climate change progresses.
3. Water management is in need for greater investment in integrated climate-informed planning, water retention, water-efficient technologies, ecosystem restoration, in order to strengthen resilience to climate change.
4. Serbia has two distinct geographic zones with different climate vulnerabilities requiring tailored climate resilience interventions. In the ***northern agricultural plains of Vojvodina***—the nation's 'breadbasket' responsible for the vast majority of staple crop production—the primary climate threat is escalating aridity. The region's flat topography, historically designed drainage networks, and heavy reliance on rain-fed agriculture leave its fertile soils highly exposed to prolonged summer heatwaves and severe precipitation deficits, driving the urgent need for drought mitigation and localized water retention to support both agricultural continuity and broader cross-sectoral water security.
5. On the other hand, the ***hilly and mountainous terrains of Central, Western, and South-Eastern Serbia*** face an entirely different, yet equally destructive, hydrological crisis. These regions are increasingly subjected to shorter, highly intense precipitation events. When torrential rains strike steep, often degraded slopes, they trigger rapid surface runoff and severe soil erosion. This erosion creates a destructive cascade: it strips away the fertile topsoil essential for local rural livelihoods, and washes massive volumes of sediment downstream. This ensuing siltation poses a critical systemic threat. As eroded soil settles, it clogs river channels, drainage networks, and reservoirs, drastically reducing their natural capacity to convey and store water—a loss of reservoir capacity that directly threatens municipal water supplies and hydropower potential. Consequently, riverbeds become elevated with silt, meaning even moderate subsequent rainfalls can easily overtop banks and trigger devastating downstream floods. Therefore, mitigating the erosion-siltation-flood nexus in the upper watersheds is inextricably linked to the broader goal of national water security, forming the rationale for the project's dual-zone integrated approach^{4,5}.
6. A key opportunity for addressing these dual challenges lies in restoring the water cycle through integrated water–drought management, using periods of excess water to support retention and storage for deficit periods. In line with the European Water Resilience Strategy⁶, the WB6 Green Agenda⁷, and Serbia's NAP, this project is designed to address the critical adaptation gap in integrated water–drought management and NbS implementation.

¹ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change.

² Republic of Serbia. (2024). Third National Communication of the Republic of Serbia to the United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change.

³ Government of the Republic of Serbia. (2017). Water Management Strategy of the Territory of the Republic of Serbia until 2034. FAOLEX / UNEP LEAP

⁴ Popovicki, T. (2022). Enhancing Nature-based Solutions in Serbia: The role of ecosystems in disaster risk reduction and climate change adaptation. International Union for Conservation of Nature.

⁵ Gavrilović, Z., Stefanović, M., Milojević, M., Cotric, J., & Milošević, M. (2012). Torrent classification: Base of rational management of erosive regions. Journal of the Geographical Institute "Jovan Cvijić" SASA, 62(2), 7–20

⁶ European Commission. (2025). European Water Resilience Strategy.

⁷ Regional Cooperation Council. (2025). WB6 Climate Adaptation Roadmap. 3

Climate Change in Serbia

7. Serbia is experiencing a warming trend that significantly exceeds the global average. Over the past five years, mean annual temperatures have been up to 2.5°C higher than the 1961–1990 baseline. Consecutive record-breaking years were registered in 2023 and 2024, with mean-temperature anomalies of 3.0°C and 3.8°C respectively. The frequency of heat waves has increased by three to four events per year compared to the reference period, and further escalation is anticipated, including more frequent episodes of extremely high temperatures.

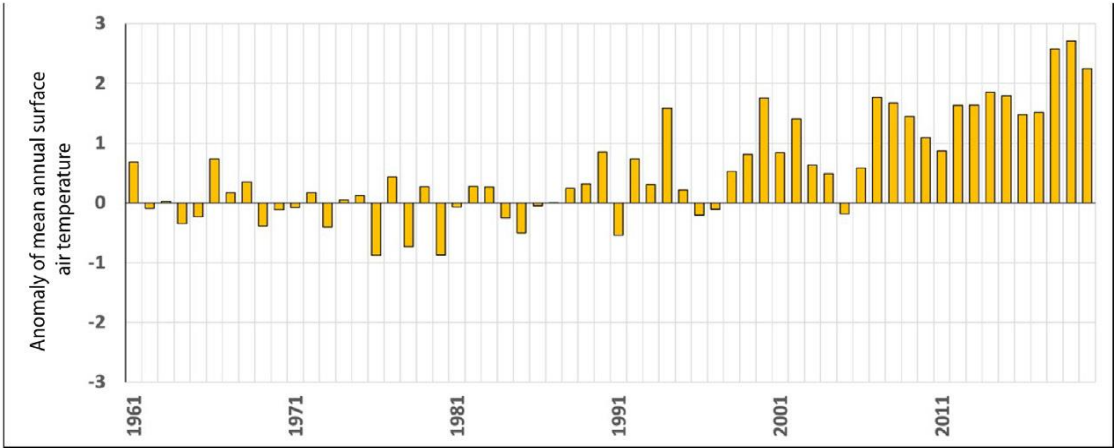


Figure 1. Deviations (anomalies) of mean annual air temperatures, averaged for the territory of the Republic of Serbia, for the 1961-2020 period in relation to the 1961-1990 base period mean value. Source – Republic of Serbia Climate Change Adaptation Programme for the period 2023-2030

8. According to Serbia’s National Climate Change Adaptation Programme (NAP), the most prominent climate change observations between 2000 and 2020 include:
- Mean temperature increased by +1.4°C in 2001-2020 compared to the period 1961-1990
 - Increase in the number of heat waves per year by +2.4 in 2001-2020 (in the period 1961-1990 the frequency was less than 1 per year)
 - Increase in the number of tropical days (days with maximum temperature above 30°C) - from an average of 20-30 per year (1960-1990), to 40-60 in 2001-2020.
 - Increase in number of hot days (maximum daily temperature above 35°C) in the lowland areas - from 2-3 per year in 1961-1990, to between +4 and +7 in 2000-2020
 - Increase in the number of days with very heavy (daily precipitation 20mm-30mm) and extreme (daily precipitation over 30mm) precipitation and the amount of precipitation accumulated during such events, while the events with light and moderate precipitation have decreased
 - Increase of the percentage of years with drought, on average, for the territory of the Republic, by +30% --
 - "Increase of the percentage of years with drought, on average, for the territory of the Republic, by +30% (as measured by standardized meteorological indices such as the Standardized Precipitation Index - SPI).

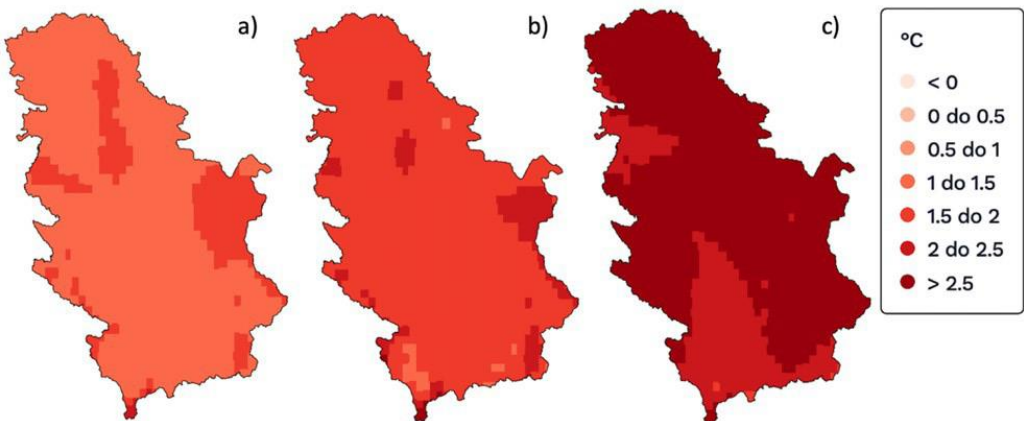


Figure 2. Anomalies of mean temperatures for the periods 2001-2020 (a) and 2011-2020 (b) and anomalies of mean maximum temperature for June-July-August for 2011-2020 (c) in relation to the 1961-1990 base period. Source: Republic of Serbia Climate Change

Adaptation Programme for the period 2023-2030

9. Climate projections confirm a continued warming trajectory, with an expected additional increase of 4.5–5.8°C by the end of the century relative to the 1961–1990 baseline (or 1.8–4.1°C relative to the past two decades), depending on future greenhouse-gas emission pathways⁸. By mid-century (2041-2060), drought conditions are expected to occur almost every year, with extreme droughts projected in four out of every ten years. Looking further to the end of the century (2081-2100), projections under a high-emissions scenario (RCP 8.5) indicate a catastrophic increase in aridity. Summer precipitation is projected to decrease by as much as 40-50% compared to the 1961-1990 baseline, and mean annual temperatures are expected to rise by 4.5–5.8°C. This would lead to a near-permanent state of water stress across the country, with severe consequences for all sectors^{9 10}.
10. Changes in the seasonal distribution of precipitation are particularly important. Summer precipitation is decreasing, while the June–July–August season is warming at the fastest rate, making summer conditions increasingly hot and dry. Historically, June was the month with the highest average precipitation; however, the monthly precipitation maximum has already shifted towards earlier months, currently averaging highest in May. Further shifts towards the snowmelt period may increase the likelihood that intense precipitation occurs when soils are already saturated, thereby contributing to higher flood risk¹¹.

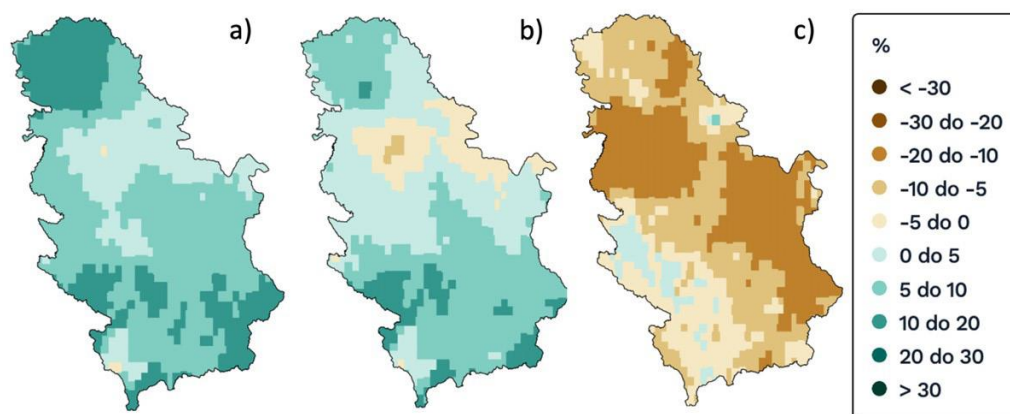


Figure 3. Anomaly average annual accumulated precipitation for 2001-2020 (a) and 2011-2020 (b) compared to 1961-1990, and anomaly of accumulated precipitation for the June-July-August season for 2011-2020 (c) compared to 1961-1990. Source: Republic of Serbia Climate Change Adaptation Programme for the period 2023-2030¹²

11. The intensity distribution of precipitation is also changing. The amount of precipitation recorded during extreme daily events, above 30 mm per day, has already increased by more than 100%, while the frequency of light and moderate precipitation events is decreasing. These changes in precipitation regime, combined with rising temperatures, directly affect domestic river-discharge patterns. Average maximum river discharges are increasing, while medium and minimum discharges are decreasing, and the period with low water levels is becoming longer. Groundwater recharge is also expected to decline significantly; by mid-century, the rate of groundwater recharge is projected to decrease by 30–40% across Serbia¹³.
12. To summarize, Climate change is already fundamentally altering Serbia's water cycle. Key observed and projected changes include:
 - Shifting Precipitation Patterns: Summer precipitation is decreasing, while the June–July–August season is warming at the fastest rate. The month of highest average precipitation has already shifted from June to May. This trend,

⁸ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change.

⁹ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change.

¹⁰ Republic of Serbia. (2024). Third National Communication of the Republic of Serbia to the United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change

¹¹ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/resource/NAP_Serbia_2024.pdf

¹² Republic of Serbia – Climate Change Adaptation Programme for the period 2023-2030
https://unfccc.int/sites/default/files/resource/NAP_Serbia_2024.pdf

¹³ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change.

combined with more intense rainfall events (daily precipitation over 30 mm has increased by over 100%), means that rain is falling harder and faster on increasingly dry and less absorbent soil, leading to rapid runoff, erosion, and flash floods^{14, 15}.

- Declining River Flows and Groundwater: These changes directly affect river discharge. While average maximum river flows are increasing due to intense rainfall, the crucial medium and minimum flows are decreasing, and periods of low water levels are becoming longer. By mid-century, groundwater recharge—vital for public water supply—is projected to decrease by a critical 30–40% across the country^{16,17}.
- Increasing Aridity and Soil Degradation: Rising temperatures are shifting Serbia towards a more arid climate. By mid-century, most of the territory will transition to dry sub-humid conditions, while southern, south-eastern, and north-eastern parts are expected to acquire characteristics of a semi-arid climate. This, combined with intense rainfall, will substantially accelerate soil degradation. Projections show that by 2060, only 6% of Serbia's territory will remain at low risk of soil degradation, with 42% facing high risk. In northern Serbia (Vojvodina), this will also drive an increased risk of wind erosion and dust storms¹⁸.

13. As a result, Serbia faces a dual challenge of increasing flood risk and more frequent and severe droughts, water scarcity, declining soil moisture, erosion and sediment transport.

Climate Change Impacts

14. Serbia is increasingly affected by the adverse effects of climate change, which are generating both economic and non-economic loss and damage. The intensification of hydrometeorological hazards—particularly floods, flash floods, droughts, extreme heat, and water scarcity—has significantly impacted water resources, agriculture, infrastructure, ecosystems, and rural livelihoods^{19,20,21}. These impacts are compounded by Serbia's geographic position, continental climate, and strong dependence on climate-sensitive sectors such as agriculture, hydropower, and water supply systems.
15. Climate-induced hazards are already affecting key sectors, with documented impacts including increased vulnerability of water resources, agriculture, forestry, biodiversity, and public health. Recent experience also demonstrates growing climate-related risks for energy production and distribution, critical infrastructure, transport systems, and the Serbian economy as a whole^{22 23}
16. Serbia is expected to face a high risk of climate change induced **soil degradation**²⁴ by mid-century, driven by increasing aridity, reduced water availability and more extreme precipitation events. During the 2001–2020 period, 29% of the country's territory was classified as at moderate risk of soil degradation and 28% at higher risk, including 14% at very high and extremely high-risk levels. Projections for the 2041–2060 period, indicate a significant deterioration, with 52% of the territory expected to be at moderate risk and 42% at high risk, including 25% at very high and extremely high-risk levels.
17. Driven by rising temperatures and dwindling summer water availability, the threat of climate-induced desertification in Serbia is escalating rapidly:
 - Baseline (2001–2020): Moderate desertification risk was limited to 36% of the country's territory.
 - Mid-Century Outlook (2041–2060) under RCP8.5 scenario: Lands at moderate risk will expand to cover 53% of the territory, while an alarming 30% of the country will face high risk²⁵.

¹⁴ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change.

¹⁵ Republic of Serbia. (2024). Third National Communication of the Republic of Serbia to the United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change.

¹⁶ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change.

¹⁷ Republic of Serbia. (2024). Third National Communication of the Republic of Serbia to the United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change.

¹⁸ United Nations Development Programme. (2022). Soil Degradation and Climate Change in Serbia. UNDP Serbia.

¹⁹ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change.

²⁰ Republic of Serbia. (2024). Third National Communication of the Republic of Serbia to the United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change.

²¹ Republic of Serbia. (2025). Nationally Determined Contribution of the Republic of Serbia: NDC 3.0. United Nations Framework Convention on Climate Change

²² World Bank Group. (2024). Western Balkans 6: Serbia Country Compendium — Country Climate and Development Report.

²³ World Bank Group. (2024). Country Climate and Development Report: Western Balkans 6 — Background Note: Adapting to a changing climate: The case for urgent action.

²⁴ Soil degradation and Climate Change in Serbia, UNDP, 2022 <https://www.undp.org/serbia/publications/soil-degradation-and-climate-change-serbia>

²⁵ United Nations Development Programme. (2022). Soil Degradation and Climate Change in Serbia, UNDP Serbia

Vulnerable Hotspots: This high-risk threshold will primarily impact the north-eastern regions, the Pčinja district, and the river basins of the South Morava, Nišava and Timok.

18. Concurrently, the frequency and volume of heavy precipitation events are shifting toward more intense, unmanageable extremes:
- Baseline (2001–2020): Extreme precipitation posed a moderate risk to 45% of the territory, while only 7% was classified as high risk.
 - Mid-Century Outlook (2041–2060) under RCP8.5 scenario: While moderate-risk zones are projected to decrease slightly to 34%, a critical 56% of the country's territory will transition to higher risk levels²⁶.
19. These changes have already caused significant economic and environmental damage and losses. Increasing variability in precipitation leads to insufficient groundwater recharge, declining soil moisture, and accelerated soil erosion processes²⁷. These effects are particularly severe in areas where land degradation, unsustainable land use practices, and insufficient water retention infrastructure reduce the capacity of ecosystems to buffer climate extremes.
20. Severe droughts have repeatedly affected agricultural production, particularly in northern Serbia, while intense rainfall and flash floods have caused substantial damages and losses to infrastructure, farmland, and local communities. Droughts and high-temperature events account for nearly 70% of all documented climate-related damages and losses, underscoring the country's high vulnerability to prolonged dry periods and heat stress²⁸. According to Serbia's NDC 3.0, minimum material losses and damages from weather- and climate-related extreme events in 2000–2024 are estimated at about EUR 10.45 billion. This demonstrates country's vulnerability to climate-induced hydrological extremes and highlights the need for improved water management and landscape resilience.
21. This figure includes a preliminary estimate of approximately EUR 1 billion linked to the extreme drought of summer 2024, which affected around 92% of the national territory. The highest ratios of annual sum of claims to GDP were in 2012 and 2014: damages in these years amounted to 5.36% and 5.21% of Serbia's GDP, respectively. NAP predicts the potential reduction of Serbia's GDP in case of a global mean temperature increase compared to the projected GDP without global warming. GDP decrease (in USD billions and %)

Temperature increase	GDP contraction (in billion US\$ and %)	
	2020 – 2040.	2020 – 2100.
1 °C	15.46 (1,20%)	344.36 (4,19%)
2 °C	58.12 (4,53%)	766.31 (9,32%)
3 °C	59.10 (4,97%)	890.40 (11,65%)
4 °C	97.53 (6,87%)	2,002.41 (17,06%)

Table 1. Potential reduction of Serbia's GDP in case of a global mean temperature increase²⁹

22. The World Bank Climate Change Development Report (2024)³⁰ estimates the following impact on GDP from the three key factors - riverine floods, heat and drought (wheat and maize) from -5.38% (2030) to -16.10% (2050) under RCP 4.5 scenario and from -4.59% (2030) to -14.70% (2050) under RCP 8.5 scenario. Also, according to Serbia's Biennial Transparency Report³¹, projections indicate that, without robust adaptation measures, Serbia's GDP could decrease by 4.5% by 2040 and up to 9.3% by 2100 if global climate goals are not met. For example, agriculture is the most vulnerable sector, with droughts capable of reducing average crop yields by over 40%. Also, maize yields could decline by up to 58% in non-irrigated conditions by 2030 if no adaptation measures are taken³². The 2014 floods alone caused economic

²⁶ United Nations Development Programme. (2022). Soil Degradation and Climate Change in Serbia. UNDP Serbia

²⁷ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change

²⁸ Republic of Serbia. (2025). Nationally Determined Contribution of the Republic of Serbia: NDC 3.0. United Nations Framework Convention on Climate Change

²⁹ Climate Change Adaptation Programme for the period 2023-2030, available at: https://unfccc.int/sites/default/files/resource/NAP_Serbia_2024.pdf

³⁰ Western Balkans 6 Country Climate and Development Report, The World Bank, 2024, <https://www.worldbank.org/en/region/eca/publication/western-balkans-6-ccdr>

³¹ Republic of Serbia. (2025). First Biennial Transparency Report of Serbia 2024. United Nations Framework Convention on Climate Change.

³² Republic of Serbia. (2024). Third National Communication of the Republic of Serbia to the United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change

damage estimated at €1.5 billion, affecting around 1.6 million people in central and western Serbia^{33 34}. On average, 200,000 people are affected by flooding each year, with an annual GDP cost of US\$1 billion. Major floods in May 2014 pushed an estimated 125,000 people into poverty.

