



ADAPTATION FUND

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

## **PROPOSAL FOR BOSNIA & HERZEGOVINA**



ADAPTATION FUND

**ADAPTATION FUND BOARD SECRETARIAT**  
**TECHNICAL REVIEW OF PROJECT PROPOSAL FOR**  
**"INTEGRATED LANDSLIDE RISK REDUCTION AND CLIMATE-RESILIENT LAND**  
**MANAGEMENT IN BOSNIA AND HERZEGOVINA"**

**Project Title** Integrated Landslide Risk Reduction and Climate-Resilient Land Management in Bosnia and Herzegovina

**Project ID** AF00000563

**Category** Regular size project (over \$1 million)

**Type** Single country project

**Stage** Concept

**Country** Bosnia and Herzegovina

**Implementing Entity** UNDP

**Financing Requested** USD 12,000,000.00

**Reviewer** Una May Gordon

## Co-reviewer(s)

### IE Contact Person

Radhika Dave , Siriboon Ketphichai ,Mahlet Ambachew,Mariam Zafar,Meral Ozler,Missale Woldegiorgis,Nancy Bennet,Nataly Olofinskaya,Robin Merlier

## Secretariat's Overall Comment

The initial technical review raises some issues, such as lack of explicit concrete adaptation actions, economic, environmental and social benefits should be quantified where possible, lack of evidence for initial consultations, no explicit initial consultation with community or those with gender remit, a limited initial gender analysis, E&S checklist and lack of risk categorisation as either A, B, or C, and the AF Strategic Results Framework 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:** N/A

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

**Response:** Yes

**Secretariat:** Yes. Bosnia and Herzegovina (BiH) is increasingly exposed to climate change impacts, including more frequent and severe floods, landslides, droughts, heatwaves, and damage to forest ecosystems. Climate change is increasing the frequency and severity of the hydro-meteorological conditions that trigger landslides

## Project Eligibility

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

**Response:** Yes

**Secretariat:** Yes. As per Endorsement letter signed by the Designated Authority dated 5 August 2026.

NB - A minor correction needed as website stated Mr. Srdan Admizic while LoE states Dr. Srdan Admizic

**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 project concept is 50 pages.

Some editorial notes:

CR1: Please note that the Terminal Evaluation is submitted 9 months after project closure. Please amend the Projected Calendar accordingly.

**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 information is required.

The project activities broadly aligned with the project's goals and objectives, with coherency between components, moving from enabling conditions (Component 1) to adaptation action (Component 2) to continuity and scaling up (Component 3). However, Components 1 and 3 may benefit from further refinement, including making some outcome/output statements more specific and measurable. Component 3 appears to focus on project development. Currently its intent is to produce studies and prepare future investment proposal and . As currently framed, these activities may be considered business-as-usual. It is not sufficiently clear how it will produce adaptation benefits during the project. The Theory of Change and its diagram are provided.

CAR1: Please strengthen the description of the concrete adaptation actions. More specifically please focus Components 1 and 3 around the use, adoption, implementation and financing, rather than studies, strategies and project documents.

CAR2: Please rewrite the output statements so they are less generic, ensuring outcome and outputs are tangible and measurable. For example:

- i. Please make Output 1.1.1's statement more specific, e.g. Climate-informed landslide risk reduction is integrated in the regulatory and policy frameworks or emphasis the Strategy for Climate-informed Sustainable Landslide Management. The current statement is too broad to monitor
- ii. Please adjust Output 1.1.2, considering using more specific text such as "Climate-informed landslide risk information and data management system.....".
- iii. Please adjust Output 1.1.3, consider including whose capacity is being built and in what area.
- iv. Please rephrase Outcome statement Outcome 3.1 and its Outputs. Outcome 3.1 implies financing is assured, using the term secure. Consider a statement such as ' Sustainable financing and incentive mechanisms increase access to resources for continued implementation and scaling of climate-informed landslide risk reduction.'

CAR3: Please clarify how Component 3 will generate concrete adaptation benefits during the project period. Also consider how to make the financing mechanism operational and capitalised during the project e.g. number of local adaptation investments financed. Note the response to this will influence CAR 2(iv) above.

CR2: Please also clarify if the revised policies for water and forest are expected adopted under the project.

**Response:** Not Cleared

**Secretariat:** N/A

**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, Section B (pages 29-31), of the proposal describe expected economic benefits quantitatively and social and environmental benefits qualitatively. It broadly identifies vulnerable groups. It also provides some consideration of maladaptation risks and how it will not increase it. However, it does not indicate the number of indirect and direct beneficiaries that will be reached. An initial gender assessment document is included but it lacks critical details on differentiated vulnerability.

CAR4: Please quantify the expected social and environmental benefits wherever possible. When exact figures are not available, kindly include reasonable estimates or proxies to support the identified project's impact alongside a brief explanation of the method used for these calculations.

CAR5: Please provide estimates of the number of direct and indirect beneficiaries, disaggregate by male and female.