23. The climate indicator currently used for drought assessment in Serbia correlates with observed yield losses and conditions favourable for wildfires. It also corresponds to reported cases of drought-related water-supply shortages, which are often documented by the media in the absence of systematic reporting and transparent data collection. Risk analysis of the compound effects of precipitation deficit and high temperatures for annual crop production shows that the share of production under high risk is expected to increase from 48% to 92%³⁵. These findings are consistent with the IPCC AR6 assessment, which identifies a high risk of water scarcity in South-East Europe with high confidence, even under 1.5°C of global warming³⁶.
24. Beyond economic losses—such as damage to infrastructure, reduced agricultural productivity, and disruptions to water and energy systems—non-economic losses are equally significant. These include ecosystem degradation, soil erosion, biodiversity loss, and increased vulnerability of rural communities.
25. Rising temperatures will have substantive negative impacts on public health. Between 45 and 55% of the population is at risk from climate change, and 20 to 30% of this group at extremely high risk and likely to experience direct climate change consequences. The proportion of the population at high risk is projected to rise due to rural-to-urban migration and population ageing. In urban heat island areas, air temperatures can exceed regional baseline measurements by up to 10 degrees Celsius³⁷.
26. The INFORM methodology³⁸ assesses risk through a combination of hazard and exposure, vulnerability, and coping capacity, providing a comprehensive framework for understanding the potential for crisis occurrence and escalation. According to the INFORM Risk Index as a multi-partner initiative co-developed and endorsed by European Commission's Joint Research Centre, United Nations agencies and World Bank Group, which represents one of the leading global tools for assessing disaster and humanitarian risk, Serbia ranks among the most exposed countries in Europe to climate-related hazards, particularly floods and droughts. Specifically, **Serbia is ranked as the second most exposed country in South-East Europe to flood hazards and the fourth most exposed country in Europe according to the same indicator. At the same time, Serbia is among the ten most exposed countries in Europe to drought hazards.**
27. These findings confirm that climate risks in Serbia are not only significant at the national level but are also highly pronounced in the European context.

Problem Statement

28. Serbia faces a compound climate challenge: increasingly intense but less frequent rainfall is exacerbating both flood and drought risks. **In the hilly and mountainous watersheds**, this pattern results in the combined effects of destructive flash floods, accelerated soil erosion in Central and Western Serbia, and prolonged dry periods and drought-related economic and livelihood losses in Southern and East Serbia, especially during summer. Water erosion processes are present on around 86% of Serbia's territory, with strong and excessive erosion affecting around 35%³⁹. Such combined effect of extreme weather, dominated by droughts, not only increases climate-induced water risks in water supply systems (on which a very high proportion of the population relies), energy production, and industrial use, but also strips away fertile topsoil and degrades agricultural land, jeopardizing food production⁴⁰. Downstream, this leads to severe riverbed sedimentation, rapidly reducing the active water storage capacity of key reservoirs—many of which have been heavily silted—and decreasing the conveyance capacity of channels, which raises the risk of localized flash floods in populated areas.

³³ United Nations Development Programme. (2025). Assessment of the impact and consequences and comprehensive measures following the 2014 floods. UNDP Serbia

³⁴ World Bank. (2014, October 3). World Bank supports Serbia in its recovery from devastating floods

³⁵ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change

³⁶ Intergovernmental Panel on Climate Change. (2022). Fact sheet: Europe. In Climate Change 2022: Impacts, Adaptation and Vulnerability

³⁷ Republic of Serbia. (2024). Third National Communication of the Republic of Serbia to the United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change.

³⁸ European Commission, Joint Research Centre. (n.d.). INFORM Risk: Results and data. Disaster Risk Management Knowledge Centre. Retrieved July 3, 2026.

³⁹ Gavrilović, Z., Stefanović, M., Milojević, M., Cotric, J., & Milošević, M. (2012). Torrent classification: Base of rational management of erosive regions. Journal of the Geographical Institute "Jovan Cvijić" SASA, 62(2), 7–20

⁴⁰ World Bank Group. (2024). Serbia: Deep Dive Water Security Assessment and Action Planning

29. Concurrently, **the northern agricultural plains of Vojvodina** suffer from declining summer precipitation and rising temperatures, leading to significant soil moisture deficits and agricultural droughts can reduce average crop yields by over 40%, while non-irrigated maize yields could decline by up to 58% by 2030 without adaptation⁴¹, crippling the country's primary food production zone.
30. Structural constraints exacerbate this vulnerability. Serbia has limited natural water storage capacity and relies heavily on a network of multi-purpose reservoirs originally constructed over 30 to 50 years ago under stationary climate assumptions. These aging systems, designed for historical weather patterns rather than today's extreme variability, lack the operational flexibility and active storage volume needed to buffer against rapid hydrological shifts. Consequently, during prolonged dry spells, the lack of climate-adapted water retention infrastructure intensifies systemic water scarcity, driving resource competition and operational conflicts between agriculture, municipal water supply, energy production (hydropower and cooling), and industrial sectors. Furthermore, a lack of integrated climate-informed planning means that flood management, drought management, and land use policies are often disconnected.
31. Without a targeted, integrated approach that combines climate-resilient water management, modernized early warning systems, and on-the-ground soil and water conservation, climate-induced economic losses are projected to escalate, threatening to weaken Serbia's economy and push vulnerable rural households into poverty.

Barriers to climate resilient water management and risk reduction

32. **Enabling Environment Barriers:** Beyond the general lack of climate risk integration, a key barrier is the legislative and administrative gap in mandating and coordinating cross-sectoral, integrated drought-flood management. Current water laws primarily manage either floods or water scarcity in isolation, failing to recognize how seasonal water deficits structurally trigger resource competition between agriculture, municipal utilities, industrial operations, and energy generation (hydropower and thermal cooling). Additionally, there is a critical lack of standardized technical guidelines and legal frameworks for implementing Nature-based Solutions (NbS) for water retention and anti-erosion measures. This legislative vacuum prevents public water management companies and local governments from legally prioritizing, budgeting, and adopting green infrastructure over traditional grey solutions.
33. **Barriers related to Risk Knowledge and EWS:** The core issue is not a complete lack of raw data, but the inadequacy of the monitoring network's density, technological integration, and dissemination mechanisms for localized, impact-based forecasting. For the northern agricultural plains of Vojvodina, the existing drought monitoring system does not link meteorological data directly to on-the-ground, actionable metrics like localized soil moisture levels or real-time crop health, rendering information highly abstract for rain-fed smallholders. In the steep, mountainous watersheds of Central, Western, and South-Eastern Serbia, the current early warning systems lack the high-resolution, real-time monitoring and hydro-meteorological modeling required to provide adequate lead time for rapid-onset, torrential flash floods. Furthermore, EWS data is poorly integrated with the operational models of municipal water suppliers and energy planners, leaving them unable to proactively manage aging reservoir storage in response to sudden hydrological shifts.
34. **Barriers related to Adaptation Capacities and Local Communities:** A specific barrier to water retention and soil erosion prevention at the community level is the lack of access to affordable, small-scale financing mechanisms for implementing targeted, localized adaptation measures—such as small retention ponds, terracing, and agroforestry. While erosion processes threaten approximately 90% of Serbia's territory, local land-users and municipal agencies lack the capital and technical capacity to halt this degradation. Rural advisory and agricultural extension services often lack the specialized engineering and ecological expertise to assist smallholders in designing and implementing these hybrid, nature-based solutions. Consequently, land degradation and upstream erosion continue unabated, driving massive, unmitigated siltation downstream.
35. **Barriers to Adaptation Investment Planning:** The primary barrier here is the lack of pre-prepared, bankable project pipelines that integrate both green (NbS) and grey infrastructure. While large-scale, traditional grey infrastructure investments (such as reservoirs and concrete river-regulation channels) are periodically planned, they are typically designed using outdated stationary climate baselines. They consistently lack the integrated watershed-level management, soil-erosion control, and green infrastructure components needed to prevent rapid reservoir siltation and ensure long-term physical efficiency under escalating climate variability. This systemic oversight makes it exceptionally difficult for local and national authorities in Serbia to attract financing from International Financial Institutions (IFIs) and global climate funds, which increasingly mandate climate-proofed, integrated designs to protect critical sectors like energy, infrastructure, and water supply from multi-sectoral climate risks.

⁴¹ Republic of Serbia. (2024). Climate Change Adaptation Programme for the period 2023–2030. United Nations Framework Convention on Climate Change

Project Target Areas

36. To address these challenges, the project will focus on two priority geographical areas that demonstrate distinct but complementary climate vulnerabilities. The support for the EWS will indirectly cover the whole country.
37. The first intervention area includes the **hilly and mountainous regions of central, western, and south-eastern Serbia**, which are highly sensitive to extreme rainfall events and accelerated soil erosion. Steep slopes, degraded watersheds, and reduced vegetation cover contribute to rapid surface runoff during intense precipitation events, increasing the risk of landslides, sediment transport, and flash flooding in downstream communities. At the same time, prolonged dry periods during summer months reduce water availability for agriculture and rural settlements. Climate projections indicate that the intensity of rainfall events in these regions is likely to increase, further exacerbating erosion and land degradation. Strengthening watershed management, improving water retention capacity, restoring vegetation cover, and implementing erosion control measures are therefore critical climate adaptation priorities in these areas. Due to climate vulnerability specificities, **this particular area of intervention can be further divided into two sub-regions**: 1. Central-West Serbia (including Šumadija and the West Serbia region): Highly vulnerable to extreme precipitation events and hydrological hazards, this hilly and mountainous subregion is increasingly prone to severe flooding, flash floods, and intense soil erosion. This is particularly evident during spring and autumn. On the other side, during summer and winter, this sub-region also experiences droughts seasons. The combination of steep terrain, heavy runoff, and changing precipitation patterns also triggers destructive landslides, threatening critical infrastructure, local agriculture, and rural livelihoods. 2. South-East Serbia: This subregion, which contains some of the country's most underdeveloped and rapidly depopulating rural areas, is characterized by its high susceptibility to prolonged summer droughts and rising aridity. These shifting conditions severely impact local farming (such as maize yields) and water security. Furthermore, the combination of intense heat waves, reduced rainfall, and high dryness places the subregion's mountainous ecosystems at a critical risk of forest degradation and devastating wildfires.
38. The Second intervention area focuses on the **northern plains of Serbia**, particularly the Autonomous Province of Vojvodina, which represent one of the most important agricultural production zones in South-Eastern Europe. This lowland region is increasingly affected by prolonged droughts, rising temperatures, and declining soil moisture levels. Historical water management systems have largely prioritized drainage and rapid removal of excess water from agricultural fields, which reduces the natural capacity of landscapes to retain water during dry periods. As climate change intensifies, these conditions lead to more frequent crop losses, declining agricultural productivity, and growing economic vulnerability among rural populations. Enhancing water retention in agricultural landscapes, improving soil moisture conservation, and promoting climate-resilient land management practices are therefore essential adaptation measures in this region.
39. In both regions, declines in snowfall will lead to less moist soil in spring, while increasing summer temperatures and declines in summer rainfall will lead to less replenishment of soil moisture, less water for plant growth, increased evaporation from soil and increased transpiration from plants in the summer growing months. Driven by projected climate shifts that will increase Serbia's average temperatures by up to 2.0°C and slash summer rainfall by 20% to 40% by 2050, over 92% of the country's arable land faces severe exposure to permanent aridity. Under these mid-century conditions, un-irrigated staple crops like maize and soybeans are projected to suffer systemic yield declines of 50% or more, while extreme heatwaves and late spring frosts will threaten two-thirds of all fruit plantations, burning high-value exports like raspberries and severely degrading potato and pepper harvests.⁴²
40. Across the intervention areas, rural communities face heightened vulnerability to climate change due to their strong dependence on agriculture, natural resources, and local water systems. Smallholder farmers, rural households relying on rain-fed agriculture, and communities located in erosion-prone catchments or drought-affected agricultural plains are particularly exposed to climate risks. Additional vulnerability factors include aging rural populations, limited financial resources, and insufficient infrastructure for water storage and soil protection.
41. For this reason, the project will prioritize adaptation and resilience-building interventions in rural areas, where the impacts of climate change on livelihoods, agriculture, and ecosystems are most pronounced. These interventions will focus on agricultural landscapes, small rural settlements, and watershed systems where improved water retention and

⁴² National Climate Change Adaptation Programme for Serbia, with the Action Plan (<https://unfccc.int/documents/640134>);

"Climate Change Impacts on Serbian Agriculture" Report: Issued under the *Second Biennial Update Report and Third National Communication under the UNFCCC*

soil stabilization can directly reduce climate risks. At the same time, around 20% of project interventions will target urban and peri-urban agglomerations, where climate change is increasing the risks of stormwater flooding, urban heat stress, and pressure on water supply systems. Nature-based water retention measures, green infrastructure, and improved stormwater management solutions will therefore be integrated into urban adaptation planning.

Theory of Change

42. IF Serbia builds a policy and planning framework for integrated climate-informed water-drought management, including NbS, enhances climate information and institutional capacities, implements community-driven adaptation solutions, and develops investment-ready adaptation pipeline,
43. THEN climate risks (droughts, floods, soil erosion) will be anticipated, managed and reduced more effectively,
44. LEADING TO reduced climate-induced losses and enhanced resilience of vulnerable communities, ecosystems and climate-sensitive sectors.
45. By addressing climate vulnerabilities in both mountainous watersheds prone to erosion and lowland agricultural plains vulnerable to drought, the project adopts an integrated landscape-based adaptation approach that enhances the capacity of ecosystems and communities to cope with climate variability and change. The project will strengthen enabling regulatory and planning frameworks, support community-led adaptation interventions such as water retention structures and soil erosion prevention measures, and prepare larger-scale climate-resilient investments in water management infrastructure. Through these measures, the project will directly contribute to the following objectives of the Adaptation Fund:

AF Outcome 1 (Reduced exposure to climate-related hazards and threats): Addressed via early warning systems and drought/flood risk mapping.

AF Outcome 2 (Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses): Addressed via training local self-governments on integrating climate risks into spatial plans. AF Outcome 3 (Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level) through component 2.

AF Outcome 3 (Strengthened awareness and ownership of adaptation and climate risk reduction processes): Addressed through project Outputs 1.5 and 2.1.

AF Outcome 4 (Increased adaptive capacity within relevant development sector services and infrastructure assets): Increased adaptive capacity through the implementation of interventions in scope of Component 2 and prepared in scope of Component 3.

AF Outcome 5 (Increased ecosystem resilience in response to climate change and variability-induced stress): Addressed via localized NbS interventions (e.g., wetland restoration, reforestation of riparian buffer zones) and development of technical documentation for climate adaptation investments pipeline under project Component 2.

AF Outcome 6 (Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas): Addressed through adaptation/risk reduction interventions under project Component 2.

AF Outcome 7 (Improved policies and regulations that promote and enforce resilience measures): Work on policies under Component 1 to ensure climate change integration in relevant legislation and policies.

AF Outcome 8 (Innovation for effective, long-term adaptation to climate change accelerated, encouraged, and enabled to scale up): Under Component 3, the innovative adaptation investments (piloted through Component 2) will be defined, designed, encouraged and enabled for scaling up through climate investment pipelines.

46. The project will reduce the vulnerability of communities, ecosystems, and productive landscapes to the adverse impacts of climate change. It will improve water security, protect soils and agricultural productivity, strengthen ecosystem resilience, and enhance the adaptive capacity of both rural and urban populations in Serbia. This is achieved through three reinforcing pathways:
 - **Improved policy and planning framework, enhanced climate information and institutional capacity strengthened** (corresponding to the **Component 1: Enabling environment and enhanced information for climate resilient integrated water resource management**): Enhanced data, improved capacities for drought EWS, at national and local level, enable informed and timely decisions.
 - **Enhanced adaptive capacity and climate-resilient livelihoods** (corresponding to the **Component 2: Community-led climate adaptation measures**): Applying integrated water-drought management on the local level - engaging municipalities in participatory planning, access to knowledge and financing result in the adoption of local adaptation measures and in increased community resilience to climate change.
 - **Reduced climate-related losses through scaled infrastructure solutions** (corresponding to the **Component 3: Investment Planning for Scaling Up Climate-Resilient Infrastructure**): Investment-ready and community-validated adaptation pipeline (including technical and financial documentation) facilitates access to funding (IFI, commercial

banks etc.) for large-scale adaptation investments.

47. The climate information and planning tools developed under Component 1 (e.g., upgraded hydro-meteorological models by the Republic Hydrometeorological Service - RHMZ) provide the foundational data layer. This data informs the geographic targeting and design specifications for the community-level Nature-based Solutions (NbS) implemented in Component 2. Also, proceedings of the policy dialogue and stakeholder consultations will guide the community-level adaptation measures. Furthermore, the institutional capacity built in Component 1, as well as technical guidelines developed for cross-sectoral water-drought management, will be used to prioritize and design larger-scale, bankable pre-feasibility studies under Component 3, ensuring all future infrastructure investments are based on localized, future-looking climate risk models rather than historical averages. The sole focus of Component 3 is on project preparation and investment planning. By financing comprehensive pre-feasibility studies, environmental impact assessments (EIAs), and cost-benefit analyses, Component 3 aims to create a mature pipeline of "investment-ready" climate-resilient water infrastructure projects. The project will support the Government/Ministry of Environmental protection and other competent institutions, to unlock and mobilize future capital from the national budget, the EIB, the Green Climate Fund, and commercial blended-finance mechanisms.

Impact Level

- ✓ Reduced economic and environmental losses from climate hazards
- ✓ Increased resilience of water systems, agriculture, and rural communities and related larger urban agglomerations
- ✓ Improved long-term sustainability of land and water resources

Key assumptions:

- ✓ Policy recommendations are adopted and implemented by relevant institutions
- ✓ Institutions have sufficient mandate and resources to apply new climate-sensitive tools
- ✓ Climate information is accessible and trusted by end-users
- ✓ Communities are willing and able to adopt adaptation measures

THEORY OF CHANGE

IF Serbia builds a policy and planning framework for integrated water-drought management, including NbS, enhances climate information and institutional capacities, implements community-driven adaptation solutions, and develops investment-ready adaptation pipeline, THEN climate risks (droughts, floods, soil erosion) will be anticipated, managed and reduced more effectively, LEADING TO reduced climate-induced losses and enhanced resilience of vulnerable communities, ecosystems and climate-sensitive sectors

Outcome 1. Preparedness for extreme weather and climate events is improved through enhanced enabling environment for integrated water-drought management and strengthened EWS

Outcome 2. Adaptive capacity and climate-resilient livelihoods of local communities are strengthened through participatory, gender-responsive and community-based measures with focus on integrated water-drought management and NbS.

Outcome 3. Climate-resilient flood protection and drought prevention infrastructure investments scaled up through enhanced investment planning and pipelines

1.1. Policy amendments and technical guidelines developed for cross-sectoral water-drought management under changing climate conditions

1.2 Capacity of the Republic Hydrometeorological Service of Serbia strengthened through upgraded monitoring systems and development of enhanced climate information products

1.3 Local institutions equipped with tools and technical capacity to integrate adaptation measures into local planning, with a focus on integrated water-drought management and

1.4 Drought early warning system strengthened with impact-based forecasting covering agriculture and water management

1.5 Knowledge Management for capturing and disseminating lessons

2.1 Increased community engagement for development of local-level interventions related to integrated water-drought management and NbS implementation.

2.2 Community-driven climate adaptation measures implemented through challenge calls to strengthen climate-resilient livelihoods, with evidence generated for scaling up

3.1. Integrated risk-informed adaptation investment planning framework developed for three selected river basins, covering flood and drought risks

3.2 Investment pipelines and design documentation for climate-resilient water retention developed

Enabling Environment Barriers: Beyond the general lack of climate risk integration, a key barrier is the legislative and administrative gap in mandating and coordinating cross-sectoral, integrated drought-flood management.. Additionally, there is a critical lack of standardized technical guidelines and legal frameworks for implementing Nature-based Solutions (NbS) for water retention and anti-erosion measures.

Barriers related to Risk Knowledge and EWS. The core issue is not a complete lack of raw data, but the inadequacy of the monitoring network's density, technological integration, and dissemination mechanisms for localized, impact-based forecasting

Barriers related to Adaptation Capacities and Local Communities: A specific barrier to water retention and soil erosion prevention at the community level is the lack of access to affordable, small-scale financing mechanisms for implementing targeted, localized adaptation measures—such as small retention ponds, terracing, and agroforestry

Barriers to Adaptation Investment Planning: The primary barrier here is the lack of pre-prepared, bankable project pipelines that integrate both green (NbS) and grey infrastructure. While large-scale, traditional grey infrastructure investments (such as reservoirs and concrete river-regulation channels) are periodically planned, they are typically designed using outdated stationary climate baselines.

Key assumptions:

- Policy recommendations are adopted and implemented by relevant institutions
- Institutions have sufficient mandate and resources to apply new climate-sensitive tools
- Climate information is accessible and trusted by end-users
- Communities are willing and able to adopt adaptation measures

Project/Programme Objectives:

48. The project's objective is **to reduce the vulnerability of communities, ecosystems and infrastructure to climate induced water scarcity, droughts, floods through improved integrated water and drought risk management and enhanced climate resilient water storage and supply, and the implementation of nature -based solutions.**

49. Project/Programme Components and Financing:

Project/Programme Components	Expected Outcomes	Expected Concrete Outputs	Amount (US\$)
1. Enabling environment and enhanced information for climate resilient integrated water resource management	1. Preparedness for extreme weather and climate events is improved through enhanced enabling environment for integrated water-drought management and strengthened EWS	1.1. Policy amendments and technical guidelines developed for cross-sectoral water-drought management under changing climate conditions	200,000
		1.2 Capacity of the Republic Hydrometeorological Service of Serbia strengthened through upgraded monitoring systems and development of enhanced climate information products.	300,000
		1.3 Local institutions equipped with tools and technical capacity to integrate adaptation measures into local planning, with a focus on integrated water-drought management and NbS	200,000
		1.4 Drought early warning system strengthened with impact-based forecasting covering agriculture and water management	1,479,553
		1.5 Knowledge management and learning for capturing and disseminating lessons	300,000
Total component 1			2,479,553
2. Community-led climate adaptation measures	2. Adaptive capacity and climate-resilient livelihoods of local communities are strengthened through participatory, gender-responsive and community-based measures with focus on integrated water-drought management and NbS .	2.1 Increased community engagement for development of local-level interventions related to integrated water-drought management and NbS implementation.	150,000
		2.2 Community-driven climate adaptation measures implemented through challenge calls to strengthen climate-resilient livelihoods, with evidence generated for scaling up	3,865,000
Total component 2			4,015,000
3. Investment Planning for Scaling Up Climate-Resilient Infrastructure	3. Climate-resilient flood protection and drought prevention infrastructure investments scaled up through enhanced investment planning and pipelines	3.1. Integrated risk-informed adaptation investment planning framework developed for three selected river basins, covering flood and drought risks	800,000
		3.2 Investment pipelines and design documentation for climate-resilient water retention developed	1,200,000
Total component 3			2,000,000
Project subtotal (components 1-3)			8,494,553
6. Project/Programme Execution cost (8.5%)			722,037
7. Total Project/Programme Cost			9,216,590
8. Project cycle management fee charged by the Implementing Entity (8.5%)			783,410
Amount of financing requested			10,000,000

50. **Projected Calendar:**

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

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Project/programme components, particularly focusing on the concrete adaptation activities of the project

51. The project is structured into three components:

Component 1: Enabling environment and enhanced information for climate resilient integrated water resource management;

Component 2: Community-led climate adaptation measures;

Component 3: Investment Planning for Scaling Up Climate-Resilient Infrastructure.