CAR6: Please provide preliminary evidence of gendered- differentiated vulnerability. Please ensure that the initial gender assessment focuses on the following:

- climate vulnerabilities and impacts experienced by women and men;
- roles and responsibilities;
- access to/control over land, shelter, resources, employment and decision-making;
- adaptive capacities;
- barriers to participation;
- gender-based violence/protection risks;
- differentiated knowledge and priorities;
- implications of the proposed interventions for gender relations.

CAR7: Please strengthen the section to demonstrate equitable distribution benefit by considering how benefits will be prioritised or distributed among municipalities, communities and vulnerable groups and how will you ensure vulnerable groups receive proportionate adaptation benefits.

CR3: Please ensure that the risk identified as also noted in the Section on Environmental and Social Risks.

**Response:** Not Cleared

**Secretariat:** N/A

**Is the project / programme cost effective?**

**Response:** Pending

**Secretariat:** Yes.

However further information is required.

CAR8: Please strengthen the main feasible alternative approaches considered and briefly explain why the proposed approach is considered the most cost-effective. The use of a table may assist with the comparisons.

CR4: Please clarify the economic rationale by providing the methodology for the calculations. For example, "... estimates quantified direct exposure of approximately USD 539.13 million in Banja Luka and the avoided direct losses are estimated at USD 539.13 million in Banja Luka. Is the project protecting 100% of exposed assets? The same applies for the Tuzla area. Note also it may be best explained in a tabular format as noted above.

CR5: For the sustainability dimension, please make it more explicit by linking options to life cycle costs, maintenance requirements and avoided recurrent expenditure.

**Response:** Not Cleared

**Secretariat:** N/A

**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 clarification is required.

As per Part II, Section D (pages 32-33), the concept references the National Adaptation Plan of Bosnia and Herzegovina, Climate Change Adaptation and Low-Emission Development Strategy for Bosnia and Herzegovina 2020 to 2030, Fourth National Communication and the Nationally Determined Contributions (NDC) as well as other relevant plans/programme documents.

CR6: Kindly clarify the years of implementation of each strategy/ plan or the year completed if the period is not documented, specifically the NAP.

CR7: To strengthen the section, after briefly stating the goal/objective of the strategy/plan, please include the project's alignment to the strategy. A suggested structure could be: "The proposed project is aligned with [Plan XX], under [Specific Action XX], contributing to [Project Outcome XX]."

**Response:** Not Cleared

**Secretariat:** N/A

**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 required.

As per Part II, Section E (pages 34-35), the concept proposal notes compliance with national and local technical and regulatory requirements. Some amendments are needed.

CR8: Kindly provide a comprehensive table listing of all specific national technical standards applicable to the proposed project, including s sector related. The columns in the table should include:

- (i) specific name/number of the standard/regulation,
- (ii) goals/objectives,
- (iii) how it is related to the proposed project
- (iv) briefly the steps involved to comply with the standards
- (v) The competent authority which will issue approval

**Response:** Not Cleared

**Secretariat:** N/A

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

**Response:** Pending

**Secretariat:** Unsure.

As per Part II, Section F (pages 35-37), the proposal notes a few past projects but the list needs to be more comprehensive.

CAR9: Kindly include a comprehensive table listing of all projects that are or have been implemented in the country and are related or complementary to the proposed project. For each, please include the following details in the table:

- (i) Project title, Donors/Funding Entity
- (ii) Main project interventions,
- (iii) Timeline and specific location within the country,
- (iv) Target population,
- (v) Implementing entity,
- (vi) Lessons learned (if applicable)
- (vii) Overlaps and synergies with the proposed project, including how proposed project will build upon an existing or previous project

CR9: Please clarify if the project overlaps with the AF funded project implemented by IFAD “Increasing Climate Change Resilience in the Agricultural sector of Bosnia and Herzegovina – Staza” since both have an agricultural component

**Response:** Not Cleared

**Secretariat:** N/A

### 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, Section G (pages 37-38), the proposal addresses knowledge management and dissemination of lessons learned, highlighting aspects to be achieved under Component 1. However further adjustments are needed, especially given there is no explicit knowledge management section or subsection in the proposal.

CAR10: Please make the KM activities more explicit by a dedicated component (a new Component 4) which encapsulates all knowledge management and learning across the project with a budget line.

CR10: Please also specify:

- i. how frequently the experiences and lessons gained will be documented and tracked (monthly, quarterly etc)
- ii. how will the project systematically assess what works, for whom and under what conditions, and at what cost
- iii. who will be responsible for tracking the experiences gained, how this will be done, and when the tracking will take place (e.g. an M&E Officer/ Knowledge Management Officer in the Project Management Unit).
- iv. how the knowledge generated will be sustained after the project concludes. For example, who will be responsible for managing and maintaining the digital knowledge repository or does a repository already exist.

**Response:** Not Cleared

**Secretariat:** N/A

**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, Section H (pages 38-39), initial consultations were conducted though not in sufficient detail as required in the Initial Consultation Report. Note the Initial Consultation Report repeats information in Section I. It is unclear if the Ministry responsible for gender was not part of the process or those stakeholders with a gender remit.

CR11: Kindly provide detailed information on the consultative process described in the concept 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) 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.
- (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. For example, were vulnerable groups were consulted during concept development and, if so, how their views were incorporated into the proposed interventions?