52. **Component 1: Enabling environment and enhanced information for climate resilient integrated water resource management**

53. Component 1 will support improved data and monitoring, propose policy and regulatory amendments, develop technical guidelines to facilitate the integration of climate change adaptation, including nature-based approaches, into water and land management practices.

54. **Outcome 1.** *Preparedness for extreme weather and climate events is improved through enhanced enabling environment for integrated water-drought management and strengthened EWS*

55. **Output 1.1** *Policy amendments and technical guidelines developed for cross-sectoral water-drought management under changing climate conditions.*

56. By developing policy amendments and technical guidelines that embed climate adaptation and integrated water drought management principles, the project will enable institutions to systemically incorporate climate risks into planning and decision-making. This creates an enabling environment for prioritizing risk-informed and ecosystem-based measures, leading to more effective prevention of climate-induced losses and enhanced long-term resilience of vulnerable sectors and communities.

57. **Activity 1.1.1** Drafting policy recommendations for systemic implementation of integrated water-drought management under changing climate conditions and implementation of NbS.

- Conduct a comprehensive review and gap analysis of national policies, laws, and strategies (water, agriculture, environment, spatial planning) with respect to climate risks (droughts, floods, erosion)
- Develop policy recommendations and amendments to integrate climate adaptation, nature-based solutions (NbS), and watershed approaches

Expected deliverables:

- At least four regulatory and policy gap assessment reports prepared based on projected climate risks and climate change adaptation, with focus on integrated water-drought management under climate change in Serbia
- Recommendations for improvements of policies and regulations prepared for integrated water drought management and integration of adaptation measures into most vulnerable sectors of the economy (water, agriculture, environment, spatial planning);

58. **Activity 1.1.2** Develop guidelines/technical standards for water retention and soil erosion prevention measures

- Prepare technical guidelines and standards for water retention
- Support integration of guidelines into national and sectoral planning frameworks

Expected deliverables:

- At least 2 sets of technical guidelines and standards for water retention and soil erosion prevention measures

prepared and published

- At least 1 consolidated technical manual integrating climate adaptation and ecosystem-based approaches produced
- At least 3 sectoral integration briefs for incorporating climate adaptation into sectoral planning frameworks prepared (water, agriculture, environment, spatial planning);

59. **Activity 1.1.3** Policy dialogue and stakeholder consultations

- Organize multi-stakeholder consultations involving ministries, local self-governments, CSOs, farmers' associations, while ensuring the meaningful participation of women, vulnerable groups and other underrepresented stakeholders
- Facilitate inter-ministerial coordination and discussion about proposed amendments

Expected deliverables:

- At least 3 multi-stakeholder consultation events (national and regional level) organized and delivered (participation of at least 100 stakeholders, inclusive of women and vulnerable groups);
- At least 3 inter-ministerial coordination workshops facilitated and delivered
- At least 1 validated package of policy recommendations/amendments produced and endorsed

60. **Output 1.2** *Capacity of the Republic Hydrometeorological Service of Serbia strengthened through upgraded monitoring systems and development of enhanced climate information products*

61. By strengthening the capacity of the Republic Hydrometeorological Service of Serbia to produce impact-oriented climate services and products and improve dissemination methods, the project will ensure that climate information is timely, accessible, and actionable. This enables stakeholders to make informed decisions (e.g., water use, crop planning, risk preparedness), thereby reducing vulnerability to climate variability and minimizing economic and livelihood losses.

62. **Activity 1.2.1** Upgrade and expansion of hydrological and meteorological monitoring networks

Hydrological and meteorological monitoring capacities across two selected river basins will be strengthened to improve the availability, quality, and reliability of climate and water-related data necessary for effective climate risk management.

63. Activities will include the installation and modernization of hydrological monitoring stations, as well as the strengthening of meteorological observation networks. The project will support the introduction of modern monitoring technologies and improved data transmission systems to enable near real-time collection and analysis of hydrological and meteorological information.

64. Monitoring infrastructure will be integrated into national hydrometeorological systems to improve data accessibility, interoperability, and coordinated use by relevant institutions responsible for water management, forecasting, and emergency response.

Expected deliverables:

- New equipment procured and installed in at least 20 hydrometeorological stations managed by Republic Hydrometeorological Service of Serbia, Agency for Environmental Protection
- Improved data available for climate risk assessment, in particular for assessing impacts of climate change on hydrological regimes at the river basin level

65. **Activity 1.2.2** Strengthen the capacity of hydrometeorological services through the system upgrades and the development and delivery of enhanced climate information products and services

- Assess gaps in forecasting tools, and service delivery
- Upgrade data processing systems and forecasting tools, including integration of climate and hydrological models
- Develop new hydrometeorological products
- Conduct training for staff on climate services, modeling, and communication of risk information

Expected deliverables:

- At least 1 comprehensive gap assessment report on hydrometeorological systems prepared
- At least 2 upgraded forecasting and data processing tools/models developed or improved
- At least 3 new or improved hydrometeorological products (e.g., seasonal forecasts, advisories) produced
- At least 4 staff training sessions conducted, with at least 40 staff trained on the application of the improved hydrometeorological and forecasting system;

66. **Activity 1.2.3** Improve climate and EW information dissemination systems and communication channels to improve access and support timely and informed decisions

- Improve data visualization and communication platforms (web portals, dashboards, mobile tools)
- Develop and implement standard operating procedures (SOPs) for data sharing and dissemination
- Pilot enhanced dissemination channels (SMS alerts, apps, media partnerships)

Expected deliverables:

- At least 1 upgraded digital platforms (web portal/dashboard/mobile tools) developed;
- At least 1 set of standard operating procedures (SOPs) for data sharing and dissemination developed and adopted;
- At least 3 pilot dissemination channels (e.g., SMS alerts, mobile app, media partnerships) implemented;
- At least 2 user feedback assessments conducted to improve dissemination effectiveness;

67. *Output 1.3 Local institutions equipped with tools and technical capacity to integrate adaptation measures into local planning, with a focus on integrated water-drought management and NbS*

By enhancing institutional capacities at the local level and supporting the integration of adaptation measures into local planning documents, the project will enable municipalities in the target areas to systematically incorporate climate risks into development decisions. This leads to improved targeting of adaptation investments, reduced exposure of communities to climate hazards, and strengthened resilience at the local level, particularly for vulnerable groups.

68. *Activity 1.3.1 Strengthening capacities of local institutions on CCA.*

- Develop practical tools and templates for local adaptation planning
- Facilitate multi-stakeholder planning workshops at local level
- Promote inclusive planning processes, ensuring participation of vulnerable groups and gender-sensitive approaches

Expected deliverables:

- At least 3 practical tools/templates for local adaptation planning developed;
- At least 6 local multi-stakeholder climate adaptation planning workshops conducted;
- At least 3 trainings conducted for local climate adaptation planning and reporting (involving at least 100 local stakeholders trained, including representatives of vulnerable groups);

69. *Activity 1.3.2 Support pilot municipalities in revising local planning documents to integrate climate adaptation priorities and measures addressing climate-induced water-related risks.*

70. *Provide technical assistance for integrating adaptation measures with focus on integrated water-drought management and NbS into local development plans, spatial plans, and sectoral plans (agriculture, water, disaster risk reduction)*

Expected deliverables:

- At least 3 local development plans updated to include adaptation measures
- At least 3 spatial or sectoral plans revised to integrate climate risks

71. *Output 1.4 Drought early warning system strengthened with impact-based forecasting for the agriculture and water management*

Strengthening the drought early warning system with impact-based forecasting will enable proactive and informed decision-making by stakeholders. By translating climate data into practical risk information, the system will support early actions such as adjusting agricultural practices and water management strategies. This reduces exposure to drought impacts, minimizes losses, and enhances resilience of climate-sensitive sectors and communities.

73. *Activity 1.4.1 Assess existing drought monitoring and early warning capacities.*

Expected deliverables:

- At least 1 national assessment report on drought monitoring and Early Warning System (EWS) capacities prepared and handed over to the Government/Hidromet Service (as competent authority) for further operation and maintenance in line with Government's rules and regulations;
- At least 1 gap analysis and recommendations report produced;
- At least 2 stakeholder consultation workshops conducted;

74. *Activity 1.4.2 Upgrade an impact-based drought early warning system (EWS).*

- Strengthening meteorological observation networks through installation and modernization of hydrological monitoring stations
- Develop drought indicators and risk models, integrating meteorological, hydrological, and agricultural data
- Integrate EWS with national hydrometeorological systems and data platforms
- Develop decision-support tools for agriculture and water management based
- Establish communication protocols and dissemination mechanisms (alerts, advisories, bulletins)

Expected deliverables:

- 1 impact-based drought early warning system upgraded
- At least 10 monitoring stations installed or upgraded
- At least 3 drought indicators and risk models developed and validated

- At least 1 national protocol for alerts and advisories developed and implemented

75. **Activity 1.4.3** Train end-users on interpretation and use of EWS outputs.

Expected deliverable:

- At least 8 training sessions for EWS end-users conducted (including at least 150 end-users trained (farmers, water managers, local authorities));
- *At least 3 user guidance manuals/tools for EWS utilization developed (tailored to specific end-users).*

76. **Output 1.5** Knowledge Management and learning for capturing and disseminating lessons

77. In order to ensure that lessons learned are systematically captured, disseminated, and sustained this output provides for a structured knowledge management ensuring that knowledge is generated, applied and disseminated.

78. **Activity 1.5.1** Development of knowledge products:

- Document and disseminate lessons learned and good practices for replication.

Expected deliverables:

- At least 10 knowledge products prepared to promote impacts and technical details for each supported pilot project (e.g., case studies, guidance notes, policy briefs, videos, communication materials) and disseminated to stakeholders at the national and local levels to promote replication and scaling
- Delivered outputs are available on state existing digital infrastructure (RHMS website and website klimatskepromene.rs)

79. **Activity 1.5.2** Promotion of best practice and peer-exchange.

- Setting up of a knowledge-sharing hub in the form of a Climate Adaptation and Resilience Center (preferably in some of the most vulnerable areas, such as wetland ecosystems, e.g. Obedska Bara, Bosutske Šume or Koviljski Rit). The Government will liaise with the protected areas managers to repurpose the existing facilities within these protected areas for this purpose. Such center will serve as:
 - training and education facility for climate adaptation and nature-based solutions,
 - demonstration site for retention and integrated water management measures,
 - venue for conferences, workshops and professional exchange,

Expected deliverables:

- At least 4 national and regional peer-learning and exchange events organized (e.g., one per year)
- At least one online and offline dissemination campaign implemented to promote engagement, awareness raising and replication of community driven climate adaptation actions
- One knowledge sharing hub established and operational

80. **Component 2: Community-led climate adaptation measures**

81. **Outcome 2** *Adaptive capacity and climate-resilient livelihoods of local communities are strengthened through participatory, gender-responsive and community-based measures with focus on integrated water-drought management and NbS.*

82. Through participatory process led by local communities, this component will support community-based pilot projects in vulnerable rural areas focused on “no regret” measures, such as:

- Small-scale water accumulation (for atmospheric water) and retention structures (e.g., ponds, micro-reservoirs, check dams, repurpose channels for both water retention and drainage).
- Reforestation and afforestation (greening) of erosion-prone slopes and unused and degraded agricultural areas/land.
- Terracing, grassing, and contour farming for soil stabilization.
- Community-led watershed restoration and maintenance.
- Facilitate community engagement, training, and participatory planning to ensure sustainability and local ownership of the investments.
- Develop monitoring mechanisms for water use efficiency, soil stability, and ecosystem health.

83. This component builds upon the experience in supporting similar measures in Serbia through different initiatives, such as the EU, Sweden and Swiss supported “EU for Green Agenda in Serbia” project. Some of the supported investments⁴³ could be further replicated, scaled, such as:

⁴³ https://zelenatranzicija.undp.org.rs/en/oblast/nature-protection-biodiversity/?post_types=post

1. *Revitalisation of the three wetlands - special nature reserves – Gornje Podunavlje, Koviljsko-Petrovaradinski Rit and Obedska Pond.* The Public Company Vojvodinašume manages these wetland areas that play crucial role in regulating the flood wave and preventing downstream floods. On the other hand, these areas are also affected by water deficits in increasingly dry summers, leading to eutrophication and succession that impedes its water-regulating function. The PC Vojvodinašume restored the connections between the separated water areas and enabled water circulation by removing the sediment and cleaning the channel beds, alongside creating artificial bird islands and embankments to prevent soil erosion.
2. *Applying nature-based solutions in revitalization of the Gradac riverbed* in the vicinity of the City of Valjevo. Public Water Management Company (PWMC) Srbijavode restored this important watercourse that both provides drinking water to residents, and is a habitat to many important species, and that was affected by the recent supercell storms, as well as increased fluctuations of water level. PWMC Srbijavode removed sediment (app. 3,850m³) and fallen trees that were blocking the riverbed, and they constructed willow wattle and stonework (190m long) to prevent water-erosion of the river banks.
3. *Restauration of wetland habitats in Tara Mountain National Park through innovative technologies.* The National Park installed “fog catchers” to secure water and revitalize a protected wetland area in which 6-7 meters deep layer of peat created by moss is being increasingly affected by droughts in recent years. Lack of water causes moss die out, peat oxidation and consequent emission of GHGs. However, since this area that has 85 fog days per year, the “fog catchers” helped bring back the very much needed water.
4. *Revitalization of the Special Nature Reserve “Kraljevac”.* The local Fisherman Association that is a manager of this protected area improved the water status of Lake Kraljevac that is important for the local community, its economy and the biodiversity (in particular: fish species European Mudminnow, ground squirrel, birds of prey etc.). They revitalized this habitat by recanalization of channels connected to the lake, removing sediment along 1000 m of canal, they planted 1000 seedlings of indigenous species, installed a floating pump (for watering and firefighting), and introduced sustainable grazing.
5. *Innovative anti-erosion afforestation of terrains that are less accessible in river basins.* PWMC Srbijavode and PC “Srbijašume” afforested degraded and erosion-prone slopes of the watersheds of the Jablanica, Vlasina and Pčinja rivers within the forest areas of Vranje, Leskovac and Pirot. They planted seedlings in form an elliptical shape, which is an innovative approach to the anti-erosion afforestation of hard-to-reach terrain with large slopes and extreme conditions for the growth and survival of greenery, having higher success rate than the traditional method of afforestation.
6. *Revitalization of the Okanj Pond Special Nature Reserve.* The Environmental Protection Association “Okanj” restored the canal network and improved the water regime of this drought-affected wetland, overcoming the problem of water scarcity, and improving the resilience of the ecosystem. With forming bird islands, they created new habitats for at least 17 strictly protected and protected bird species, this solution.
7. *Solar pumps for optimal water levels in Zasavica wetland.* The Nature Conservation Movement of Sremska Mitrovica used solar pumps to provide optimal water level during the dry period (from June to September) in Special Nature Reserve Zasavica wet meadows. This helped preserve the natural annual cycle in this wetland that sustains large number of cattle, and plant and animal species.

84. The demand for and impact of community-driven, small-scale climate adaptation interventions are evident. These measures effectively reduce local climate-induced vulnerabilities, generate significant local economic and nature-related benefits, and promote collaborative approaches among the public sector, private sector, and local communities.
85. To effectively implement these measures, the project will mobilize stakeholders and ensure their full participation. Community-driven climate adaptation initiatives will be solicited through a two- steps governed by UNDP’s Innovation Challenge Policy and Low-Value Performance-based Payment Agreements (PBPA’s).

Step 1: Project Development Phase (Preliminary Solicitation)

86. In order to prepare the ground for effective implementation, a competitive pre-Challenge Call will be organized during the development of the full-size project proposal. This call will solicit proposals for community-driven, small-scale adaptation measures and investments, with a particular focus on integrated water management in the context of droughts and land erosion. The outcomes of this call will be used to inform the development of river-basin level climate risk assessments, analytical studies, policies, and regulations.
87. The call will be open to public entities, private companies, and local self-governments, applying either as standalone entities or in consortia. The Government, supported by UNDP and external independent evaluators, will evaluate

applications based on pre-defined criteria targeting climate vulnerabilities and adaptation impact potentials. The selected proposals will then be awarded an appropriate prize in line with UNDP policy. Furthermore, these proposals will receive technical support during the project's implementation phase to elaborate all necessary technical documentation and conduct financial de-risking prior to final implementation decisions.

Step 2: Project Implementation Phase (Second Challenge Call and PBPAs)

88. During the implementation phase, a second Challenge Call will be organized in parallel with the development of analytical studies and policies. This phase allows government counterparts to validate study elements, incorporate end-user feedback, and better plan impactful, feasible measures (such as climate-resilient water management programs and agricultural development policies).
89. Following the evaluation of this second call, the project will conduct an acceleration process, culminating in the issuance and monitoring of Low-Value Performance-based Payment Agreements (PBPAs).

Funding Mechanism: Performance-based Payment Agreements (PBPAs) and/or Innovation Awards

90. PBPAs are agreements between UNDP and a responsible party that provide funding strictly upon the verified achievement of an agreed, measurable development result. No advance payments are provided.
91. Beneficiaries—which can include local self-governments, public and private sector companies, CSOs, and academia—will be selected through a competitive process. They will be screened against specific PBPA criteria set in agreement with national and local partners (e.g., municipalities at the river basin level). Prior to signing, each PBPA will be accompanied by detailed Social and Environmental Screening Procedures (SESP) and due diligence. The PBPAs, including their theory of change, result formulation, payment-linked indicators, and validation methods, will be appraised by the Project Board. UNDP will regularly monitor beneficiary performance to ensure qualitative and timely delivery.
92. In case of support to the beneficiaries from vulnerable groups the project will apply Innovation Awards as funding mechanism. Innovation Awards mechanisms applies same principles as PBPA, except that it allows advance payments, which removes the burden of pre-financing from the beneficiaries.

Governance, Transparency, and Stakeholder Engagement

93. Throughout both steps, the project will organize wider national and local stakeholder engagement events to discuss urgent local climate risks, tailor the challenges to actual local needs, and mobilize applicant interest. The project will ensure that the Innovation Challenge is widely promoted with sufficient application time for entities to prepare and clarify potential issues.
94. To ensure total transparency, the project team will develop clearly documented operational manuals. These manuals will guide the deployment of both the Innovation Challenge and the PBPAs, containing detailed descriptions of the development challenge, eligibility requirements, application processes, evaluation criteria, scoring methods, acceleration processes, PBPA awarding criteria, expected impacts, and monitoring and evaluation (M&E) plans. All requirements will be publicly available before entities register. Finally, these operational manuals will be reviewed and approved by the UNDP Country Office (CO) and the UNDP CCM Regional Technical Advisor (RTA), and endorsed by the Project Board prior to the deployment of the mechanisms.
95. **Output 2.1** *Increased community engagement for development of local-level interventions related to integrated water-drought management and NbS implementation*
96. By strengthening community engagement and dialogue, the project will ensure that adaptation planning is participatory, context-specific, and inclusive. Incorporating local knowledge and priorities improves the relevance and acceptance of interventions, enhances social cohesion, and empowers vulnerable groups. This leads to more effective and sustainable adaptation outcomes.
97. **Activity 2.1.1** *Mapping local level stakeholders and identifying potential drivers.*
Expected deliverables:
 - At least 1 stakeholder mapping report per target region prepared (minimum 2 regions) with at least 150 stakeholders identified and categorized;
 - At least 1 database of local stakeholders and drivers developed;
98. **Activity 2.1.2** *Organize community engagement events in target regions*
 - Conduct community-level awareness campaigns on climate risks and adaptation options
 - Organize community dialogues and workshops to identify priority adaptation measures

- Ensure inclusive participation, with targeted engagement of women, youth, and marginalized groups
- Promote knowledge exchange and peer learning between communities

Expected deliverables:

- At least 10 community engagement events conducted at river basin level to discuss key climate vulnerabilities related to integrated water and land management (involving at least 300 community members, with at least 40% women participation);
- At least 10 priority adaptation measures identified through participatory processes at the river basin level;
- At least 5 knowledge exchange sessions between communities facilitated;

99. Activity 2.1.3 Gender mainstreaming into planning and implementation of action on local level.

Expected deliverables:

- Developed Gender Action Plan for maximizing gender mainstreaming into planning and concrete implementation of action on local level;
- Defined gender sensitive indicators for selecting pilot projects;
- At least 2 trainings on gender mainstreaming into planning and implementation of action organized.

100. Output 2.2 Community-driven climate adaptation measures implemented through challenge calls to strengthen climate-resilient livelihoods, with evidence generated for scaling up

101. By supporting community-based pilot projects through challenge calls, the project will facilitate the implementation of locally appropriate, small-scale adaptation measures. These pilots will demonstrate effective solutions, build local ownership, and generate evidence for scaling up. This directly reduces climate risks at the community level while strengthening adaptive capacity and resilience of vulnerable populations. Interventions under this component will be formulated through local community dialogues in fully participatory manner, with particular focus on needs of marginalized and vulnerable groups, e.g. smallholder farmers, elderly-managed farms, women-headed households. Through local engagement, the project will use competitive “challenge calls” to solicit, incubate and pilot innovative adaptation solutions suitable for future scaling up and replication. The criteria for the selection of community-based adaptation measures will particularly focus on the positive impact on increasing resilience and development of local economy, inclusivity and gender equality. For example, the proposed measures will have to prove direct benefits for communities and citizens such as improved livelihoods, enhanced resilience of agricultural production and local economy to climate induced water stress.

102. The project will rely on the UNDP Innovation Challenge Policy in sourcing concrete community-driven climate adaptation measures. The UNDP will formulate the Innovation Challenge in direct communication with the national partners and the participating local self-governments, reflecting national and local climate risks and development challenges. The UNDP will develop Innovation Challenge on the basis of river basin level climate risk assessments and planning documentation developed under the first project component. The studies and analyses, will identify concrete climate adaptation measures at the river-basin and municipal level. This will be done following the example of Kolubara River Basin Study⁴⁴ prepared by UNDP in the aftermath of the 2014 devastating floods that heavily affected Serbia’s economy and livelihood of local population at the river basin level. The Study identified concrete needs and comprehensive works to be carried out in the coming years in the Kolubara river basin, to ensure safety from floods in this 3,600 km² area, that is a home to 335,000 people, living in 16 municipalities in central Serbia.

103. Activity 2.2.1 Design challenge calls for community driven local interventions related to integrated water-drought management and NbS implementation.

- Define eligible applicants and project types
- Define selection criteria prioritizing climate risk reduction, innovation, and inclusiveness

Expected deliverables:

- At least 1 challenge call with guidelines document developed
- At least 1 set of eligibility and selection criteria defined and published
- At least 1 outreach and communication plan prepared with at least two information sharing sessions conducted to mobilize applicants;

104. Activity 2.2.2 Launch challenge call(s) and determine longlist.

Expected deliverables:

- Challenge call package developed and published (guidelines, eligibility criteria, application forms, evaluation methodology and outreach materials)
- National and/or regional outreach and awareness campaign conducted for potential applicants
- Information sessions/webinars organized for interested municipalities, local communities, public and private companies and other stakeholders
- Longlist of eligible and high-potential project concepts prepared and endorsed
- Assessment report summarizing submitted applications, selection methodology and results produced

105. **Activity 2.2.3** Mentoring support for selected ideas to finance ready interventions.

- Provide technical assistance to applicants in proposal development
- Provide hands-on technical support and mentoring to communities

Expected Deliverables:

- Mentoring and technical assistance programme designed and operationalized in the form of Climate Adaptation Accelerator
- Tailored mentoring plans prepared for shortlisted applicants
- At least 20 community-driven climate adaptation concepts technically supported towards finance-ready proposals
- At least 10 capacity building workshops and hands-on advisory sessions delivered
- Portfolio of at least 10 finance-ready pilot interventions finalized (including technical, financial, environmental and social impacts documentation prepared) and approved for support

106. **Activity 2.2.4** Disbursement of grants and implementation.

- Co-finance pilot projects
- Support implementation of pilot measures, including procurement and supervision
- Monitor and evaluate performance and adaptation benefits of pilot projects

Expected deliverables:

- At least 10 grant agreements (Performance-based Payments, Grant Agreements or Innovation Awards) drafted and signed with selected beneficiaries
- Monitoring framework for pilot projects established and technical supervision and quality assurance missions conducted
- Periodic monitoring reports documenting implementation progress, adaptation benefits and lessons learned prepared
- Final evaluation reports for supported pilot projects completed

107. **Component 3: Investment Planning for Scaling Up Climate-Resilient Infrastructure**

108. **Outcome 3.** *Climate resilient flood protection and drought prevention infrastructure investments scaled up through enhanced investment planning and pipelines*

109. **Output 3.1. Integrated risk-informed adaptation investment planning framework developed for three selected river basins, covering flood and drought risks**

110. The development of river basin-wide climate risk assessments will provide basis for long-term climate-resilient water management and disaster risk reduction. These assessments will guide investment planning and interventions toward risk-prone areas and vulnerable communities, improving water allocation, reducing hazard exposure, and strengthening ecosystem resilience, thereby enhancing adaptive capacity across sectors.

111. **Activity 3.1.1:** Selection of three river basins to serve as replicable models for reducing climate induced water stress by integrated water-drought management.

112. Following the climate vulnerability assessments, the project will select at least three of the most vulnerable river basins that are particularly prone to climate induced hazards, including drought, floods and associated land erosion. The assessment will also consider economic and social impacts. Given the distinct climate variabilities between target areas, at least one river basin will be selected from each sub-region (Central-West and South-East) of the first area and one from Vojvodina as second focus area.

113. The project will select the first river basins from among the following: the Kolubara River, Drina River, Zapadna Morava

River – demonstrating the sub-region that is exposed to combined impacts of droughts and floods in Central and Western Serbia sub-region. This is the sub-region where steep terrain and degraded watersheds increase exposure to soil erosion, landslides, and flash floods affecting municipalities such as Valjevo, Kraljevo, Užice, and Vranje.

114. The project will select the second river basin from among the Južna Morava River basin and Timok river basin in South and East Serbia sub-region where negative trend in precipitation patterns and annual river discharges, drive severe water scarcity, aridity, and prolonged agricultural droughts. This particularly affects municipalities of Bor, Zajecar, Knjazevac, Vranje, Leskovac and Nis.

115. The project will select the third river basin from among the following drought-prone areas in northern Serbia (the Province of Vojvodina), particularly within the Tisa River and Danube River agricultural plains, including municipalities such as Zrenjanin, Kikinda, and Sombor, where recurrent droughts, declining soil moisture, and limited water retention capacity threaten agricultural productivity.

Expected deliverables:

- At least 3 river basins formally selected based on agreed criteria (one in Central Serbia and another in Vojvodina Province);
- The report on selection of river basins including justification, risk profiles, and stakeholder mapping, prepared;
- At least 3 stakeholder validation meetings conducted for basin selection;

116. **Activity 3.1.2** Develop basin-wide climate risk assessment and planning framework.

117. A comprehensive basin-wide assessment and planning framework will be developed to support long-term climate-resilient water management and disaster risk reduction in three selected river basins. The framework will combine hydrological modelling, climate projections, spatial analysis, and risk assessment methodologies to identify priority intervention areas and support integrated basin planning.

118. Activities will include (i) modelling and assessment of risks related to floods, flash floods, droughts, erosion, and sediment transport; (ii) analysis of the impacts of extreme precipitation and climate change on hydrological processes; and (iii) studies of current and future water availability and demand across households, agriculture, industry, and energy sectors. The project will also assess water quality, ecosystem conditions, and the vulnerability of critical infrastructure and settlements to climate hazards.

119. The assessment and studies prepared will provide for an investment planning framework to guide future climate-resilient investments and work under Component 3 and Component 4.

Expected deliverables:

- At least 3 comprehensive climate risk assessments produced at the river basin level including hydrological, land-use, and ecosystem assessment and vulnerability and risk maps (one per selected basin)
- At least 3 implementation roadmaps with prioritized investments / measures for flood and drought risk reduction (one per selected river basin).

120. **Output 3.2. Investment pipelines and design documentation for climate-resilient water retention developed**

121. By preparing planning documentation, the project will create a pipeline of climate-resilient infrastructure projects that can attract national and international financing. This enables the scaling up of adaptation measures, leading to substantial reductions in climate-related losses (e.g., floods and droughts) and long-term resilience of critical water systems and dependent communities. Key activities will include the preparation of planning documentation (general project, pre-feasibility studies and potentially spatial special purpose area plans with strategic environmental impact assessments) for a range of interventions, such as development of retention reservoirs and water storage areas; implementation of erosion control measures in mountainous catchments, etc.

122. Following the stakeholder consultations, Public Enterprise Srbijavode proposed several project ideas which could be supported within this Component by preparing planning documentation:

- **Planning and technical documentation for the protection of the Drina area from high waters and soil erosion in the area from the municipality of Bogatić to the town of Loznica:** The proposed project aims to strengthen Serbia's resilience to climate change through improved flood protection, water retention, and soil erosion prevention measures in the Drina River basin, particularly in the area between Bogatić Municipality and the City of Loznica. The project responds to increasing flood risks and erosion processes intensified by climate change, building on lessons

learned from the catastrophic floods of 2014 that affected western Serbia and the Drina–Sava basin. The scope of the project includes the preparation of comprehensive technical and planning documentation for an integrated flood protection system along approximately 10 km of the Drina River corridor, as well as analyses of hydrological, hydraulic, geomorphological, geological, and environmental conditions. The project should prepare a General Flood Protection Design for the Mačva and Loznica areas, including field investigations, hydrological and sediment transport studies, flood zone mapping, technical solution options, and recommendations for future interventions. Additional deliverables include a Preliminary Feasibility Study, Environmental Impact Assessment documentation, a Detailed Regulation Plan/Spatial Plan for Special Purpose Areas, and expropriation documentation with cadastral and geodetic plans. The cost for the documentation is estimated at approximately USD 700,000.

- **Adaptation to climate change in the Nišava River Basin:** The proposed project aims to strengthen climate resilience in Serbia through integrated flood and drought risk reduction, erosion control, and biodiversity conservation measures in the Nišava River basin, covering the territories of Niš, Pirot, Bela Palanka, Dimitrovgrad, and Svrlijig. The project applies an integrated river basin management approach based on Nature-based Solutions (NbS), combining engineering, biological, and biotechnical measures to improve water retention, stabilize erosion-prone areas, and enhance ecosystem resilience under future climate change scenarios. The scope of work includes a comprehensive diagnosis of the basin, GIS mapping and development of a digital cadaster of erosion hotspots, hydrological and hydraulic modelling, multicriteria prioritization of interventions, and the preparation of detailed technical documentation for priority sub-basins. The project should prepare a General Basin Management Design, updated hydraulic and hydrological models, Environmental Impact Assessment documentation, detailed Designs for Execution for selected interventions, and administrative and legal documentation required for implementation and land-use alignment. Planned field interventions include the construction of multipurpose retention structures, torrent control barriers, slope stabilization measures, reforestation using native species, restoration of wetlands and river meanders, and implementation of biotechnical erosion-control structures. The implementation period is estimated at 36 months, with a total indicative budget of approximately USD 4.8 million.
- **Preliminary Feasibility Study with General Design, Conceptual Design and Relevant Planning Documentation for the Construction of the Zlatarić Dam with Reservoir on the Bukovica River:** The proposed project aims to strengthen Serbia's resilience to climate change and flood risks through the preparation of technical and planning documentation for the construction of the Zlatarić Dam and reservoir on the Bukovica River in the Kolubara River basin near Valjevo. None of the above locations will include natural areas under protection. The project responds to the severe flood risks identified in the Kolubara basin, particularly following the catastrophic floods of 2014, and seeks to reduce flood impacts in Valjevo and downstream areas through water retention and sediment control measures. In addition to flood protection, the proposed reservoir is intended to support irrigation, low-flow augmentation, and sediment retention, contributing to climate adaptation and sustainable water management in the wider basin. The scope of work includes the preparation of a General Design Project, hydrological and geological investigations, climate-sensitive hydraulic analyses, evaluation of alternative dam and reservoir solutions, and assessment of technical, environmental, economic, and social impacts. The project should deliver a Preliminary Feasibility Study, Spatial Planning Documentation (including a Spatial Plan for a Special Purpose Area and potentially a Detailed Regulation Plan), and an Initial Design (IDR) required for obtaining location conditions and advancing future permitting and financing procedures. Additional outputs include topographic and geological surveys, hydrological studies, sediment transport assessments, conceptual engineering solutions for the dam and associated structures, and recommendations for future project development phases. The estimated implementation period is 40 months, with the total value of the documentation phase estimated at approximately USD 900,000.

123. The Project will be in continuous communication with PE Srbijavode about these and other project ideas to be considered for the selection taking into consideration alignment with national priorities and access to financing. The safeguard principles, adaptation additionality and prevention of maladaptation will be key criteria in defining the investment pipeline and design of technical documentation.

124. **Activity 3.2.1** Identify priority areas for the development of climate-resilient water storage systems (e.g., multipurpose reservoirs, retention basins) and prepare preliminary projects.

Expected deliverables:

- Priority locations/sites identified and mapped
- At least 2 general projects developed including spatial and hydrological assessment and preliminary geological investigation conducted, definition of alternatives and proposal for the technical solution
- At least 2 stakeholder consultations at the river basin level conducted with national and local institutions and water management authorities

125. **Activity 3.2.2** Conduct pre-feasibility studies, strategic environmental impact assessments and spatial planning documentation.

- Conduct pre-feasibility studies,
- Conduct cost-benefit and economic analyses to demonstrate viability
- Prepare spatial planning documentation Carry out strategic environmental and social impact assessments (SEA)

Expected deliverables:

- At least 2 pre-feasibility studies completed
- At least 2 spatial planning documents prepared with SEIA

126. **Activity 3.2.3** Prepare investment-ready packages suitable for financing by international development banks or climate finance mechanisms.

- Prepare investment proposals and financing strategies
- Engage with potential financiers (EIB, EBRD, GCF, etc.)

Expected deliverables:

- Financing and investment strategy prepared for at least 2 prioritized infrastructure projects
- At least 3 engagement meetings and consultations held with potential financiers and development partners
- Roadmap for scaling-up and blended financing finalized.

B. Describe how the Project/programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations.

127. The project will deliver concrete economic, social and environmental benefits while ensuring that vulnerable communities and groups, including women, are prioritized and equitably benefit from project interventions, in full compliance with the Environmental and Social Policy (ESP) and Gender Policy of the Adaptation Fund. The project is designed to ensure there are no concerns of negative development impacts. In line with national EIS&SEA regulation, as well as UNDP SESP standards, all activities will be screened to confirm they do not increase the vulnerability of either beneficiaries or non-beneficiaries, nor reduce their existing capacity to adapt to climate change. Potential adverse impacts will be systematically avoided, minimized, and mitigated through robust screening, inclusive planning, and continuous monitoring.

128. The project interventions across the targeted zones will physically reach and directly benefit an estimated 45,500 people (approximately 23,342 females and 22,158 males). This includes approximately 15,000 smallholder farmers whose livelihoods are threatened by intensifying agricultural droughts, and 30,500 local residents (including elderly and marginalized rural populations) who will benefit from improved flood early-warning systems and secured local water supplies. The direct benefits will occur through three primary direct mechanisms:

- **Small-Scale Infrastructure & NbS Pilots (15,000 direct beneficiaries):** The implementation of 10 localized, physical pilot interventions (e.g., micro-reservoirs, check dams, and nature-based erosion barriers) in the targeted municipalities will directly safeguard approximately 5,000 households (averaging 3 members per household) from localized flash flooding, erosion, and crop-crippling drought.
- **Localized Early Warning Systems (EWS), Hydrological Monitoring and nature-based flood risk management (30,000 direct beneficiaries):** The installation of local-level, impact-based monitoring stations and specialized warning networks will provide real-time, actionable alerts directly to smallholders and municipal coordinators in the immediate, high-risk pilot zones. High-risk flood-zone residents will also benefit from localized nature-based flood barriers and community-level warning systems. The numbers are based on targeting 3 to 5 highly vulnerable local settlements situated in high-risk "red zones," with a typical cluster size of 7,000 to 10,000 residents per area.
- **Direct Capacity Building & Technical Training (500 direct beneficiaries):** Targeted, hand-on training sessions, agricultural extension workshops, and institutional capacity-building programs will directly train at least 500 key stakeholders, including municipal planners, local farmers, water managers, and members of the national Coordination Mechanism.

129. The preliminary beneficiary figures were calculated using a proxy-based spatial and demographic modeling approach. This method overlays national census data with historical climate hazard maps in Serbia's most vulnerable watersheds. These preliminary estimates will be replaced by a Detailed Socio-Economic Baseline Assessment during the full proposal stage. This will use household surveys and gender-disaggregated municipal data to establish exact, audit-ready baselines.

130. Over 2.5 million people will indirectly benefit from improved basin-wide water security and through the upgraded impact-based early warning systems (EWS). The number of indirect beneficiaries was calculated by using GIS mapping to overlay national census data with the river basins (e.g., the Morava River basin) that will be fully covered by the upgraded, national-level hydro-meteorological forecasting and early-warning systems (Component 1).

Economic benefits:

131. The project will enhance climate-resilient livelihoods by improving water availability and reducing soil erosion in targeted areas highly exposed to climate variability. These interventions will reduce economic losses associated with droughts, floods, and land degradation, thereby increasing the stability and productivity of agriculture, which is a primary income source for vulnerable rural populations. The project will also generate local employment opportunities, particularly during the implementation of water retention and land management measures, and reduce long-term expenditures related to disaster response and land restoration. Investing in integrated water and drought management in Serbia for the 2027–2032 period is projected to yield a "triple-A dividend" of avoided losses, accelerated economic growth, and amplified socio-environmental benefits, delivering an estimated return of \$4 to \$5 for every \$1 invested. While implementing comprehensive national adaptation measures requires an estimated annual investment of 0.4% to 0.6% of GDP over the next decade, the cost of inaction is drastically higher, threatening to shrink Serbia's overall GDP by up to 15% by 2050.⁴⁵ A more detailed estimation of the expected economic benefits will be developed for the full project proposal.
132. To ensure that economic benefits are not offset by unintended negative impacts, all investments will be subject to environmental and social screening and risk categorization, consistent with the Adaptation Fund ESP. Procurement and implementation processes will follow transparent, non-discriminatory procedures, preventing the exclusion of vulnerable groups and ensuring fair access to economic opportunities.

Social benefits:

133. The project will improve water security, safety, and adaptive capacity of communities exposed to climate-induced risks. It will specifically target vulnerable groups, including smallholder farmers, low-income rural households, elderly populations, and communities in remote or environmentally degraded areas.
134. To avoid potential negative social impacts—such as inequitable benefit distribution, exclusion, or unintended restrictions on access to natural resources—the project will apply inclusive, participatory planning processes and ensure free, prior, and informed consultations with affected communities. A grievance redress mechanism (GRM) will be established and accessible to all stakeholders, enabling timely resolution of complaints. The project will also ensure that no activities result in involuntary resettlement or loss of livelihoods, and where risks are identified, mitigation measures will be designed in line with the ESP principles.

Environmental benefits:

135. The project will generate significant environmental benefits through the restoration and sustainable management of watersheds, reduction of soil erosion, improved groundwater recharge, and enhanced ecosystem services. Nature-based solutions such as reforestation, terracing, and sustainable land management will contribute to biodiversity conservation and improved ecological status of water bodies.
136. All interventions will be designed to avoid adverse environmental impacts, including habitat degradation, watercourse disruption, or unintended downstream effects. Site-specific assessments will ensure that activities are environmentally sound and climate-resilient, and that they do not negatively affect protected areas or critical habitats. Where minor impacts cannot be fully avoided, mitigation measures—such as erosion control, biodiversity safeguards, and monitoring of water flows—will be implemented. For large-scale investments an EIA will be prepared followed by public consultations. As illustration, Integrating economic valuations into Serbia's environmental adaptation efforts for 2027–2032 indicates that investments into wetlands and floodplains restoration can reduce municipal and agricultural damages, turning a 50 million recovery program into \$250 million in cumulative savings.⁴⁶ Past environmental and climate-smart pilot projects implemented in Serbia demonstrate highly specific, quantified economic benefits and long-term cost savings: Sava and Drina Rivers Corridors Integrated Development Program (SDIP): Backed by a €78.2 million (\$85 million equivalent) World Bank loan specifically allocated to Serbia in Phase I, this ongoing regional initiative is

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⁴⁶ [The first Dialogue on Serbia's Climate Change Adaptation held in Belgrade | United Nations Development Programme; Environment in Serbia; Sava and Drina Rivers Corridors Integrated Development Program;](#)

designed to increase flood-protected areas by 300,000 hectares and secure 400,000 citizens against destructive 1-in-100-year flood events. Since the catastrophic 2014 floods caused over €1.5 billion in damages (4.7% of GDP) in Serbia alone, this targeted infrastructure intervention mathematically yields hundreds of millions of euros in avoided infrastructure recovery costs and agricultural asset protection. The EU & FAO's "Strengthening Disaster Resilience in Agriculture" Project: Conducted across vulnerable Serbian municipalities (such as Svrlijig, Valjevo, and Paraćin), the introduction of specific water-retention practices—specifically tractor subsoiling—resulted in a 20% to 30% increase in soil water-holding capacity. This physical improvement systematically protected demonstration farms from yield declines, translating into immediate localized savings of €1,500 to €3,500 per hectare in preserved crop values during extreme summer droughts.