**Response:** Not Cleared

**Secretariat:** N/A

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

**Response:** Pending

**Secretariat:** No

As per Part II, Section I (pages 39-40), the fundings justification is repeatedly framed as ‘incremental cost of adaptation’ but instead should demonstrate the full costs of the adaptation measures required to achieve the project’s stated adaptation objectives. Note that the avoided-loss analysis supports the economic rationale for intervention but does not, on its own, demonstrate the full cost of adaptation.

CAR11: Please strengthen the full cost of adaptation reasoning by clearly demonstrating that Adaptation Fund resources will finance the measures required to shift from business-as-usual interventions towards a climate-resilient pathway, rather than an incremental-cost approach. For example, consider clearly identifying the climate risks, explain the baseline situation, and demonstrates how the proposed AF-financed components will reduce vulnerability or strengthen adaptive capacity. However, the full proposal should provide a more detailed component-level explanation of the baseline, adaptation gap, AF-financed response, expected adaptation benefits, and cost justification.

CAR12: Some activities that can be considered as business-as usual include drainage and slope management, forest management, financing frameworks and follow-up on investments. Please provide a clearer explanation of why they are necessary to achieve the specific adaptation objectives and project benefits.

CAR13: 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

**Secretariat:** N/A

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

**Response:** Pending

**Secretariat:** No.

Part III, Section A (pages 47-49), the concept note should be revised to ensure consistency with the template.

CAR14: Please comply with the template for the SRF Alignment Table.

CAR15: Please re-examine the wording of the Fund Outcomes and Outputs and their respective Fund indicators. For example, Output 7 indicators is not aligned to the new guidance. Note the exact wording from the guidance should be used

CR12: Please include a brief narrative on alignment with Strategic Results Framework Outcomes.

**Response:** Not Cleared

**Secretariat:** N/A

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

**Response:** Pending

**Secretariat:** Yes.

As per Part II, Section J (pages 41- 42), the proposal addresses some key areas of sustainability (e.g. environmental, financial and institutional). However, some arrangements need to be further clarified.

CR13: Please clarify the arrangements for sustaining key project systems and investments beyond project completion, including institutional responsibility for the operation, maintenance and recurrent financing of the GIS/data platform, monitoring and early warning systems, drainage works, and nature-based interventions.

CR14: Please clarify how the proposed financing mechanisms under Component 3, including financing windows and follow-on investment pipelines, will be institutionalised and sustained beyond the Adaptation Fund grant period.

CR15: Please strengthen the discussion of social and economic sustainability, including how community-level capacities, preparedness and participation will be maintained after project completion and how the project's economic benefits will be sustained over time.

**Response:** Not Cleared

**Secretariat:** N/A

**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 required.

As per Part II, Section K (pages 43-46), the proposal provides preliminary environmental and social screening against the 15 Environmental and Social Principles. While several relevant potential risks have been identified, along with mitigation measures, the section does not highlight the risk category of the project based on preliminary screening.

CAR16: Please indicate the environmental and social risk category (Category A, B or C) assigned to the project based on the preliminary screening, in accordance with the Adaptation Fund Environmental and Social Policy. Please ensure that the classification reflects the AF ESP classification criteria rather than solely the Implementing Entity's own environmental and social safeguard system.

CAR17: Please review the ESP screening table and note that whether Column 2 "No further assessment required

for compliance” is marked (✓) depends on whether further assessment for compliance is not required. Please note that Adaptation Fund Principles 1, 4 and 6 always apply. Therefore, these should be left blank. For more information, please visit: AF’s ESP guidance.

CR16: Note that the E&S Principle (Climate Change) refers to the potential for increase in greenhouse gas emissions. Kindly ensure this is addressed in Column 3.

CAR18: Please include a clear statement confirming that project implementation will comply with the Adaptation Fund Environmental and Social Policy and Gender Policy, including the application of appropriate environmental, social and gender risk-management measures throughout implementation.

**Response:** Not Cleared

**Secretariat:** N/A

## 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:** Cleared

**Secretariat:** Yes. The Implementing Entity Management Fee is at 8.5% for single country project. The PFG budget is within range for a project size US\$5M and above. Regarding the PFG, UNDP is the Executing Entity and the period for the PFG looks reasonable. The Implementing Entity’s Management Fee equates to the 8.5%. The totals also are accurate.

**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 Project Execution Costs are at 1.5% as UNDP is the Executing Entity.

CAR19: Please provide justification as to why the IE is serving as an EE.

**Response:** Not Cleared

**Secretariat:** N/A

## Eligibility of IE

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

Response: **Cleared**

**Secretariat:** Yes. The IE (UNDP) is listed as accredited and the accreditation expires on 10 October 2029.

## CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

### PART I: PROJECT/PROGRAMME INFORMATION

**Title of Project/Programme:** Integrated Landslide Risk Reduction and Climate-Resilient Land Management in Bosnia and Herzegovina

**Country:** Bosnia and Herzegovina

**Thematic Focal Area:** Disaster Risk Reduction

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

**Implementing Entity:** UNDP

**Executing Entities:** UNDP

**Amount of Financing Requested:** 12,000,000 (in U.S Dollars Equivalent)

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

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

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

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

**Stage of Submission:**

☐ This concept has been submitted before

☒ This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: Click or tap to enter a date.