137. UNDP & GEF "Digital Farm" and Smart Irrigation Pilots: This pilot project digitized a family farm in Serbia using solar-powered IoT sensors and automated drip-irrigation control, demonstrating a full commercial payback period of just three years. By utilizing real-time meteorological data to trigger precise water application, the pilot achieved an immediate 30% reduction in water and electricity utility costs while simultaneously boosting crop yields by up to 25% during severe drought years, compared to neighboring non-digitized farms.

Benefits for vulnerable groups:

138. To prevent marginalization or elite capture, the project will apply transparent beneficiary selection criteria, community validation processes, and continuous monitoring of benefit distribution. The participatory approach for the identification of pilot measures will put special focus on integration of most vulnerable stakeholders, such as smallholder farmers, elderly-managed farms, women-headed households.

Gender considerations:

139. The project will adopt a gender-responsive approach in line with the Adaptation Fund Gender Policy. Women, particularly in rural areas, often face disproportionate climate impacts while playing a central role in water and land management. The initial gender analysis highlights that women in rural Serbia face disproportionate climate vulnerabilities due to structural inequalities (e.g., low rates of agricultural land ownership, which limits access to commercial credit for adaptive technologies like drip irrigation). During water scarcity, the burden of securing household water falls predominantly on women. A comprehensive gender analysis and action plan will be presented with the full proposal. The project will ensure meaningful participation of women in all project components (setting gender sensitive criteria under Component 2, favoring women participation in capacity building under Component 1, gender responsive early warning etc.) and promote equal access to resources, training, and economic opportunities. Consequently, the project will mandate a minimum of 40% female participation in all capacity-building activities and prioritize funding for women-led agricultural cooperatives in the Component 2 challenge calls.

140. The initial gender analysis is provided in a supplementary Annex 1 (shared as a separate file) and summarized below.

141. Serbia has a robust statutory framework for gender equality, anchored by the Law on Gender Equality (2021) and the National Strategy for Gender Equality (2021–2030), which mandate equal opportunities in economic development and environmental planning. Despite progressive laws, deeply entrenched patriarchal norms persist in rural Serbia. Traditional cultural practices often dictate that property is inherited by and registered to male head-of-households. Consequently, women in rural communities are largely excluded from formal financial decision-making and are culturally assigned to unpaid domestic and care work. According to the Republic Statistical Office (RZS), women constitute only about 19% of agricultural landowners and manage merely 15.9% of agricultural holdings in Serbia. In rural areas, the formal employment rate for women is significantly lower than for men, with women comprising over 60% of the unpaid family workforce in agriculture. Because women in rural Serbia are primarily responsible for household management, cooking, and hygiene, they bear a disproportionate physical and psychological burden during periods of climate-induced water scarcity and droughts. The most critical challenge for women is that lack of land ownership directly restricts their access to commercial credit, state agricultural subsidies, and adaptation finance (which often require land deeds as collateral). Therefore, male farmers are more likely to afford adaptive technologies (e.g., drip irrigation, hail nets), while women-led households are left highly vulnerable to crop failures.

142. The project actively addresses these disparities by transforming the climate-finance landscape for rural women through tailored access to financing, capacity building quotas and gender-responsive early warning. Under Component 2, the "Challenge Call" criteria will be specifically designed to lower the barriers to entry for women. For instance, evaluation matrices will award bonus scoring to women-led households, female agricultural cooperatives, and projects specifically addressing household water security. Recognizing that women are often excluded from local water governance, the project will enforce a minimum 40% female participation quota in all capacity-building workshops and municipal planning

consultations (Component 1). The early warning systems will be designed taking into account the different communication channels used by men and women, ensuring that emergency alerts regarding floods or droughts reach women, who are often at home managing dependents during crises.

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

143. The proposed project is highly cost-effective as it prioritizes preventive, ecosystem-based, and integrated water and land management measures that deliver multiple benefits at relatively low cost compared to conventional, infrastructure-heavy alternatives.
144. First, the project emphasizes nature-based solutions (NbS)—such as water retention measures, reforestation, terracing, and soil stabilization—which are widely recognized as cost-efficient approaches for climate adaptation. These measures typically require lower capital investment and maintenance costs than grey infrastructure (e.g., large-scale flood control structures or engineered irrigation systems), while providing long-term, self-sustaining benefits through enhanced ecosystem services, including water regulation, soil fertility, and erosion control.
145. Second, the project adopts a preventive approach, reducing the need for costly post-disaster recovery and rehabilitation. By addressing root causes of vulnerability—such as poor water retention capacity and land degradation—the project will avoid or significantly reduce economic losses associated with droughts, floods, and soil erosion. This results in a favorable cost–benefit ratio, as relatively modest upfront investments generate substantial avoided damages over time.
146. Third, the project is designed to maximize co-benefits across sectors, including agriculture, water management, disaster risk reduction, and biodiversity conservation. This integrated approach ensures that a single set of interventions delivers multiple outcomes, increasing overall efficiency of resource use and reducing duplication of investments across sectors and institutions.
147. Fourth, the project leverages and strengthens existing institutional frameworks, data systems, and planning processes, including Serbia’s water management planning framework. By building on ongoing initiatives and capacities rather than creating parallel systems, the project minimizes transaction costs and enhances sustainability and scalability of results.
148. Fifth, the project incorporates community-based and participatory approaches, which are inherently cost-effective. Engaging local stakeholders in the design, implementation, and maintenance of interventions reduces operational costs, improves targeting, and increases the longevity of investments through local ownership. In-kind contributions from communities (e.g., labor, local knowledge) further enhance cost-efficiency.
149. Sixth, the project includes capacity-building and knowledge transfer components, which represent a cost-effective investment with long-term returns. Strengthening institutional and technical capacities will enable replication and scaling of successful measures beyond the project lifetime, thereby amplifying impact without proportional increases in cost.
150. Finally, the project ensures efficient allocation of resources through prioritization of high-risk and high-impact areas, as well as through the application of environmental and social screening to avoid maladaptation and unintended costs. Monitoring and adaptive management will allow for continuous optimization of interventions, ensuring that resources are used effectively throughout implementation.

Benefits generated – losses averted (with project)	Alternative to project / Baseline situation (without project)
Component 1. Enabling environment and enhanced information for climate resilient integrated water resource management	
• More efficient allocation of public resources through integrated planning, reducing duplication and maladaptation costs	• Fragmented policy and planning frameworks leading to inefficient investments and overlapping measures
• Reduced long-term costs through better integration of climate risks into water and land management policies	• Continued reactive, short-term planning resulting in higher future adaptation and recovery costs
• Strengthened institutional coordination, reducing transaction costs and delays in implementation	• Weak coordination across sectors leading to delays, inefficiencies, and increased administrative costs
• Avoided costs of policy misalignment with EU/WFD requirements and future compliance adjustments	• Increased future costs to retrofit policies and systems to meet EU and international requirements
• Early identification of extreme events, reducing damage to agriculture, infrastructure, and livelihoods	• Limited forecasting capacity leading to higher economic losses from droughts, floods, and extreme events
• More efficient disaster response, reducing emergency response	• High costs of reactive disaster management and emergency

costs	interventions
• Improved data for decision-making, leading to optimized investments and reduced uncertainty	• Poor data availability leading to suboptimal investments and inefficient resource use
• Long-term savings through reduced damage to public infrastructure and ecosystems	• Repeated damage to infrastructure and ecosystems due to lack of anticipatory systems
• Reduced agricultural losses through timely response to drought conditions	• Significant crop losses and income instability due to lack of comprehensive drought early warning systems
• Improved water use efficiency, reducing costs of water abstraction and supply	• Inefficient water use leading to higher operational and environmental costs
• Avoided livelihood losses for vulnerable farmers and rural households	• Increased vulnerability and economic shocks for rural populations during drought periods
• Lower long-term costs of emergency water supply and drought response	• Recurring high costs for emergency drought relief measures
Component 2: Community-led climate adaptation measures	
• Reduced soil erosion and land degradation, preserving agricultural productivity and avoiding rehabilitation costs	• Continued land degradation requiring costly restoration and resulting in declining productivity
• Increased water retention and groundwater recharge, reducing costs of water supply interventions	• Water scarcity leading to expensive technical solutions (e.g., irrigation expansion, water transfers)
• Reduced flood and sedimentation risks, lowering infrastructure maintenance costs	• Increased sedimentation and flood damage, leading to higher infrastructure repair and maintenance costs
• Enhanced ecosystem services (soil fertility, biodiversity, water regulation) providing long-term economic value	• Ongoing loss of ecosystem services, increasing long-term environmental and economic costs
• Lower-cost, self-sustaining solutions compared to grey infrastructure alternatives	• Reliance on capital-intensive grey infrastructure with high investment and maintenance costs
• Increased efficiency and sustainability of interventions through local ownership and capacity	• Low sustainability of investments due to limited local capacity and ownership
Component 3: Investment Planning for Scaling Up Climate-Resilient Infrastructure	
Increased preparedness of large-scale investments for water storage	Investments remain at the level of project idea
Facilitated access to financing	Large scale investments fail to secure access to financing due to lack of planning documents and studies

151. A detailed cost-effectiveness analysis will be included in the full proposal, in particular for the purpose of prioritizing the climate adaptation investments and pipeline development. It will include comparison of feasible alternative, detailed costing, life cycle assessment and quantification of expected benefits and avoided losses. The concept note integrates this principle by prioritizing Nature-based Solutions (NbS) over traditional grey infrastructure for localized adaptation. Evidence shows that restoring riparian buffer zones and utilizing natural floodplains provides a competitive return-on-investment for flood attenuation compared to concrete embankments, offering massive co-benefits for biodiversity and carbon sequestration.

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

152. The proposed project aligns with and operationalizes key national strategies across the climate, water, agriculture, and disaster risk reduction (DRR) sectors, addressing critical gaps in their integrated implementation across a multi-sectoral landscape that includes energy, industry, and municipal water supply. Table below provides for an overview of national policies and alignment with the project:

Name of Policy / Strategy	Implementation Period	Key Objectives	Relevance & Alignment with the Project
Law on Climate Change	2021	To establish the basis for planning, updating and implementing policies, measures and activities in the field of adaptation to changed climate conditions.	Direct alignment: the project activities under Component 1 will be aligned with and contribute to the implementation of the Law.

National Climate Change Adaptation Programme	2023–2030	To identify climate impacts, reduce vulnerability, and integrate adaptation measures into key sectors (agriculture, water management, forestry, and health).	Direct Alignment: The project operationalizes this Programme by deploying Nature-based Solutions (NbS) for flood/drought management (Component 2) and developing climate-resilient water infrastructure plans (Component 3).
Water Management Strategy of the Republic of Serbia	Until 2034	To ensure sufficient good-quality water, protect against the harmful effects of water (floods, erosion), and protect water quality.	Direct Alignment: Upgrading the hydro-meteorological early warning systems (Component 1) and planning multi-purpose reservoirs (Component 3) directly fulfill the Strategy's flood protection and water supply mandates.
Revised Nationally Determined Contribution (NDC)	2022–2030	To reduce GHG emissions (33.3% by 2030 vs. 1990) and significantly enhance adaptive capacity, particularly in the highly vulnerable agriculture and water sectors.	Direct Alignment: Supports the NDC's adaptation goals by reducing the vulnerability of local agricultural communities to extreme weather events (droughts and flash floods) through targeted local interventions.
Environmental Protection Programme (Green Agenda Strategy)	2024–2033	To align Serbia with the EU Green Deal, focusing on decarbonization, circular economy, depollution, and biodiversity protection.	Direct Alignment: Component 2 directly contributes to the Strategy's biodiversity pillar by prioritizing green infrastructure and ecosystem restoration (NbS) over traditional grey infrastructure.
The Strategy of Agriculture and Rural Development	2026-2034	Restoring the food sovereignty of the Republic of Serbia, ensuring food security for the population, increasing the competitiveness of the agri-food sector, and fostering the sustainable development of rural areas.	One of the specific objectives is Strengthening the resilience of agricultural production to climate change and the sustainable management of natural resources used in agriculture. The project aligns with this strategy by providing the necessary water security and soil conservation techniques required to sustain agricultural outputs in a sustainable manner that does not exacerbate water stress for other competing sectors. The Strategy calls for the development of an Irrigation and Drainage Program in the Republic of Serbia and the project can contribute by sharing experience and best practice.
National Disaster Risk Management Program	2014-	For the Republic of Serbia to become more resilient to natural disasters, with the capacity for rapid recovery.	The project will build upon the baseline by shifting the focus from post-disaster response to proactive risk mitigation (like anti-erosion measures) and upgrading the Early Warning Systems (EWS) to handle localized flash floods and agricultural droughts, which are currently under-monitored. This upgraded, impact-based EWS will provide critical lead time not only for farmers and rural communities, but also for municipal and energy planners managing regional water reserves.

153. The Project is fully aligned with NAP processes, particularly in relation to water resources management, agriculture, and disaster risk reduction. The Project is aligned with the **three** of the four priority objectives of NAP:

- SPECIFIC OBJECTIVE 1: Increasing awareness, improving knowledge and understanding of the impact of climate change and its consequences,
- SPECIFIC OBJECTIVE 2: Establishing and strengthening capacity for the systematic implementation of the process of adaptation to changing climate conditions from national to local levels;
- SPECIFIC OBJECTIVE 3: Increasing the resilience of critical infrastructure and natural resources to climate change.

154. While the NAP identifies water management and agriculture as highly vulnerable sectors—with cascading climate risks directly threatening energy production, industrial operations, and municipal infrastructure—there is a gap in translating these national, cross-sectoral priorities into localized, basin-level interventions. This project will directly operationalize NAP priorities in the targeted vulnerable regions. In scope of water management, the Project will support engaging in concrete investments as defined in the water management studies developed as activities in NAP. In terms of drought,

the Project will build upon the methodology for drought risk as defined in scope of NAP (Measure 4: Inclusion of drought as a multidimensional climate hazard in the monitoring system, timely notification, impact monitoring, including damage and losses) and support the Republic Hydrometeorological Service of Serbia in introducing a comprehensive early warning system and new products (Measure 15: Improving agrometeorological services to provide the necessary information to increase the resilience of agricultural production to climate change). The capacities of the Republic Hydrometeorological Service of Serbia will be strengthened to support also the improving the preparedness of citizens (NAP Measure 8: Improving the preparedness of citizens of the Republic of Serbia to weather and climate extremes).

155. More concretely, the Project will build upon several measures from NAP, including:

- Measure 4: Inclusion of drought as a multidimensional climate hazard in the monitoring system, timely notification, impact monitoring, including damage and losses;
- Measure 15: Improving agrometeorological services to provide the necessary information to increase the resilience of agricultural production to climate change;
- Measure 13: Irrigation optimization according to needs and resources;
- Measure 20: Support to local government units in implementing climate change adaptation through strengthening green infrastructure, etc⁴⁷.

156. The Water Management Strategy of the Republic of Serbia up to 2034 sets the baseline for Integrated Water Resources Management (IWRM) and explicitly mandates the need to balance the competing water demands of agriculture, public water supply, the energy sector (hydropower and thermal cooling), and industry. However, its current implementation heavily favors traditional grey infrastructure. This project will support the strategy's modernization by demonstrating how Nature-based Solutions (NbS) and climate-informed water retention can be integrated into existing watershed management plans to buffer water scarcity risks for all reliant economic sectors. Project activities supported within Components 2 and 3 will be aligned with the key measures of the Plan, especially: 23: Measures for natural water retention; 24: Climate change adaptation measures, 17: Measures to reduce sediment production due to soil erosion and surface runoff.

157. Under the Green Agenda for WB6 a WB6 Climate Adaptation Roadmap was prepared as a pre-phase for WB6 Climate Adaptation Strategy. The Roadmap stresses the necessity for the implementation of integrated water-drought management through a favorable policy framework and pilot projects. Water-drought management addresses a gap in adaptation in WB6 countries and supports water resilience in alignment with the European Water Resilience Strategy.

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

158. The project will follow Serbia's legal and regulatory framework, UNDP Environmental and Social Policy and the Environmental and Social Policy (ESP) and Gender Policy of the Adaptation Fund. The Implementing Entity (UNDP), through its Social and Environmental Standards (SES), will ensure that all activities are screened at an early stage, that environmental and social risks are assessed proportionate to their significance, and that appropriate mitigation and monitoring measures are applied in line with the Adaptation Fund ESP guidance on risk screening and categorization.

159. Given the nature and scale of proposed activities, the project is a Category B intervention under the AF ESP and significant risk under UNDP's SES Guidance note. A full E&S screening against all 15 AF ESP principles (compliance with the law, access and equity, marginalized groups, human rights, gender equality, core labor rights, indigenous peoples, involuntary resettlement, natural habitats, biodiversity, climate change, pollution prevention, public health, physical and cultural heritage, lands and soil conservation) is presented under section K. The results of self-screening based on UNDP's procedure is provided as an appendix.

160. All project activities will comply with the legal and regulatory framework of the Republic of Serbia, including laws governing environmental protection, water management, spatial planning, agriculture, and construction as per the table below.

⁴⁷ The project directly aligns with the National Climate Change Adaptation Programme (2023–2030) by operationalizing its green infrastructure mandates—specifically utilizing upper-watershed replanting and natural water retention to combat erosion and downstream siltation

Name of Law / Legislation /Number	Key Objectives	Compliance & Permitting Steps for the Project	Name of competent authority
Law on Climate Change Official Gazette of the Republic of Serbia, No. 26/2021	To establish a comprehensive legal framework for GHG monitoring and mandatory local adaptation planning.	Compliance: The project supports local institutions (Component 1) to fulfill their legal obligations under this Law by providing the data and tools needed to develop mandated local climate action plans.	Ministry of Environmental Protection
Law on Waters & associated Rulebooks Official Gazette of RS, no. 30/2010, and later amended in numbers 93/2012, 101/2016, and 95/2018	To regulate water resource management, protection from the harmful effects of waters, and the management of water infrastructure.	Compliance: All physical NbS interventions under Component 2 will strictly comply with this Law by securing mandatory water conditions, water consents, and water permits from competent authorities (e.g., Srbijavode, Vode Vojvodine) prior to implementation.	Ministry of Agriculture, Water and Forest Management / Directorate for Water Management Public companies Srbijavode and Vojvodinavode
Law on Environmental Impact Assessment (EIA) & Law on SEA Official Gazette of the RS, No. 94/2024	To ensure that development projects (EIA) and strategic spatial plans (SEA) do not cause significant adverse environmental impacts.	Compliance: The project ensures all localized sub-projects (Component 2) and large-scale pre-feasibility infrastructure designs (Component 3) undergo mandatory EIA/SEA screening processes as dictated by national legislation.	Ministry of Environmental Protection (national level) Provincial Secretariat for Urban Planning and Environmental Protection (Provincial level) Local self-governments
Law on Soil Protection Official Gazette of the RS, No. 112/2015.	To systematize soil protection, prevent degradation, and manage land sustainably.	Compliance: NbS interventions, such as riparian reforestation, wetland restoration, and agricultural anti-erosion measures, directly comply with and support the Law's mandate to prevent soil erosion and land degradation.	Ministry of Environmental Protection / MoAFWM Serbian Environmental Protection Agency Provincial and local self-governments
Law on Planning and Construction & Technical Standards Official Gazette of the Republic of Serbia, No. 72/2009 -amendments 81/2009, 64/2010, 24/2011, 121/2012, 42/2013, 50/2013, 98/2013, 132/2014, 145/2014, 83/2018, 31/2019, 37/2019, 9/2020 and 52/2021)	To regulate spatial planning, construction land use, and the issuance of location conditions and building permits.	Compliance: The project will ensure that any infrastructural interventions obtain the required location conditions and building permits according to national technical standards. Furthermore, Component 1 helps integrate climate risk maps directly into local spatial planning procedures.	Ministry of Construction, Transport and Infrastructure Agency for Spatial Planning and Urbanism Provincial and local self-governments
Law on Disaster Risk Reduction and Management (Official Gazette 87/2018)	Disaster risk reduction, prevention, and strengthening resilience and response preparedness	The project will comply with the Serbian Law on Disaster Risk Reduction and Emergency Management. Strengthening drought early warning systems and flood/drought risk planning directly contributes to implementation of this law. Local-level interventions will align with municipal risk management plans.	Ministry of Interior, National Emergency Management Headquarters, Provincial Government, LSGs
Law on Nature Protection	Conserving the country's natural heritage	Law on Nature Protection which defines protection of biodiversity and ecosystems,	Ministry of Environmental Protection, Institute for Nature

("Official Gazette of the RS", Nos. 36/2009, 88/2010, 91/2010 – corr., 14/2016, 95/2018 – other law, and 71/2021)		regulation of activities in protected areas and application of conservation measures and ecological network requirements. Nature-based solutions (reforestation, wetland restoration) will be designed in line with conservation requirements. Any activities in or near protected areas will require targeted screening and ESMPs	Protection of Serbia, Provincial Government, LSGs, Managers of protected areas
Law on Waste Management (Official Gazette 109/2025)	Regulatory framework on how to handle, record, and reduce waste while further aligning domestic legislation with European Union standards	Construction waste, spoil and packaging materials will be handled in line with the Serbian Law on Waste Management, with an emphasis on minimizing waste generation, re-using materials where safe and feasible, and disposing of residual waste in approved sites.	Ministry of Environmental Protection, SEPA; Provincial Government, LSGs
Law on Occupational Health and Safety (Official Gazette 35/2023) Law on Fire Protection ("Official Gazette of the RS", Nos. 111/2009, 20/2015, 87/2018 and 87/2018 – other laws)	Governing the rights, obligations, and responsibilities of employers and employees with the aim of preventing workplace injuries, occupational diseases, and work-related illnesses Protection of human life and health, physical integrity, material assets, and the environment.	The project will ensure alignment with Serbian legislation on occupational health and safety and fire protection, which set requirements for safe workplaces, protective equipment and accident prevention on construction sites. Adherence with national labor act will be ensured by all partners and subcontractors.	Ministry of Labour, Employment, Veterans and Social Affairs
Law on Gender Equality (Official Gazette 52/2021)	Realization of equal rights, responsibilities, and opportunities, as well as equal participation and balanced representation of women and men in all areas of social life	The project will apply gender sensitive design of measures, specifically for small scale investments and capacity building measures.	Ministry of Labour, Employment, Veterans and Social Affairs

161. Adaptation Fund ESP and Gender Policy compliance: In line with the Adaptation Fund ESP and its Guidance for Implementing Entities, the project will: (i) document the applicable national legal and regulatory requirements (permits, licenses, approvals) for each type of subproject; (ii) integrate ES risk screening against all 15 AF principles into the project cycle; (iii) prepare and update a SESP and streamlined ESMPs with proportionate mitigation measures; (iv) ensure meaningful, inclusive consultation of women, youth and vulnerable groups; and (v) establish a project-level grievance redress mechanism based on UNDP's existing systems.