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

## Project/Programme Background and Context:

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

### 1. Introduction

Bosnia and Herzegovina (BiH) is increasingly exposed to climate change impacts, including more frequent and severe floods, landslides, droughts, heatwaves, and damage to forest ecosystems<sup>1,2,3</sup>. Climate change is increasing the frequency and severity of the hydro-meteorological conditions that trigger landslides, while the country's mountainous terrain, diverse climatic zones, and strong dependence on natural resources make it particularly sensitive to climate variability. These pressures interact with degraded forests, uncontrolled hillside construction, and inadequate drainage systems, which together amplify slope instability, erosion, disruption, and damage.

BiH is a middle-income country with an estimated population of **3.531 million**, a total area of **51,209.2 km<sup>2</sup>**, and a highly decentralised political and administrative structure consisting of two entities, the **Federation of Bosnia and Herzegovina (50.638%)** and **Republika Srpska (48.386%)**, and **Brčko District (0.976%)**. The Federation is divided into 10 cantons and further into cities and municipalities, while Republika Srpska consists of cities and municipalities. In total, BiH has **142 municipalities**, of which **79** are in the Federation of BiH and **63** in Republika Srpska. This complex governance structure shapes how climate and disaster risks are managed and contributes to uneven institutional capacity and fragmented implementation.

Landslides are already a major national hazard. Based on available studies and risk assessments, Bosnia and Herzegovina has approximately **13,000 recognised landslides**, including about **8,000** in the Federation of BiH and **5,000** in Republika Srpska. The country experience more than **1,000 landslides annually**, including both reactivated and newly formed. National landslide susceptibility mapping undertaken in 2016 found that around **7,571 ha<sup>4</sup>** of land are at significant landslide risk and that approximately **260,731 people** live in areas exposed to very significant landslide risk.

The evidence shows that the risk of landslides and their associated impacts have been aggravating as a result of climate change. In May 2014, the Tamara low-pressure system brought record-breaking rainfall, causing the worst natural disaster in the region in 120 years. In Bosnia and Herzegovina, the event triggered more than **3,000 landslides**, caused over **25 deaths**, led to the evacuation of **66,080 people**, displaced around **90,000 people**, damaged approximately **100,000 homes**, of which **25,000** were severely damaged or destroyed, affected around **230 schools and hospitals**, and caused economic damage estimated at around **EUR 2 billion**, equivalent to roughly **15% of GDP<sup>5</sup>**. More recently, the October 2024 flood, mudflow, and landslide disaster caused **27 deaths**, affected **1,057 households** and **3,036 individuals**, led to the evacuation of **322 people**, damaged **893 houses or apartments**, destroyed **55**, damaged **143 public buildings**, and caused serious damage to roads, railways, and bridges. Initial World Bank estimates placed direct damages at around **EUR 144 million**, with total recovery costs likely to be two to three times higher<sup>6</sup>.

These impacts are intensified by fragmented institutional and policy arrangements for landslide risk management, weak monitoring and early warning systems, degraded slopes and drainage, and

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<sup>1</sup> FOURTH NATIONAL COMMUNICATION OF BOSNIA AND HERZEGOVINA Under the United Nations Framework Convention on Climate Change. [https://unfccc.int/sites/default/files/resource/FNC%20BiH\\_ENG%20fin.pdf](https://unfccc.int/sites/default/files/resource/FNC%20BiH_ENG%20fin.pdf)

<sup>2</sup> World Bank (2024), Bosnia and Herzegovina – Country Climate and Development Report.

<https://openknowledge.worldbank.org/server/api/core/bitstreams/adc53ecc-1fb1-4931-94f3-80cf982d1a10/content>

<sup>3</sup> Bosnia and Herzegovina National Adaptation Plan – NAP with proposed measures <https://unfccc.int/sites/default/files/resource/NAP-Bosnia-and-Herzegovina%20.pdf>

<sup>4</sup> <https://www.undp.org/bosnia-herzegovina/publications/flood-and-landslide-risk-assessment-housing-sector-bih>

<sup>5</sup> Bosnia and Herzegovina Floods 2014 – Recovery Needs Assessment. <https://www.gfdrr.org/sites/default/files/BiH-rna-report.pdf>

<sup>6</sup> Bosnia and Herzegovina Floods Response - Multi-Cluster Initial Rapid Assessment.

limited local financing for prevention. Preliminary economic analysis undertaken for this Concept Note estimates combined direct exposure of about **USD 564.29 million** across three illustrative hotspots, **Banja Luka, Foča, and Tuzla**, selected to represent different landslide risk, loss, and intervention contexts, and indicates a strong avoided-loss rationale for intervention. The analysis shows that preventive adaptation is economically justified because the avoided direct losses and avoided disruption associated with targeted interventions are likely to exceed intervention costs by a substantial margin, even before wider social and environmental benefits are included.

Against this background, the proposed project aims to enhance the resilience of communities, ecosystems, and infrastructure in Bosnia and Herzegovina to climate-induced landslides through gender-sensitive and inclusive integrated forest, water, and land management, improved early warning systems, risk-informed spatial planning, and strengthened financing for long-term risk reduction.

## **2. Climate change context**

Bosnia and Herzegovina (BiH) has a highly heterogeneous climate shaped by complex relief and its position between the Adriatic Sea and the Pannonian Basin. Mediterranean and continental air masses interact over steep terrain, producing sharp climatic contrasts over short distances. This is highly relevant for landslide risk because precipitation is strongly controlled by topography, rainfall occurs through frontal, convective, and orographic mechanisms, and wet periods often cluster seasonally. Long wet spells in autumn and winter, rapid snowmelt in spring, and short intense storms in the warm season can all raise pore-water pressures, increase runoff, and weaken slope materials.

Landslides are a major climate-sensitive hazard in BiH because three factors coincide: increasingly intense rainfall triggers, widespread physical susceptibility of slopes and valleys, and high exposure of settlements, roads, and infrastructure in unstable terrain. Climate change therefore amplifies an already significant baseline hazard by increasing the frequency, intensity, and concentration of the hydro-meteorological conditions (particularly rainfall) that trigger slope failure.

### **2.1 Historical trends**

The rainfall indices most relevant to landslide triggering are those representing extreme daily and multi-day precipitation. The Fourth National Communication (FNC) reports a general increase in heavy precipitation during 1961 to 2016, including upward trends in **Rx1day** (maximum 1-day precipitation), **Rx5day** (maximum consecutive 5-day precipitation), **SDII** (average daily intensity), **R10mm**, **R20mm** (frequency of events exceeding 10mm and 20mm respectively), **R95p**, and **R99p** (95<sup>th</sup> and 99<sup>th</sup> percentile event intensity). These indices are important because they capture both short intense rainfall and multi-day cumulative loading, which are key trigger mechanisms for rainfall-induced landslides.

The increase in **R95p** and **R99p** is especially significant because it indicates intensification in the upper tail of the rainfall distribution, meaning that very wet and extremely wet days are becoming more intense. The FNC also states that the increase in intense heavy precipitation has become more pronounced since the beginning of the 21st century. Taken together, the national historical evidence supports the conclusion that the rainfall conditions most relevant to landslide initiation are becoming more severe in BiH.

### **2.2 Climate change projections**

The downscaled climate modelling presented in the FNC shows a pattern that is highly relevant to landslide risk. Although total annual precipitation changes are mixed and spatially variable, the indices most relevant to landslide triggering generally intensify, especially under higher-emissions scenarios and toward the end of the century. For landslides, this is critical because annual rainfall totals are less important than changes in heavy daily rainfall, multi-day accumulations, heavy-rainfall frequency, seasonal concentration, and antecedent wetness.

Future climate projections are presented relative to the 1986 to 2005 baseline for three time horizons: 2016 to 2035, 2046 to 2065, and 2081 to 2100, under RCP2.6, RCP4.5, and RCP8.5. In addition to total precipitation, the FNC provides several climate indices that are directly relevant to landslide triggering.

### **Projected changes in mean precipitation**

Annual precipitation changes are mixed in the near future, generally ranging between **-5% and +5%**. By late century, especially under **RCP8.5**, annual precipitation becomes negative in many areas, with some locations showing changes of less than **-10%**. However, the seasonal signal is more important for landslides. The FNC shows that the largest precipitation reductions occur in June to August, with summer declines of less than **-30%** in the south under RCP8.5 by late century, while December to February generally becomes wetter across most of the country.

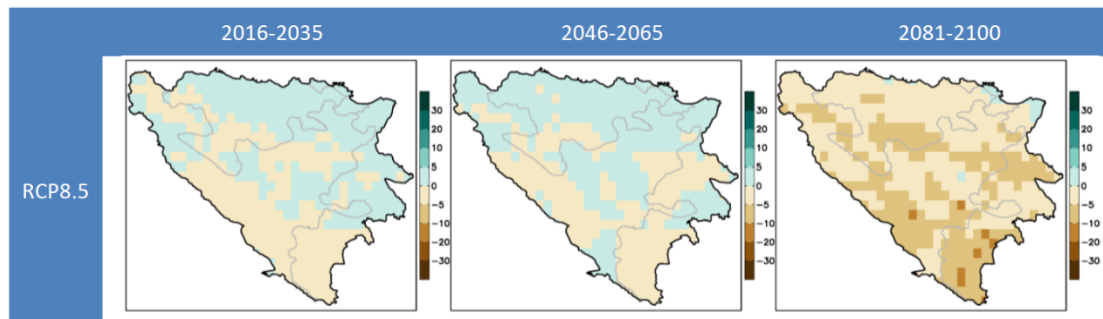


Figure 1: Change in mean daily precipitation (in %) compared to the reference period 1986-2005, for scenarios RCP8.5, on an annual basis, for the three selected future periods 2016-2035, 2046-2065 and 2081-2100 (Source, FNC)

For landslide risk, this means wetter winters, drier summers, and stronger seasonal contrasts. In the central hilly-mountainous and river-valley zone, annual mean daily precipitation under RCP8.5 for 2016 to 2035 shows both increases and decreases of around  $\pm 5\%$ , while summer precipitation falls by up to **-10%** in some areas. This reinforces that annual rainfall alone is not a sufficient basis for assessing changes in landslide-trigger conditions.