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

162. Currently there are no other AF funded activities in Serbia. However, there is a number of baseline programmes and activities funded by other sources. The proposed project will build upon, coordinate with, and scale up successful elements of several major baseline programs to avoid duplication. The proposed Project is complementary to the following on-going initiatives as shown in the table below:

DocuSign Envelope ID: 5AA589EA-A36B-8FAD-8031-CB94C54F489B	Objective & Scope Implementer	Complementarity and Lessons Learned
	Advancing medium and long-term adaptation planning in Serbia (NAP Project)(<i>Funder: GCF / Implementer: UNDP</i>)	Complementarity: This AF project acts as the direct implementation vehicle for the priorities identified in the NAP, moving from planning to on-the-ground action.Lessons Learned: The NAP process revealed that while national data exists, local self-governments lack the granular data and technical capacity to design localized adaptation measures. How it informed this proposal: Component 1 is specifically designed to bridge this gap by downscaling climate data and providing direct technical assistance to local municipalities for spatial planning.
	EU for Green Agenda in Serbia(<i>Funder: EU, Sida, SECO / Implementer: UNDP</i>)	Complementarity: The AF project will synergize with the Green Agenda's biodiversity pillar, specifically expanding upon its initial work with wetlands and natural infrastructure.Lessons Learned: The Green Agenda proved that "Challenge Calls" are a highly effective, low-barrier mechanism for mobilizing local communities, CSOs, and agricultural cooperatives to implement green technologies. How it informed this proposal: Component 2 adopts this exact "Challenge Call" methodology to disburse funds for local Nature-based Solutions (NbS), ensuring high local ownership and rapid deployment.
	Sava-Drina River Corridor Integrated Development Program(<i>Funder: World Bank / Implementer: Ministry of Agriculture, Forestry and Water Management</i>)	Complementarity: The AF project focuses on highly vulnerable sub-basins and smaller torrential catchments that fall outside the scope of this massive regional macro-project.Lessons Learned: Large-scale grey infrastructure is often prohibitively expensive and faces lengthy delays, while failing to address local agricultural droughts. How it informed this proposal: This proposal prioritizes agile, cost-effective Nature-based Solutions (NbS) (Component 2) for immediate local relief, while ensuring future large-scale designs (Component 3) are informed by updated climate scenarios rather than historical data.
	Disaster Risk Reduction and Climate Resilience Project(<i>Funder: Various / Implementer: Government of Serbia, RHMZ</i>)	Complementarity: The AF project builds directly on this baseline by upgrading RHMZ capabilities specifically for impact-based forecasting and drought management.Lessons Learned: Previous interventions focused heavily on general weather forecasting and post-disaster flood response, but lacked predictive capabilities for prolonged agricultural droughts. How it informed this proposal: Component 1 explicitly directs resources into developing impact-based forecasting and specialized drought-monitoring products to provide critical lead-time for the agricultural sector.
	Enhancing the resilience of Serbian forests to ensure energy security of the most vulnerable while contributing to their livelihoods and carbon sequestration (FOREST Invest) (Funder GCF, Implementer: FAO)	The project will organize regular exchange on the topic of climate investments, engagement with the private sector and developed approaches and knowledge materials. Building on pilot projects implemented by FAO that introduced subsoiling and drought-resistant practices in select municipalities, this project will scale these agricultural adaptation techniques systematically across the targeted geographic zones, pairing them with broader watershed-level water retention infrastructure .

Sustainable Cities (Funder: GEF, Implementer: UNDP and Ministry of Environmental Protection)	The project aims to support pilot interventions for the green, digital, and nature-positive transformation of three cities (Belgrade, Novi Sad, Zrenjanin) promoting sustainable urban development. The interventions will focus on: (i) promoting multi-sectoral resource and energy efficiency through decarbonization and circular business models; (ii) implementing integrated intra and inter-city spatial planning to enhance resilience and sustainability; and (iii) preserving natural capital and biodiversity.	Continuous exchange and alignment for design of challenge calls. Cooperation on capacity building and promotional events.
Strengthening capacities in Serbia to comply with the Enhanced Transparency Framework under the Paris Agreement (Funder: GEF, Implementer: UNDP and MoEP)	Strengthening capacities in Serbia to comply with the Enhanced Transparency Framework under the Paris Agreement - CBIT 2, by strengthening Serbia's Policy and Regulatory Framework for transparent climate change reporting, utilizing country-specific tools and data to enhance the Climate Change Transparency System, building institutional and individual capacities for transparent climate policy implementation, and improving Monitoring and Evaluation (M&E) and Knowledge Management practices.	Complementary activities include a climate change capacity and competency needs assessment for government institutions, public enterprises and the industry sector at the institutional and individual levels, ensuring gender disaggregated data collection to identify specific capacity gaps for women.
Technical Assistance for Improvement of Climate Change Policy Framework (Funder: EU, Implementer: MoEP)	Providing support to Serbian partners in carrying out a detailed analysis of the strategic policy and legislative framework and alignment with EU legislation.	The AF Project will prepare proposals for the integration of adaptation in policy documents.
Environment Accession Project in Serbia, Phase 4 (Funder: SIDA, Implementer: MoEP)	The purpose of the project is to strengthen Serbia's EU rapprochement and reform in the field of environment and climate. Support is provided mainly to the Serbian Ministry of the Environment.	Complementary activities are focused on building institutional capacities for climate action, collaboration across sectors and compliance with the EU environmental acquis.
EU IPARD III Program (2021-2027) (Funder: EU, Implementer: Ministry of Agriculture, Forestry and Water Management)	This program provides pre-accession funding for agricultural and rural development, including a measure for "Agri-environment-climate and organic farming." The project will address a critical barrier by building the technical capacity of local extension services and farmers to actually design and implement the water-retention and soil-conservation measures required to successfully access these IPARD funds .	The proposed AF project will build upon the results of the EU-funded work and mainstream lessons in the implementation of Outcome 2.
Upgrading of monitoring system, for the assistance of the environment protection and flood prevention in	Upgraded hydrometeorological monitoring in Vojvodina to improve the availability of observations for environmental protection and flood prevention. The	Complementarity The intervention established an earlier monitoring baseline in Vojvodina for environmental protection and flood prevention. The proposed AF project will first assess the

Vojvodina (Funder: EU CARDS/INTERREG Neighbourhood Programme Hungary–Serbia / Implementer: Republic Hydrometeorological Service of Serbia (RHMSS), 2006–2008)	intervention supported modernization of monitoring equipment and strengthened the observational basis required for timely hydrological assessment and flood-risk management.	functionality, coverage and remaining gaps of existing stations and will finance only targeted upgrades or additional monitoring needed for current climate-risk management.
Hydrological Flood Forecasting System for Small and Medium Sized Catchments in Serbia (Funder: Bilateral Assistance Programme of the Kingdom of Norway / Implementers: RHMSS and Norwegian Water Resources and Energy Directorate (NVE), 2009–2010)	Improved hydrological forecasting and flood warning for small and medium-sized catchments. The project tested and introduced a hydrological information system and rainfall-runoff modelling into RHMSS operational practice, including a modern time-series/data-management system and HBV-type models for a number of Serbian catchments, coupled with meteorological forecasts.	Complementarity: The Norwegian-supported project created a technical foundation for operational flood forecasting in small and medium catchments through hydrological data management, rainfall-runoff modelling and links with meteorological forecasts. The AF project will build on these capacities rather than replace them, adding value through improved observations in priority gaps, drought/low-flow applications and stronger use of forecasts by local decision-makers. Lessons incorporated: Forecast accuracy depends on reliable real-time observations, continued model calibration and institutional capacity, while technical forecasts must be translated into actionable warnings.
Effects of climate change in the Kolubara and Toplica catchments, Serbia (RHMSS/NVE joint study; NVE Report No. 62, August 2013)	Assessed climate-change impacts on hydrological fluxes and states in the Kolubara and Toplica catchments using climate and hydrological modelling. The study provided projections of changes in runoff and hydrological regimes and demonstrated how climate scenarios can be translated into catchment-scale water-resource information.	Complementarity: The Kolubara and Toplica study provides an established methodology and evidence base for translating climate scenarios into catchment-scale hydrological impacts. The AF project will not repeat the study; it will use and, where necessary, update/downscale this type of analysis for selected intervention areas and convert the resulting risk information into concrete adaptation investments.
Further Improvement and Development of Flood Forecasting Services in Serbia (Funder: Bilateral Assistance Programme of the Kingdom of Norway / Implementers: RHMSS and NVE, October 2011–2013)	Further strengthened RHMSS modelling capability and real-time flood forecasting/warning for small and medium catchments. Activities included hydrological modelling and data processing, upgrading selected hydrometeorological network components, installation of additional automatic rain gauges, climate-change impact studies, and capacity building through training and workshops.	Complementarity: This follow-on Norwegian cooperation further developed Serbia's flood-forecasting capacity through modelling, network improvements, additional observations, climate-impact analysis and staff development. The AF project will use this accumulated institutional and technical capacity as its baseline and focus financing on unresolved climate-adaptation gaps. Lessons incorporated: Combining observations, modelling, climate analysis and staff training produces greater resilience benefits than isolated equipment procurement, but flood-centred systems should evolve toward multi-hazard services, including drought and low-flow risks..
Rehabilitation and Modernization of the Hydrological and Meteorological Observing Network and Data Exchange Procedures in Serbia and Bosnia and Herzegovina (Funder: Finnish Foreign Aid Programme / Implementers/beneficiaries: hydrometeorological services of Serbia and Bosnia and Herzegovina, March 2015–September 2016)	Post-2014-flood assistance aimed at improving preparedness for hydrometeorological hazards by rehabilitating and modernizing observation networks and improving data-exchange procedures in Serbia and Bosnia and Herzegovina. The regional intervention supplied/modernized hydrological, precipitation and meteorological monitoring equipment and supported stronger cross-border hydrometeorological cooperation.	Complementarity: The Finnish-supported post-2014-flood intervention rehabilitated and modernized hydrometeorological observations and strengthened data-exchange arrangements in Serbia and Bosnia and Herzegovina. The AF project will build on this improved baseline, addressing only demonstrated residual monitoring, communications and climate-service gaps relevant to the target areas. Lessons incorporated: Resilient observation networks require not only instruments but dependable communications, rapid data exchange, trained staff, maintenance and cross-border institutional cooperation.
ALERT – Strengthening Serbian Multi-Hazard Early Warning and Alert System, Phase I and Phase II	Phase I assessed and developed an integrated policy approach for reducing damage from extreme events and risks to the population. Phase II focused on optimizing	Complementarity: ALERT provides a direct institutional precedent for the proposed AF early-warning activities by linking forecasting with real-time data exchange, national-local coordination and communication with exposed populations. AF support will deepen this end-to-end approach

(Funder: CEI Know-How Exchange Programme / Know-how provider: Emilia-Romagna hydrometeorological service (Italy); recipient: RHMSS, December 2014–February 2017)	hydrological-risk warning through dynamic real-time data exchange and stronger communication links among national and local institutions, drawing on the Emilia-Romagna multi-hazard early-warning model and seeking more effective involvement of local authorities and the population.	and broaden it toward climate adaptation, including drought and other hydroclimatic risks. Lessons incorporated: Forecasting alone does not constitute an effective early-warning system; clear mandates, thresholds, protocols, municipal preparedness, understandable messages and last-mile communication are essential for anticipatory action.
Flood Forecasting and Warning System in the Sava River Basin – Sava FFWS (Funder: WBIF / administered by World Bank; coordinated by International Sava River Basin Commission (ISRBC), June 2016–December 2018)	Established an operational, basin-wide joint Flood Forecasting and Warning System for the Sava River Basin, integrating observed telemetry, numerical weather prediction and hydrological/hydraulic models on a common platform. The project also trained staff in Sava countries and identified priorities for future improvements in monitoring, telemetry, model development and operational implementation.	Complementarity: Sava FFWS is core regional forecasting infrastructure integrating observations, weather forecasts and hydrological/hydraulic models. The AF project will treat it as an existing platform and, where target catchments are within the Sava Basin, improve Serbian data inputs and local use of its outputs rather than finance a competing system. Lessons incorporated: Open and modular systems, shared data and sustained cross-border cooperation create substantial value, but require recurrent maintenance, model improvement and staff training..
West Balkans Drina River Basin Management Project – WBDRBM (Funder: GEF Special Climate Change Fund / Implementing Agency: World Bank; Serbia, Bosnia and Herzegovina and Montenegro, 2016–2021)	Improved mechanisms and capacity for cooperative transboundary management of the Drina River Basin while incorporating climate-change adaptation. Activities included strategic/transboundary planning, hydrological and hydraulic modelling, data collection and sharing, institutional cooperation, and pilot investments/grants addressing flood and drought risks.	Complementarity: WBDRBM established important experience in climate-informed, cooperative river-basin management in the Drina, including modelling, data sharing, institutional coordination and pilot measures addressing flood and drought risks. The AF project will use these results where geographically and technically relevant while addressing remaining national/local gaps and vulnerable catchments outside or below the scale of the earlier intervention. Lessons incorporated: Effective adaptation combines basin-scale evidence and coordination with tangible local measures, and pilots create greater value when their performance is documented and pathways for replication are built in.
Serbia – Flood Recovery and Prevention (Funder: EU Instrument for Pre-accession Assistance – IPA II 2014–2020 / Coordinated by EU Delegation, Ministry of European Integration and Government Office/Public Investment Management Office; March 2017–July 2020)	Supported post-flood recovery while strengthening prevention and emergency-response systems following the 2014 floods. In the hydrometeorological field it delivered significant improvements to RHMSS hydrological and meteorological observing systems, telecommunications, information systems and hydrological forecasting capacity, alongside broader flood-protection and disaster-risk-reduction measures.	Complementarity: The EU Flood Recovery and Prevention programme significantly strengthened Serbia's post-2014 technical and institutional baseline, including hydrometeorological observations, telecommunications, information systems, forecasting and broader flood-risk-reduction capacity. The AF project will add adaptation value by shifting emphasis from recovery and conventional flood prevention toward forward-looking, climate-informed, multi-hazard prevention, including drought, water retention and soil-erosion reduction. Lessons incorporated: Post-disaster reconstruction can restore and modernize systems, but long-term resilience requires anticipatory planning, maintenance, climate scenarios and local preparedness.
Flood Forecasting and Warning System in the Sava River Basin – Sava FFWS: regular operation, maintenance and further upgrading (Coordinated by ISRBC with national user institutions including RHMSS)	Maintains and progressively upgrades the operational Sava FFWS used by responsible institutions across the five Sava countries. The system integrates real-time observations, numerical weather predictions and hydrological/hydraulic models. .	Complementarity: Continued operation and upgrading of Sava FFWS confirms that forecasting is a permanent service requiring recurrent improvement, not a one-off capital investment. The AF project will align with this evolving regional system, particularly its extension toward low-flow/drought services, and will strengthen Serbian inputs and last-mile application where relevant. Lessons incorporated: Long-term effectiveness depends on formal maintenance, regular software/model upgrades, reliable telemetry, recurrent training and continuous national data contributions.

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

163. The project integrates a comprehensive learning and knowledge management (KM) output to systematically capture, validate, and disseminate lessons learned across all components, ensuring replication, scaling, and long-term impact. The KM approach is structured around three core functions: (i) knowledge generation, (ii) knowledge application, and (iii) knowledge dissemination, closely aligned with project outcomes and outputs.

164. A dedicated output for knowledge management and learning is planned within Component 1 with a **dedicated KM Responsibility**: A part-time Knowledge Management and Communications Specialist will be hired within the Project Management Unit (PMU). This expert will be exclusively responsible for tracking project milestones, documenting best practices, and ensuring continuous knowledge sharing throughout the project lifecycle.

165. To ensure that lessons learned are systematically captured, disseminated, and sustained, in scope this this output, the project will implement the following:

a. Knowledge generation through implementation and monitoring

The project will generate evidence-based knowledge through work on policy and implementation of pilot interventions. Under Component 1 on preparation of policy amendments and technical guidelines, (Output 1.1) the project will provide key insights into integrating climate adaptation into water and land management systems. Under this Component the project will also generate operational knowledge on climate data utilization, impact-based forecasting, and risk communication (Outputs 1.2-1.4). Component 2 will serve as a primary source of practice-based learning, with community-driven pilot projects (Output 2.2) and participatory planning processes (Output 2.1) producing locally grounded knowledge on water retention, soil conservation, and livelihood resilience. Component 3 will contribute knowledge on the preparing infrastructure for adaptation through the development of climate risk assessment and planning framework for two selected river basins and through planning documentation (Outputs 3.1 and 3.2).

b. Knowledge application and institutional learning

The project will ensure that knowledge generated is actively used to improve policies, planning, and operational practices. Lessons learned from climate risk assessments and pilot interventions will inform national and local planning processes, supporting Outcome 1. on integrating adaptation into local plans.

Institutional learning will be supported through targeted capacity-building programmes for national institutions (e.g., hydrometeorological services) and local self-governments. In addition, the drought early warning system will be designed not only as a technical tool but also as a learning system, enabling continuous improvement of forecasting models and response protocols based on user feedback and evolving climate risks.

c. Knowledge dissemination and scaling

To maximize impact, the project will implement a multi-tiered dissemination strategy targeting policymakers, technical institutions, local governments, and communities including:

- **Development of Targeted Knowledge Products:**
 - Technical Manuals & Guidelines: Step-by-step guides on designing and implementing Nature-based Solutions (NbS) tailored to Serbia's specific climate and geographical conditions. Guidance for community-based adaptation and local planning.
 - Case Studies & Policy Briefs: Documents highlighting the cost-effectiveness and social benefits of the community-led interventions, designed specifically for national policymakers to inform future funding allocations.
- **Active Dissemination & Peer-to-Peer Learning:** The project will actively disseminate knowledge through:
 - Annual Peer-to-Peer Exchange Workshops with Standing Conference of Towns and Municipalities (SCTM - municipal network organization): Gathering representatives from the participating municipalities, local self-governments (LSGs), and CSOs to share successes, implementation barriers, and solutions.
 - Capacity-Building Seminars in cooperation with SCTM: Training local urban planners on how to integrate the newly developed climate vulnerability maps and NbS guidelines into their municipal spatial plans.
- **Digital outputs will be permanently integrated into the state's existing infrastructure:**
 - Hydrometeorological models and drought mapping will be hosted on the Republic Hydrometeorological Service (RHMZ) systems.
 - Technical guidelines/manuals [for and practical examples of small-scale investments \(e.g. including NbS\) as well as policy briefs](#) will be hosted on the National Climate Change web platform (<https://www.klimatskepromene.rs/>), managed by the Ministry of Environmental Protection, ensuring they become standard operational procedure for urban planners across Serbia.

166. At the regional level, the project will contribute to knowledge exchange within the Western Balkans, sharing lessons on

climate adaptation, water management, and soil conservation with neighboring countries facing similar risks.

167. By embedding knowledge generation, application, and dissemination across all components, and by aligning KM activities with concrete outputs and indicators, the project will ensure that its lessons extend beyond immediate beneficiaries—supporting replication, policy uptake, and long-term climate resilience in Serbia.

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

168. A stakeholder consultation and validation meeting for the Adaptation Fund project proposal was held on 12 May 2026 at the UN House in Belgrade, bringing together representatives of the Ministry of Environmental Protection, Republic Directorate for Water (RDW), Republic Hydrometeorological Service of Serbia, Public Enterprise Srbijavode, Ministry of Science, and UNDP. The discussion focused on defining priorities for strengthening Serbia's climate resilience in the water sector, particularly in response to increasing climate-related pressures on water availability, flood risks, erosion, and droughts. Participants emphasized the importance of aligning the proposed Adaptation Fund initiative with Serbia's existing strategic and planning framework, including the Water Management Plan, draft Flood Risk Management Plan and their forthcoming update.