### **Projected number of days with precipitation greater than 20 mm<sup>7</sup>**

One of the most useful projected indices for landslides is the **number of heavy-rainfall days with precipitation above 20 mm**. In this context, the index is used as an indicative heavy-rainfall class relevant to potentially damaging events, rather than as a locally calibrated landslide-trigger threshold. The FNC states that this number generally increases under all scenarios by the end of the century. In most areas, positive changes are in the range of **+5% to +20%**, while under **RCP8.5** for 2081 to 2100, much of the country shows increases of around **+20%**, with some areas above **+30%**. This is highly relevant because it means heavy-rainfall days capable of triggering slope failures are expected to become more frequent, even where annual precipitation does not rise.

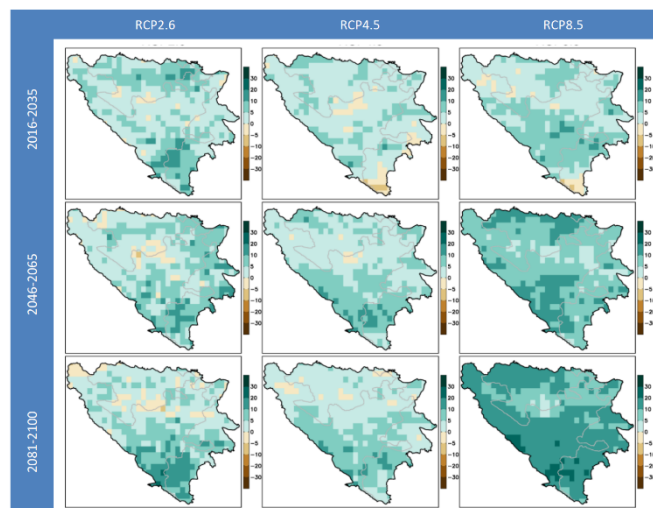


Figure 2: Change in the number of days with precipitation greater than 20 mm (in %) compared to the reference period 1986-2005, for scenarios RCP2.6, RCP4.5 and RCP8.5 and three selected twenty-year periods, 2016-2035, 2046-2065 and 2081-2100 (Source, FNC).

<sup>7</sup> The >20 mm index is used here as the heavy-rainfall class reported in the Fourth National Communication. It should not be interpreted as a locally derived or universally applicable landslide-trigger threshold.

### **Projected maximum daily accumulated precipitation**

The FNC also projects a general increase in **maximum daily precipitation**. Under all scenarios, most of the country experiences increases of **+5% to +20%**, while under **RCP8.5** by late century, increases reach **+20%** in most areas and exceed **+30%** in some locations. This is directly relevant because maximum daily precipitation is a close analogue of the **maximum 1-day rainfall** index used in analyses of landslide risk. The implication is clear, the strongest single-day rainfall events are expected to intensify across much of BiH, increasing the likelihood of short-duration slope-triggering events.

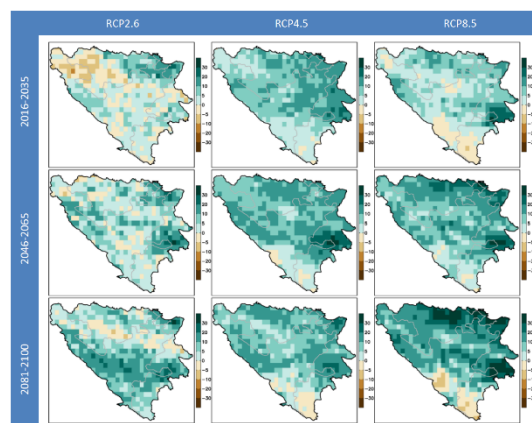


Figure 3: Change in maximum daily precipitation (%) in the year compared to the reference period 1986-2005, for scenarios RCP2.6, RCP4.5 and RCP8.5 and three selected twenty-year periods, 2016-2035, 2046-2065 and 2081-2100 (Source, FNC).

### **Consecutive dry days**

The FNC also projects an increase in **consecutive dry days**. Under **RCP4.5**, increases reach **5 to 10%** by mid-century and **10 to 20%** by late century. Under **RCP8.5**, the increase reaches **20 to 30%** across most of the country by the end of the century. This is not a direct landslide trigger index, but it is still relevant. Longer dry spells can weaken vegetation cover, weaken interstitial soil bonds, alter runoff generation, and intensify the contrast between prolonged dry periods and subsequent intense storms. In some soils and landscapes, this can contribute to runoff concentration, erosion, and instability when heavy rainfall returns.

Overall, the FNC's downscaled climate modelling indicates that the rainfall indices most relevant to landslide triggering generally intensify in the future climate. Increases in heavy-rainfall days and maximum daily precipitation, together with wetter winters and stronger seasonal contrasts, point to more frequent and more intense rainfall-trigger conditions for landslides.

### **2.3 Supplementary analysis of landslide-relevant rainfall extremes**

A supplementary municipality-focused climate analysis undertaken for this Concept Note strengthens the national evidence by examining rainfall indices more directly relevant to landslide triggering in **Banja Luka, Sarajevo, Mostar, Tuzla, and Zenica**. For clarity, Foča is included as a representative exposure hotspot in the economic analysis, whereas the supplementary municipality-level climate index analysis is limited to major urban centres with long and consistent meteorological records, namely Banja Luka, Sarajevo, Mostar, Tuzla and Zenica. The observed record for the period 1961-2025 shows measurable increases in critical rainfall triggers. In **Banja Luka**, mean winter **Rx1day** rises from **26.7 mm to 34.2 mm** and mean winter **Rx5day** from **53.4 mm to 61.1 mm**. In **Tuzla**, annual mean **Rx1day** rises from **46.1 mm to 51.9 mm** and annual mean **Rx5day** from **77.5 mm to 94.1 mm**. In **Zenica**, annual mean **Rx1day** rises from **40.8 mm to 44.6 mm** and annual mean **Rx5day** from **68.7 mm to 76.8 mm**. In **Sarajevo**, the annual maximum **Rx5day** rises from **116.3 mm to 171.7 mm**, indicating a very large increase in multi-day loading.

The strongest empirical signal comes from counts of prolonged-rainfall threshold exceedance events. In **Banja Luka**, 15-day threshold exceedances derived using the Loznica reference rainfall series and the Marjanović et al. (2018)<sup>8</sup> prolonged-rainfall threshold approach rise from **231 to 943**;

8 Marjanović, M., Krautblatter, M., Abolmasov, B., Đurić, U., Sandić, C. 2018. The rainfall-induced landsliding in Western Serbia: A temporal prediction approach using Decision Tree technique. Engineering Geology, 232, 147–159. <https://doi.org/10.1016/j.enggeo.2017.11.021>

in **Sarajevo**, from **170 to 519**; in **Mostar**, from **970 to 2540**; in **Zenica**, from **46 to 297**; and in **Tuzla**, exceedance counts for the **Brunetti et al. (2010)<sup>9</sup>** 15-day cumulative rainfall threshold (E15) rise from **30 to 418**. These results indicate that rainfall conditions comparable to those associated with landslide occurrence in published regional threshold studies have become materially more frequent. In the absence of a locally calibrated Bosnia and Herzegovina rainfall-landslide threshold model, these results should be interpreted as proxy evidence of increasing rainfall conditions associated with landslide occurrence in comparable regional studies.

The future signal is also strong. Under **RCP8.5** by late century, projected increases in **ERR20**, defined here as the **percentage change in the annual number of heavy-rainfall days with daily precipitation of at least 20 mm**, reach **21.57%** in **Banja Luka**, **19.59%** in **Tuzla**, and **19.0%** in **Sarajevo**. Projected **Rx1day** increases reach **14.63%** in **Banja Luka**, **12.70%** in **Sarajevo**, **15.80%** in **Mostar**, **9.52%** in **Tuzla**, and **8.93%** in **Zenica**. Projected **Rx5day** increases reach **7.47%**, **12.46%**, **13.39%**, **4.89%**, and **6.32%** respectively.

These findings mean that municipalities already identified as highly exposed to landslides are also likely to experience a worsening rainfall-trigger environment, through more frequent heavy-rainfall days and stronger daily and multi-day extremes. This supplementary analysis therefore reinforces the climate rationale for the project and supports the need for climate-informed susceptibility mapping, updated trigger and warning criteria, and stronger drainage and slope-protection measures in high-exposure municipalities.

### 3. Geological context

Bosnia and Herzegovina's geological setting creates strong underlying susceptibility to landslides. The country is predominantly mountainous and includes the central Dinaric Alps, which run broadly southeast to northwest and rise toward the south. These mountains transition to the Pannonian Plain in the north and to the Adriatic coastal zone in the south. The central and eastern parts of the country are mainly mountainous, the northwest is moderately hilly, and the northeast is predominantly lowland. Two major river basin systems structure the landscape, the **Sava Basin** and the **Adriatic Basin**, with deeply incised valleys, steep slopes, canyon systems, and dissected uplands creating terrain conditions that favour slope instability. In many areas, settlements, roads, and other infrastructure are concentrated along valley floors, lower slopes, and terrace edges, increasing both direct exposure to landslides and secondary impacts through road blockage, drainage disruption, and loss of access.

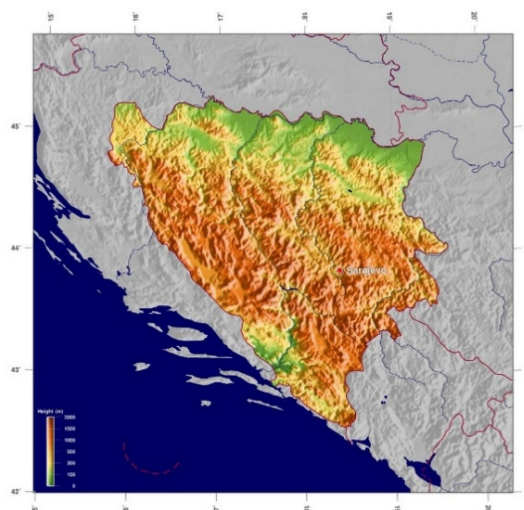


Figure 4: Elevation map of Bosnia and Herzegovina

In a geological sense, Bosnia and Herzegovina is highly heterogeneous. The country is dominated by the Dinarides and includes a complex assemblage of **Mesozoic carbonate platforms, Triassic and Jurassic ophiolite zones, Paleozoic formations, flysch sequences with marls, clays, sandstones and other weakly cemented sediments**. In large areas, the rock masses are covered by a weathering crust that is highly susceptible to erosion and degradation. This diversity is highly relevant to landslide risk because lithology and engineering-geological composition strongly influence weathering behaviour, permeability, shear strength, and failure mechanisms. The national