169. A key conclusion of the consultations was that insufficient monitoring systems represent the most critical gap in effective climate adaptation and water management. Stakeholders repeatedly stressed the urgent need for improved hydrological, climate, water use, and water quality monitoring, as well as investments in monitoring stations, digital systems, early warning systems, and water balance modelling. The Republic Hydrometeorological Service of Serbia and RDW highlighted that future investments should prioritize operationally useful and measurable outputs that can support drought and flood forecasting, integrated water management, and future financing opportunities from international financial institutions. Existing successful examples, including the Kolubara and Sava River basin projects and hydrometeorological modernization initiatives, were referenced as good practices for future replication.

170. Participants agreed that climate adaptation planning should integrate water resource management, erosion control, land management, irrigation practices, and long-term sustainability considerations. Rather than preparing entirely new plans, participants recommended focusing on analytical studies, and climate risk assessments as guidance for future investment opportunities for improving resilience.

171. The consultations further highlighted the need for stronger involvement of local governments, public water management institutions, and forestry authorities in implementation, while recognizing that capacity constraints exist at both local and central levels. Participants emphasized the importance of "no-regret" adaptation measures that remain beneficial under different climate scenarios and contribute to long-term resilience. Overall, the meeting concluded that the proposed project should avoid duplication of previous initiatives, build upon existing studies and pilot projects, and focus on strengthening monitoring systems, analytical capacities, early warning systems, and climate-informed integrated water management as a foundation for future adaptation investments in Serbia.

172. In addition, UNDP has continuously engaged with stakeholders to identify and address adaptation challenges, with a particular focus on climate change-induced water insecurity and its impacts across the economy, environment, and public health. These consultations were carried out throughout the implementation of Phases I and II of the National Adaptation Planning (NAP) project, as well as during the preparation of the project proposal, Strengthening the Resilience of Small and Medium-Sized Fruit and Vegetable Producers to Climate Change-Induced Water Insecurity in Central Serbia. The consultation process included dozens of meetings with the Ministry of Agriculture, Forestry and Water Management, the Public Water Management Company (PWMC) "Srbijavode", the Hydrometeorological Service, international financial institutions (IFIs), and local self-governments, including Leskovac, Valjevo, Velika Plana, Pirot, Malo Crniće, Aleksinac, Kruševac, Veliko Gradište, Smederevo, Smederevska Palanka, Žabari, Zaječar, and Paraćin, as well as other relevant stakeholders. Furthermore, during the fifteen capacity-building events organized under NAP Phase I, UNDP used the opportunity to gather stakeholder perspectives on emerging adaptation needs, particularly those related to growing water scarcity. Discussions highlighted the increasing importance of addressing water availability challenges in the agriculture sector, while also recognizing their implications for the energy, forestry, and other climate-sensitive sectors.

173. As a result, the design of this project was country-driven and informed by an extensive, continuous consultative

process involving national competent institutions, the scientific community, local self-governments (LSGs), and vulnerable agricultural producers as follows:

- Consultations with Competent Institutions (Informing Components 1 & 3): Extensive consultations and validation workshops were held with the Ministry of Environmental Protection, the Ministry of Agriculture, Forestry and Water Management (Water Directorate), and public water management enterprises (Srbijavode and Vode Vojvodine) during the formulation of the National Adaptation Programme (NAP) and the recent GCF Readiness proposal. These institutional stakeholders explicitly identified that while national climate targets exist, there is a critical lack of mature, "investment-ready" technical documentation for large-scale water resilience infrastructure. This feedback directly informed the creation of Component 3, which focuses exclusively on investment planning and preparing bankable pre-feasibility studies to unlock future international financing.
- Consultations with Science and Academia (Informing Component 1 & 2): In recent months, UNDP and the Ministry of Environmental Protection conducted targeted technical consultations and expert roundtables to prepare inputs for the future assessment of Water Availability in Serbia under Climate Change. These sessions engaged leading hydrologists, climatologists, geologists and researchers from national institutes and universities. The proceedings of these workshops highlighted that historical water management data is no longer reliable due to accelerating drought cycles. This justified the critical need for Component 1—upgrading the Republic Hydrometeorological Service's (RHMZ) impact-based forecasting—and validated the selection of Nature-based Solutions (NbS) over grey infrastructure for localized flood and drought integrated management, needs for data for informed water storage planning, etc.
- Consultations with Local Self-Governments (Informing Component 1): During the NAP development process, workshops were held with representatives from dozens of LSGs across Serbia's most vulnerable districts. LSG representatives consistently reported a severe lack of local technical capacity and downscaled climate data required to integrate climate risks into their mandatory municipal spatial and urban plans. This feedback directly shaped the capacity-building outputs in Component 1, ensuring that local institutions are equipped with accessible tools and training to mandate NbS in local planning.
- Consultations with Vulnerable Communities & Farmers (Informing Component 2): During the development of the GCF proposal targeting smallholder farmers, extensive field consultations and focus groups were held with local communities, local agricultural services, public water companies, female-headed rural households, and civil society organizations (CSOs) in drought-prone regions. A key lesson learned from these vulnerable groups was that complex bureaucratic procedures and strict co-financing requirements often prevent smallholders and local communities from accessing climate finance. In direct response to this feedback, Component 2 was designed around a "Challenge Call" mechanism. This agile granting modality is specifically structured to lower administrative barriers, ensuring that funding for localized adaptation (e.g., drip irrigation, riparian buffer restoration) reaches the most vulnerable end-users efficiently.
- Youth involvement: Through interactive dialogue and educational program (undertaken under the UNDP lead Climate Box project), UNDP indirectly, through the work with educators, increased the awareness of young people on how climate change alters precipitation patterns and intensifies water scarcity.

174. Please refer to a supplementary Annex 2. shared with the Concept Note summarizing all consultations (disaggregated by sex and stakeholder groups).

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

175. **Without AF financing**, Serbia would continue to implement **standard development practices** in water management, agriculture, and spatial planning, such as conventional water management planning without systematic integration of climate risk, water-drought management and NbS; fragmented local planning processes with limited incorporation of adaptation measures and incremental infrastructure investments that do not fully account for future climate variability.

176. These measures are **insufficient to address the scale and complexity of climate risks** and as a result: a) Water resource management remains reactive, leading to inefficient allocation during droughts and increased flood damage; b) Soil erosion and land degradation continue to undermine agricultural productivity; c) Vulnerable communities, particularly smallholder farmers, experience increasing livelihood insecurity; d) Investment decisions fail to account for long-term climate risks, leading to maladaptation and higher future costs.

177. **Adaptation Scenario (With Adaptation Fund Support):** AF financing therefore pays for the adaptation-specific “additionality” needed to ensure planning, assets and services are able to reduce exposure of livelihoods and infrastructure to climate extreme.

178. The proposed project introduces targeted adaptation interventions that go beyond the baseline by integrating climate risk considerations into planning, strengthening institutional and community capacities, and enabling both small-scale and large-scale adaptation investments. These include:

- Development of climate-informed policy amendments and Integrated climate risks, loss-and-damage and investment planning frameworks for two vulnerable river basins
- Strengthening of hydrometeorological services and drought early warning systems, including impact-based forecasting tailored to key sectors
- Implementation of community-driven adaptation measures, such as water retention and soil erosion control, directly reducing local vulnerability
- Preparation of bankable investment documentation for climate-resilient water infrastructure, enabling access to future financing

179. These interventions represent additional, climate-specific measures that would not occur under the baseline scenario due to capacity, financial, and institutional constraints.

Business-as-usual scenario: Climate change risks and challenges (baseline scenario)	Adaptation Fund additionality
Component 1: Enabling environment and enhanced information for climate resilient integrated water resource management	
Water and land management policies remain fragmented and only partially climate-informed, with limited integration of drought, flood, and erosion risks. Incomplete monitoring station network provides insufficient data for planning and decision making failing to address combined climate hazards or future climate projections. This leads to suboptimal prioritization of investments and continued exposure of vulnerable areas.	The project introduces climate-informed policy amendments and technical guidelines, ensuring systematic integrated water-drought management.. Adaptation benefit: Enabled risk-informed, coordinated planning, reducing exposure to climate hazards and improving long-term resilience.
Hydrometeorological systems and institutional capacities remain insufficient to translate climate data into actionable information. Early warning systems are limited, not fully impact-based, and not effectively disseminated to end-users. Local institutions lack capacity to integrate climate risks into planning, resulting in reactive responses and increased climate-induced losses.	The project strengthens climate information services and impact-based early warning systems, including drought forecasting tailored to agriculture and water management. It enhances institutional and local capacities to integrate climate risks into planning and decision-making. Adaptation benefit: Enabled anticipatory action, reduced vulnerability, and minimized economic and livelihood losses.
Component 2: Community-led climate adaptation measures	
Communities, particularly in rural and climate-sensitive areas, have limited access to financial resources, technical knowledge, and institutional support to implement adaptation measures. Adaptation actions are sporadic, small-scale, and not systematically supported, leaving communities highly vulnerable to droughts, floods, and soil erosion.	The project provides targeted financing and technical support for community-based adaptation through challenge calls. It strengthens participatory planning and local engagement, enabling the implementation of practical measures such as water retention and soil erosion control. Adaptation benefit: reduced climate risks at the local level and enhanced adaptive capacity and resilience of vulnerable groups.
Component 3: Investment Planning for Scaling Up Climate-Resilient Infrastructure	
Investments in water infrastructure are limited and not systematically climate-resilient, with incomplete planning documentation. This constrains access to financing and delays the implementation of critical adaptation infrastructure, leading to continued exposure to drought and flood risks.	Basin-wide climate risk assessment and planning framework is prepared to guide investments. The project develops planning documentation for climate-resilient water infrastructure, including general projects and pre-feasibility studies. This creates a pipeline for scaling up adaptation investments and facilitates access to national and international financing. Adaptation benefit: long-term reduction of climate-related losses through climate-proof infrastructure.

180. The Adaptation Fund resources will finance the additional measures required to shift from a business-as-usual development pathway to a climate-resilient pathway. The project is designed to deliver its intended outputs and outcomes independently, without reliance on additional donor funding or co-financing. The AF-financed activities, taken on their own,

are sufficient to deliver the proposed adaptation results.

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

181. The sustainability of the proposed project has been systematically integrated into its design to ensure that adaptation benefits are maintained, institutionalized, and scaled beyond the duration of Adaptation Fund support.

182. **Institutional sustainability** is ensured through strong alignment with Serbia's national adaptation planning framework and water management strategy. By supporting Outcome 1., the project will strengthen the policy and regulatory environment for integrated water and land management, embedding climate resilience principles into formal governance systems and providing technical guidance. Capacity-building efforts targeting national, regional, and local authorities will ensure that institutions responsible for water management, agriculture, and disaster risk reduction are equipped to sustain and replicate project interventions.

183. **Technical and operational sustainability** is embedded through the use of locally appropriate, cost-effective, and nature-based solutions for water retention and soil erosion prevention. Interventions such as terracing, contour farming, small-scale retention structures, and ecosystem-based flood protection will be designed for long-term functionality with minimal maintenance requirements. Under Outcome 1., strengthened hydrometeorological monitoring systems and institutional capacities will ensure continued data collection, analysis, and use for decision-making. The drought early warning system will be upgraded and handed over to the Government/Hydromet Service - as competent authority taking over operation and maintenance in line with government rules and regulations, thus also becoming a part of their regular budget planning ensuring its long-term sustainability, operation and relevance. The documentation for investments under Outcome 3 will be done following the requirement of banks or donors facilitating access to finance and implementation.

184. **Community ownership and social sustainability** are central to the project approach. Through Outcome 2, the project will support community-based, small-scale interventions that directly enhance local adaptive capacity and livelihoods. Local stakeholders—including farmers, water user groups, and community organizations—will be actively involved in planning, implementation, and maintenance of measures. This participatory approach will foster ownership, strengthen local knowledge, and ensure that interventions are tailored to local needs, increasing the likelihood of long-term sustainability. Special attention will be given to the inclusion of vulnerable groups and gender-responsive approaches to ensure equitable access to project benefits.

185. **Environmental sustainability** is ensured by prioritizing sustainable land and water management practices that enhance ecosystem resilience. By focusing on water retention, soil conservation, and nature-based flood and drought management solutions, the project will contribute to improved soil health, reduced land degradation, and enhanced ecosystem services. All interventions will be implemented in line with environmental and social safeguards, avoiding maladaptation and ensuring long-term ecological benefits.

186. Knowledge management and replication will further support sustainability by documenting and disseminating lessons learned, methodologies, and best practices. The project will develop guidance materials and integrate them into institutional training programmes, enabling replication across other vulnerable regions in Serbia. Strengthened monitoring systems and data availability will also support evidence-based policymaking and scaling of successful approaches.

187. **Economic sustainability** will be achieved by demonstrating avoidance of loss and damage in case of inaction at national and local levels and by presenting clear return on climate adaptation investments and unlocking sustainable, long-term financing mechanisms:

- At the national level: Under Component 1, the climate adaptation measures related to integrated water-drought management, will be integrated into regulatory and policy amendments, as well as technical sector-level guidelines and standards. In the Component 2, the project will make sure that pilot investments and measures are aligned with national and local planning documents (including e.g. National Climate Change Adaptation Programme, Green Agenda Strategy, etc.), ensure that competent institutions and LSGs are involved into maintenance upon project completion. The key criteria for selecting appropriate local small-scale interventions will be their alignment with the observed and projected climate change for Serbia. Under the Component 3, the project specifically addresses the primary bottleneck to domestic climate finance: the lack of mature, 'investment-ready' project documentation. By utilizing Component 3 to fully prepare bankable pre-feasibility studies for climate-resilient water infrastructure, the project bridges the gap to major international credit lines

(such as the EIB, EBRD) and national capital budgets. This creates a durable, self-sustaining pipeline for future adaptation investments that extends far beyond the AF project's lifespan. The project will apply participatory investments planning approach. This will ensure engagement of competent stakeholders and institutions (e.g. in the field of climate change adaptation, infrastructure planning, water management, DRR etc.) already in early investment identification phase. Furthermore, by climate-risk-informed planning (using most updated climate projections data – e.g. closely engaging with RHSS and the Institute for Meteorology), it will prevent both over-engineering (unnecessary costs) and under-engineering (risk of failure). The infrastructure investments will be appropriately sized and climate resilient.

- At the municipal level: By demonstrating the costs of inaction and cost-effectiveness of small-scale climate risk management measures which integrate Nature-based Solutions (NbS), over expensive, traditional grey infrastructure (Component 2), the project will provide Local Self-Governments (LSGs) with the financial justification needed to mainstream NbS into their regular, annual municipal infrastructure budgets.
- At the community level: The localized adaptation interventions (e.g., drought-resistant agricultural practices, local flood buffers) directly protect the livelihoods and income streams of vulnerable smallholder farmers. By preventing costly agricultural losses and avoided infrastructure damage from extreme weather events, the project ensures the long-term economic resilience and financial self-sufficiency of local communities.

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

188. **Overall categorization and approach:** the Project has been pre-classified as involving potential Substantial environmental and social risk under UNDP's Social and Environmental Standards, given the nature of the potential investments supported under Component 3. Under the Adaptation Fund Environmental and Social Policy (ESP), the Project is preliminarily categorized as Category B.

189. Consistent with the Adaptation Fund Environmental and Social Policy (ESP 2016), and UNDP's E&S policy, the project will apply a risk-proportionate safeguards approach. At full proposal stage, screening will be confirmed and updated, and the relevant instruments.

190. At full proposal stage, an updated Social and Environmental Screening Procedure (SESP), Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), Gender Action Plan and project-level GRM will be prepared in full compliance with both UNDP and AF ESP requirements.

191. **Key environmental risks include:**

- Risks to critical habitats and natural ecosystems and their services
- Surface or ground water use risks
- Maladaptation risks
- Forestry/plantation-related risks to biodiversity
- Agriculture-related risks to biodiversity

192. **Key social risks include:**

- Economic displacement
- Risks of inequitable or discriminatory impacts on affected populations
- Safety risks due to failure of project structural elements
- Risks of stakeholder grievances
- Physical displacement risks

193. **Risk management and next steps:** At full proposal stage, the following instruments will be prepared or updated and disclosed in line with AF and UNDP requirements:

- Updated Social and Environmental Screening Procedure (SESP)
- Environmental and Social Management Framework (ESMF) for the entire project that will specify detailed assessment and management obligations for its implementation. These are currently expected to involve: i) activity-level screenings and management measures for small-scale interventions involving Moderate risks; ii) ESIA's and ESMPs for pipeline of projects involving Substantial risks; and iii) Strategic Environmental and Social Assessment (SESAs) for adaptation investment planning frameworks that may involve Substantial risks.
- Detailed Stakeholder Engagement Plan and Gender Action Plan.
- Project-level GRM

Checklist of Environmental and Social Principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance	Justification / Potential Impacts (To be addressed via the ESMF in the Full Proposal)
1. Compliance with the Law		X	Low risk. There is risk of non-compliance as projects co-financed under Component 2 may require specific local construction permits, water acts, or EIAs. Mitigation: The ESMF will contain a screening checklist to ensure no sub-project is funded without securing all mandatory national and local permits.
2. Access and Equity		X	Low risk. There is a risk that challenge calls could inadvertently favor better-resourced communities. Mitigation: Call criteria will be designed to prioritize marginalized municipalities and ensure equitable access to project benefits.
3. Marginalized and Vulnerable Groups		X	Low risk. There is a risk that small farmers, women, elderly and remote community who are highly exposed to climate change may be excluded from decision making about sub-projects. Mitigation: Strict vulnerability screening and participatory and inclusive consultations will be mandated for every sub-project. Also minimum quotas will be set for the involvement of vulnerable groups in pilots and knowledge management activities.
4. Human Rights		X	Low risk. There is a risk that access to information and involvement in decision making on land and water will not be equal to all. Mitigation: The project will uphold all UN and national human rights standards, enforced through the PMU's grievance redress mechanism. Also, the project will ensure free, prior and informed consultations.
5. Gender Equity and Women's Empowerment		X	Low risk. There is a risk that women in rural areas may lack equal access to grant funding or decision-making. Mitigation: The ESMF and Gender Action Plan will mandate female participation quotas and target women-led agricultural households.
6. Core Labour Rights		X	Low risk. There is a risk that construction/earthworks for NbS could involve contractors violating labor laws or occupational health and safety (OHS) standards. Mitigation: All grant contracts will include strict binding clauses requiring compliance with ILO core labor standards and national OHS regulations.
7. Indigenous Peoples	X		Justification: There are no recognized indigenous peoples in Serbia within the definition of the Adaptation Fund. Issues relating to minorities (e.g., Roma) are covered under Principle 3.
8. Involuntary Resettlement		X	Medium risk. There is a risk that land use changes for floodplain restoration or water storage could lead to economic or physical displacement. Mitigation: The ESMF screening will strictly prohibit any sub-projects that require involuntary resettlement or forced eviction.
9. Protection of Natural Habitats		X	Moderate risk: While NbS aims to restore habitats, there is a risk that physical earthworks phase could cause temporary disruption to local

			flora/fauna. Mitigation: For community-based adaptation measures: prioritize nature-based solutions (NbS); conduct environmental screening; avoid critical habitats; ecological supervision where needed. For investment planning frameworks and pipelines: conduct adequate assessments of impacts on critical habitats as part of the relevant ESIA and SESA processes.
10. Conservation of Biological Diversity		X	Moderate risk. There is a risk of planting non-native or invasive species during riparian reforestation. Mitigation: Technical guidelines will mandate the exclusive use of native, climate-resilient species for all biological interventions for community-based adaptation. For investment planning frameworks: consider wider biodiversity issues (e.g. impacts on species, habitat connectivity, etc.) as part of the relevant ESIA and SESA processes
11. Climate Change		X	Moderate risk. There is a risk that interventions could inadvertently cause maladaptation or generate GHG emissions (e.g., machinery use). Mitigation: NbS interventions generally act as carbon sinks. The ESMF will screen out any projects that could cause maladaptation or significant emissions. Ensure that all investment designs are informed by impact based forecasting and are climate resilient.
12. Pollution Prevention and Resource Efficiency		X	Low risk. There is a risk that earthworks and construction could cause temporary water pollution or sediment runoff into rivers. Mitigation: Standard environmental construction protocols (e.g., silt fencing, waste management) will be mandated for all contractors.
13. Public Health		X	Moderate risk. There is a risk that creating wetlands or water retention areas could create stagnant water, leading to vector-borne diseases. Mitigation: NbS designs will require proper hydrological flow planning to prevent stagnant water and associated health risks.
14. Physical and Cultural Heritage		X	Low risk: Risk: Excavations for NbS could disturb unmapped archaeological or cultural sites. Mitigation: A "chance-find" procedure will be integrated into all civil works contracts as part of the ESMF.
15. Lands and Soil Conservation		X	Low risk. Although NbS aims to prevent erosion, there is a risk that improper execution of earthworks temporarily degrades soil quality or causes localized erosion. Mitigation: Strict soil conservation methodologies will be required during the implementation of all physical works.

194. The Legal and Cultural Context in Serbia

- Legal Framework: Serbia has a robust statutory framework for gender equality, anchored by the *Law on Gender Equality (2021)* and the *National Strategy for Gender Equality (2021–2030)*, which mandate equal opportunities in economic development and environmental planning.
- Cultural Reality in Rural Areas: Despite progressive laws, deeply entrenched patriarchal norms persist in rural Serbia. Traditional cultural practices often dictate that property is inherited by and registered to male head-of-households. Consequently, women in rural communities are largely excluded from formal financial decision-making and are culturally assigned to unpaid domestic and care work.

195. Quantitative Data on Gender Disparities

- Land Ownership & Agriculture: According to the Republic Statistical Office (RZS), women constitute only about 19% of agricultural landowners and manage merely 15.9% of agricultural holdings in Serbia.
- Economic Participation: In rural areas, the formal employment rate for women is significantly lower than for men, with women comprising over 60% of the unpaid family workforce in agriculture.

196. Qualitative Data: Roles, Needs, and Climate Risks

- **Differentiated Climate Risks:** Because women in rural Serbia are primarily responsible for household management, cooking, and hygiene, they bear a disproportionate physical and psychological burden during periods of climate-induced water scarcity and droughts.
- **Financial and Adaptive Barriers:** The most critical challenge for women is that lack of land ownership directly restricts their access to commercial credit, state agricultural subsidies, and adaptation finance (which often require land deeds as collateral). Therefore, male farmers are more likely to afford adaptive technologies (e.g., drip irrigation, hail nets), while women-led households are left highly vulnerable to crop failures.

197. Opportunities and Project Interventions (Addressing the Needs)

The project actively addresses these disparities by transforming the climate-finance landscape for rural women:

- **Tailored Financial Access:** Under Component 2, the "Challenge Call" criteria will be specifically designed to lower the barriers to entry for women. For instance, evaluation matrices will award bonus scoring to women-led households, female agricultural cooperatives, and projects specifically addressing household water security.
- **Capacity Building Quotas:** Recognizing that women are often excluded from local water governance, the project will enforce a minimum 40% female participation quota in all capacity-building workshops and municipal planning consultations (Component 1).
- **Gender-Responsive Early Warnings:** The early warning systems will be designed taking into account the different communication channels used by men and women, ensuring that emergency alerts regarding floods or droughts reach women, who are often at home managing dependents during crises.

PART III: IMPLEMENTATION ARRANGEMENTS**A. Demonstrate how the project/programme aligns with the Results Framework of the Adaptation Fund**

Project Objective(s) ¹	Project Objective Indicator(s)	Adaptation Fund Outcome	Adaptation Fund Outcome Indicator	Grant Amount (USD)
To reduce climate induced water scarcity risks through improved water drought management, including risk reduction from floods, droughts, soil erosion (such as through improved water storage capacity and water supply) and implementation of Nature based Solutions	1. (Human & Infrastructure Focus): Number of beneficiaries (disaggregated by sex and age) in targeted vulnerable areas with secured access to water supply and reduced exposure to climate-induced water stress. <i>Measurement unit: Number of people/ Number of days of uninterrupted water access per year</i> 2. (Ecosystem & Land Focus): Total area (in hectares) of vulnerable catchments and agricultural land brought under climate-resilient, sustainable land and water management practices (preventing soil erosion). <i>Measurement unit: Hectares (ha).</i> 3. Number of people (disaggregated by sex and age) benefitting from the enhanced Drought EWS and climate advisories. <i>Measurement unit: Number of people</i>	Outcome 1: Reduced exposure to climate-related hazards and threats	1: People using climate-related threat and hazard information [# of people, by sex, by sector, and by hazard]	1,479,553
		Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	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]	500,000
		Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes	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]	300,000
			3B: People implementing new or improved adaptation actions [# of people, disaggregated by sex and by vulnerable groups]	150,000
		Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	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]	1,500,000
		Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress	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]	1,500,000
		Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	Indicator 6B (Core Indicator 5): Households with increased income, or avoided decrease in income [# of households, disaggregated by female headed households]	865,000

		Outcome 7: Improved policies and regulations that promote and enforce resilience measures	7. Policies, strategies, and/or plans adopted, implemented, and/or enforced that integrate climate risk and resilience considerations [# of policies, strategies, and/or plans, disaggregated by scale, by policy step, and by sector]	200,000
		Outcome 8: Innovation for effective, long-term adaptation to climate change accelerated, encouraged, and enabled to scale	8B: Institutions created and/or enabled that lead on innovation for adaptation to climate change [# of institutions, disaggregated by scale and type of institution]	2,000,000
Total objective level grant amount				8,494,553
Project Outcome(s)	Project Outcome Indicator(s)	Adaptation Fund Output	Adaptation Fund Output Indicator	Grant Amount (USD)
Outcome 1.1 Preparedness for extreme weather and climate events is improved through enhanced enabling environment for integrated water-drought management and strengthened EWS Preparedness	Number of planning and policy documents prepared for integrated climate risks management Number of targeted people and institutions receiving and using climate advisories and early warnings and applying risk-informed planning and action protocols (sex and age disaggregated).	Output 1.2: Targeted population groups covered by warning and advisory services for climate-related hazards and threats	1.2A (Core Indicator 2): Early warning systems established or improved [# of systems, disaggregated by hazard and by scale]	1,479,553
		Output 2.1: Strengthened capacity of institutions to understand and better address climate risks	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 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	3.2: Climate resilience knowledge products and/or tools developed and shared with stakeholders [# of products/tools, by sector]	300,000
		Output 7.1: Improved integration of climate-resilience strategies into country development plans	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]	200,000
Outcome 2.1 Adaptive capacity and climate-resilient livelihoods of local communities are strengthened through participatory, gender-responsive and	Number of community-driven climate resilience interventions supported No. of physical assets strengthened or constructed through community-driven	Output 3.3: Increased ownership of adaptation and climate risk reduction processes	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,	150,000

community-based, measures with focus on integrated water-drought management and NbS	projects to withstand conditions resulting from climate variability and change (by sector and scale) No. of natural resource assets created, maintained or improved through the community-driven projects to withstand conditions resulting from climate variability and change (by type and scale)		disaggregated by institutions and communities]	
		Output 4.1: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1: Development sector services strengthened to respond to climate variability and change [# of sector services, disaggregated by sector and by scale]	1,500,000
		Output 5.1: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability	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]	1,500,000
		Output 6.1: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	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]	865,000
Outcome 3.1 Climate-resilient flood protection and drought prevention infrastructure investments scaled-up through enhanced investment planning and pipelines	Number and value of investment pipelines and planning documents for climate resilient infrastructure investments prepared	Output 8.1: Innovations identified and piloted that collectively enhance local innovation capacity and contribute to the development of local, national and regional adaptation innovation ecosystems	Indicator 8.1A: Innovations identified that demonstrate local innovation participation and/ or local innovation benefit [# of innovations]Output 8.1: Innovations identified and piloted that collectively enhance local innovation capacity and contribute to the development of local, national and regional adaptation innovation ecosystems	2,000,000
Total outcome level grant amount				8,494,553

¹ Utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology, but the overall principle should still apply

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

A. Record of endorsement on behalf of the government²

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

Sara Pavkov, Minister of Environmental Protection of the Republic of Serbia	Date: 07/08/2026
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B. Implementing Entity certification

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

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 of the Republic of Serbia and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender 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.

Implementing Entity Coordinator

DocuSigned by:


Nancy Bennet
4EEADA5A5FE9433...

Director, Quality and Impact Hub and
Executive Coordinator, Vertical Funds
Bureau for Policy and Programme Support (BPPS)
United Nations Development Programme

Date: 08-Sep-2026

Tel. and email: Nancy.Bennet@undp.org

Project Contact Person: Natalia Olofinskaya, Regional Technical Advisor, UNDP IRH

Tel. And Email: nataly.olofinskaya@undp.org

⁶ 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.



**Republic of Serbia
MINISTRY OF
ENVIRONMENTAL PROTECTION**

Nº: 000551887 2026 14850 005 006

000 001

Date: July 8, 2026
22-26 Nemanjina St
Belgrade

ADAPTATION FUND BOARD SECRETARIAT

Mail stop: N 6-600
1818 H Street NW
Washington DC 20433
USA

Subject: Endorsement Letter for the national project "Enhancing Climate Resilience in Serbia through Integrated Water-Drought Management"

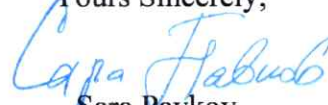
Dear Ser/Madam,

I kindly confirm that the proposed project is in accordance with the Government's national priorities in implementing adaptation activities to reduce adverse impacts and risks posed by climate change in the Republic of Serbia.

Accordingly, I am pleased to endorse the proposed project with support from the Adaptation Fund. If approved, the project will be implemented by the Ministry of Environmental Protection and the United Nations Development Programme.

Looking forward to successful future cooperation.

Yours Sincerely,


Sara Pavkov
Minister



Revised PFG Submission Form¹
Project Formulation Grant (PFG)

Submission Date:

Adaptation Fund Project ID: AF00000564

Country/ies: Republic of Serbia

Title of Project/Programme: Enhancing Climate Resilience in Serbia through Integrated Water-Drought Management

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

Implementing Entity: UNDP Serbia

Executing Entity/ies: UNDP

A. Project Preparation Timeframe

Start date of PFG	December 2026
Completion date of PFG	September 2027

B. Proposed Project Preparation Activities (\$)

List of Proposed Project Preparation Activities	Output of the PFG Activities	US\$ Amount	Budget note²
1. Assessment of the existing Early Warning System (EWS) and preliminary technical study for its upgrade	Detailed concept and technical architecture of the existing EWS, including monitoring logic, options for upgrade and data integration, institutional roles, warning chains, and interoperability with existing hydrometeorological systems. The assessment will inform the planning and costing of the upgrade.	10,000	Includes multidisciplinary technical input, data-sharing assessments, and coordination across institutions like RHMS and the Ministry of Agriculture, Forestry and Water Management (25 days at \$400/day).

¹ As presented in AFB/PPRC.33/40 Annex 1.

² 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.

2. Climate vulnerability and baseline assessment of the intervention areas and (sub)regions	This activity will provide the climate risk assessment of the intervention areas guiding the work on community-based pilot projects and preparation of large-scale intervention. Also, criteria for the selection of river basin will be developed.	35,000	It includes specialist input on climate change, hydrological, agronomic, and engineering, targeted site visits and reconnaissance (institutional sub-contract).
3. Development of catalogue of adaptation measures based on the climate risk assessment	This activity will provide a catalogue of measures to guide the design of challenge calls.	11,000	It includes specialist input on hydrology, forestry, biodiversity, and catchment restoration expertise (27.5 days at \$400/day)
4. Environmental and social safeguards package, including screening and management framework	Safeguards screening package, development of ESMF-equivalent framework or required safeguards instruments, site eligibility and exclusion criteria, temporary access management provisions, stakeholder engagement and grievance inputs	12,000	Safeguards specialist input (international consultant, 15 days at \$800/day) is required because the project includes physical works, pilot sites, warning systems, and possible temporary access impacts. Includes safeguards specialist input, environmental and social screening, preparation of required safeguards instruments or framework elements, and development of management measures related to relevant risks.
5. Gender, social inclusion and local stakeholder engagement assessment	Gender analysis, LNOB-sensitive vulnerability targeting, stakeholder engagement plan, and Gender Action Plan inputs for the full proposal	7,000	Gender and social specialist input plus targeted consultations. Includes gender and social specialist input, targeted consultations, review of differential vulnerability and access issues, development of gender-responsive and LNOB-sensitive design inputs, and preparation of stakeholder engagement and Gender Action Plan elements for the full proposal. (17.5 days at \$400/day)

6. Institutional, legal, spatial planning and implementation arrangements study	A detailed implementation architecture covering executing arrangements, inter-sectoral coordination mechanisms, institutional capacity building needs/plan, legal considerations, and long-term O&M responsibilities.	9,000	This work requires specialist institutional and legal analysis, together with consultation across the relevant national institutions and local authorities. (22.5 days at \$400/day)
7. Technical design and budgeting	Integrated technical leadership and design of technically sound, coherent proposal, including technical guidance, alignment and consolidation of technical assessments and inputs from national and international experts, refinement of project design, preparation of the overall implementation approach, development of budget and resource plan, final technical shaping and authorship of a coherent Adaptation Fund full proposal package.	33,600	Includes international technical expertise/consultant input for overall technical leadership, coordination of specialist studies, integration of climate, hazard, EWS, NbS, safeguards, financing and institutional workstreams, and preparation of technical design, budget framework, resource plan, and full technical proposal (42 days at \$800/day).
8. Results framework, M&E, risk management and final proposal package	Completed Adaptation Fund results framework and supporting proposal package, including indicators, targets, means of verification, monitoring and evaluation arrangements, risk matrix, implementation schedule, detailed budget presentation, and final editorial consolidation of the full proposal.	10,000	Includes specialist support for development of the results framework, indicators, M&E system, risk management matrix, implementation schedule, budget presentation, supporting resource planning, and editorial consolidation of the full proposal package (25 days at \$400/day).
9. Stakeholder consultations/workshops/ meetings and field visits, as a part of proposal preparation	Reports on pilot-areas verification, consultations with institutions and local stakeholders, stakeholder consultation and	10,649	In-country travel and mission costs for pilot-areas verification, consultations with institutions and local stakeholders, and validation

	validation workshops at national and sub-national level.		workshops at national and sub-national level, including venue, logistics, and related meeting costs needed to validate technical design, implementation arrangements, and proposal preparation outputs (including \$6,649 for stakeholder consultation meetings and validation workshop; US\$4,000 for local in-country travel to pilot areas).
Implementing Entity Fee (8.5%)		11,751	
Total Project Formulation Grant		150,000	

The PFG activities are required to convert the current Concept Note into a technically robust, institutionally credible, and submission-ready full Adaptation Fund proposal. The proposed preparation package reflects the complexity of the intervention, including geo-early warning systems, structural and non-structural/hybrid slope stabilization and erosion reduction measures, nature-based and catchment interventions, safeguards-sensitive site selection, and cross-entity implementation arrangements.

1. Assessment of the existing Early Warning System (EWS) and preliminary technical study for it upgrade

This activity is needed because the Concept Note proposes strengthening the EWS with impact-based drought forecasting. Full proposal development requires a more detailed insights in EWS architecture. This includes assessment of the existing system, its components and gaps. The assessment will cover the monitoring logic, options for data integration from the Republic Hydrometeorological Service of Serbia (RHMS) and agricultural monitoring networks, telemetry needs, institutional responsibilities, operational warning chains, and interoperability with existing hydro-meteorological systems. Special focus will be put on analysis of the current meteorological and hydrological responsibilities, instruments and products available in the Republic of Serbia for: (1) estimating and forecasting agricultural droughts, and (2) supporting stakeholders in drought preparedness and response planning. The scope of the assessment will include the estimation of the costs for the additional equipment and criteria for the selection of the stations to be equipped. The amount requested is justified because this is a specialist systems-design task requiring multidisciplinary technical input, data-sharing assessments, and coordination across institutions like RHMS and the Ministry of Agriculture, Forestry and Water Management.

2. Climate vulnerability and baseline assessments of the intervention areas and (sub)regions

This activity is needed to provide for a better understanding of the climate vulnerability of the intervention areas and type of adaptation measures. Focus will be on the assessment of the water-scarcity, analyzing the complex interplay between climate change, water availability, and sectoral water demands. The assessment shall include the identification of critical vulnerability hotspots and development of actionable recommendations to guide adaptation planning and investment related project activities. Within this activity, relevant plans, strategies, and existing hydrometeorological datasets for these areas will be analyzed. This analysis will build upon the following baseline technical parameters:

1. Apply climate change projections from the Digital Climate Atlas of Serbia to quantify projected changes in hazard conditions relative to the reference baseline period.
2. Incorporate projected changes in exposure and vulnerability driven by demographic trends and land use change scenarios through the agreed projection horizon.
3. Translate the risk assessment results into spatial outputs, producing a set of national water scarcity risk maps in GIS covering:
 - Hazard severity maps showing the frequency, intensity and spatial distribution of water deficit conditions under the reference baseline period and under projected future conditions
 - Exposure maps showing the spatial distribution of assets, infrastructure, population and economic activities to water scarcity hazard
 - Vulnerability maps showing the spatial distribution of sensitivity and adaptive capacity indicators across administrative districts and river basin units
 - Composite risk maps combining hazard, exposure and vulnerability into an overall risk score, for both current and projected future conditions
 - Change maps showing the projected shift in risk between current conditions and the agreed future scenarios, highlighting areas of increasing and decreasing risk.
 - Develop water scarcity risk map in GIS to:
 - Identify hotspots areas where the combination of high hazard, high exposure and high vulnerability produces the greatest overall risk.
 - Characterize the dominant risk drivers in each hotspot, distinguishing between areas where risk is primarily driven by hazard intensity, by high exposure, or by low adaptive capacity, to inform the targeting of appropriate response measures.
 - Identify sector-specific spatial vulnerabilities including areas with high dependence on a single water source, ageing infrastructure, or populations with limited adaptive capacity that may not be fully captured by the composite risk score alone.
4. Combine projected changes in hazard, exposure and vulnerability into future risk estimates at the agreed spatial units of analysis, applying the same scoring and weighting methodology used for current conditions.

Based on the results of the assessment, the criteria for the selection of river basins will be prepared.

This activity will provide the climate risk assessment of the intervention areas guiding the work on community based pilot projects and site selection for the design of larger-scale interventions. The amount requested is justified because this work requires specialized climate change, hydrological, agronomic, and engineering input, targeted site visits and reconnaissance.

3. Development of catalogue of adaptation measures based on the climate risk assessment

This activity will cover selection of adaptation and response measures addressing the most significant water scarcity risks identified will be prepared. For each measure, a brief description will be prepared; the risk component addressed (hazard reduction, exposure reduction or vulnerability reduction); the implementation horizon (short, medium or long-term); indicative cost range; and known co-benefits or potential trade-offs leading to maladaptation. Categories of measures that shall be taken into account, such as water retention and storage solutions: including reservoir and small-scale retention infrastructure, managed aquifer recharge, rainwater harvesting, and measures to increase groundwater recharge through land management practices; Nature-based solutions: including riparian zone restoration, wetland rehabilitation, reforestation of water catchments, and green infrastructure measures that restore natural water retention and regulate runoff. This activity will provide a catalogue of measures, including their costing, to guide the design of challenge calls. The amount requested is justified because this work requires hydrology, forestry, biodiversity, and catchment

restoration expertise.

4. Environmental and social safeguards package, including screening and management framework

This activity is needed because the proposed project includes site-based interventions and small-scale physical works that will require safeguards screening and management measures at the full proposal stage. A full proposal will require detailed screening, definition of site eligibility criteria, nature protection considerations, consultation arrangements, and grievance provisions consistent with Adaptation Fund and UNDP requirements. This activity includes the development of an Environmental and Social Management Framework (ESMF). The amount requested is justified because safeguards preparation requires specialist input, targeted consultations, review of risk pathways, and development of appropriate management instruments.

5. Gender, social inclusion and local stakeholder engagement assessment

This activity is needed to ensure the full proposal is based on a stronger understanding of differentiated vulnerability, particularly for rural women, smallholder farmers, and socially vulnerable groups in the target areas. Full proposal development requires a detailed gender analysis, social inclusion assessment, stakeholder engagement approach, and preparation of a Gender Action Plan (GAP). The amount requested is justified because this work requires specialist gender and social expertise, alongside targeted consultations to analyze how the project design can best address vulnerable rural communities.

6. Institutional, legal, spatial planning and implementation arrangements study

This activity is needed because the proposed project will operate across a complex governance environment involving the Ministry of Environmental Protection, RHMS, Public Water Management Companies "Srbijavode" and "Vode Vojvodine", the Republic Directorate for Water, local self-governments, and managers of wetland areas. Full proposal development requires a detailed implementation architecture covering executing arrangements, inter-sectoral coordination mechanisms, legal considerations, and long-term O&M responsibilities. The project preparation phase will include assessment of institutional capacities of the key institutional stakeholders, identification of capacity building and training needs and designing capacity building activities to be included in the full project. The amount requested is justified because this work requires specialist institutional and legal analysis, together with consultation across the relevant national institutions and local authorities.

7. Coherent design of technical interventions, budgeting, resource planning and full proposal preparation

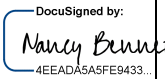
This activity is needed to ensure the full proposal is developed as a coherent and technically sound package. The project combines climate analysis, drought monitoring, engineering works, NbS, safeguards, and institutional coordination. Strong technical leadership is required to guide and integrate all specialist workstreams, ensure consistency, prepare the consolidated budget, and develop technically sound and coherent proposal. The amount requested is justified because this work requires a highly qualified international technical expertise and leadership.

8. Results framework, M&E, implementation planning

The full proposal will require a results framework with indicators, targets, and means of verification, a monitoring and evaluation system, a risk matrix, an implementation schedule, a complete budget presentation, and integration of review comments and final edits. This work is distinct from technical leadership described under i. 7 above and is required to ensure that the proposal is internally consistent, properly structured, and includes a rigid results framework aligned with the Adaptation Fund requirements. The amount requested is justified because this work requires specialist support for results and M&E design, implementation planning, editorial consolidation, and final packaging of the proposal.

C. Implementing Entity

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

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Nancy Bennet, Director, Quality and Impact Hub and Executive Coordinator, Vertical Funds, Bureau for Policy and Programme Support (BPPS), United Nations Development Programme	 DocuSigned by: Nancy Bennet 4EEAD5A5FE9433...	27-Jul-2026	Natalia Olofinskaya, Regional Technical Advisor	+905435323046	Nataly.olofinskaya@undp.org