<sup>9</sup> Brunetti, M. T., Peruccacci, S., Rossi, M., Luciani, S., Valigi, D., & Guzzetti, F. (2010). Rainfall thresholds for the possible occurrence of landslides in Italy. *Natural Hazards and Earth System Sciences*, 10(3), 447–458. <https://doi.org/10.5194/nhess-10-447-2010>

landslide susceptibility mapping and the GIS landslide susceptibility screening undertaken for this Concept Note both use **lithology, slope, precipitation, and land use** as core explanatory variables, reflecting their first-order importance in the BiH context. The geological basis for these assessments is nevertheless constrained by the scale of the available national mapping, which limits more detailed local interpretation and reinforces the need for more site-specific investigation in later project stages.

Hydrogeological conditions are equally important because rainfall-induced landslides in BiH are driven not only by slope angle and material type, but also by the movement and concentration of water through soils, weathered horizons, fractured rock, and slope drainage pathways. Under intense rainfall, sharp local contrasts in infiltration, subsurface flow concentration, seepage emergence, perched water formation, and toe saturation can develop over short distances. These processes are especially important in BiH because they interact with road cuts, gullies, blocked drains, and concentrated runoff pathways to raise pore-water pressures and reduce slope stability. The country also contains both strong karst systems and non-karst mountainous and hilly terrain. In karst-influenced areas, infiltration can be rapid and subsurface routing highly complex, while in non-karst terrain, lower-permeability layers and weathered mantles can favour saturation and shallow sliding. This means that similar rainfall events can produce very different slope responses depending on local hydrogeological conditions.

Soils and surficial materials further reinforce susceptibility. Bosnia and Herzegovina has highly variable soil cover, including **Fluvisols** in northern valleys, and **Cambisols, Leptosols, Luvisols, and Terra Rossa** in hilly and southern areas. Major soil types include **Dystric Cambisol** and **Calcocambisol**, while significant parts of the country are already affected by erosion. In many landslide-prone locations, soils are shallow, degraded, or underlain by weak and disturbed regolith, colluvium, or clay-rich materials that lose strength when saturated. These conditions make slopes highly responsive to intense rainfall and runoff concentration, especially where vegetation cover is sparse or degraded and where land management is poor.

Taken together, Bosnia and Herzegovina's steep topography, heterogeneous geology, complex hydrogeology, and erosion-prone soils create a strong physical basis for recurrent landslide risk. These geophysical conditions already favour instability under current climate conditions and make the country particularly sensitive to the observed and projected increase in heavy rainfall and prolonged wet periods under climate change. They also explain why landslide risk is frequently compounded by degraded forests, uncontrolled hillside construction, and inadequate drainage systems, all of which intensify runoff concentration, slope weakening, and failure probability.

**Degraded forests amplify landslide risk** by reducing the protective role of vegetation in slope reinforcement, runoff regulation, and erosion control. Climate stress can worsen forest condition through drought, heat, and wildfire, while degraded or poorly managed forest land becomes less able to buffer intense rainfall and stabilise slopes. In Bosnia and Herzegovina, forests are not only biodiversity assets or timber resources, in many steep and erosion-prone areas they function as active stabilising systems that reduce runoff, reinforce soils, limit erosion, and moderate slope processes. The forestry and biodiversity assessment undertaken for this Concept Note development notes that structurally complex, mixed, and uneven-aged forests, especially those with continuous canopy cover, natural regeneration, retained deadwood, and intact soil structure, provide critical regulatory ecosystem services for slope stabilisation and reduction of landslide and torrent risks. Conversely, degraded forest structure, canopy interruption, poorly planned or maintained forest roads, fire damage, and unsuitable forest utilization practices can increase runoff concentration, reduce soil cohesion, and aggravate slope instability, particularly under increasingly intense rainfall conditions. In this sense, forest condition and catchment management are core determinants of climate resilience in landslide-prone terrain.

The forestry and biodiversity analysis provides especially strong evidence for the stabilising influence of vegetation in the Foča hotspot and the Sutjeska National Park landscape. NP Sutjeska covers 16,059.6 ha, of which more than 89% is forested, and includes the Perućica Primeval Forest strict

reserve of 1,434 ha, one of the largest preserved primeval forest reserves in Europe. The analysis shows that the absence of evident active landslides within the primeval forest, despite steep slopes and large elevation differences, illustrates the stabilising role of preserved forest structure on potentially unstable terrain. At the same time, the Park's highly dissected alpine relief, steep slopes, flysch and silicate bedrock, diluvial deposits, and deep sensitive soils make parts of the wider Foča-Sutjeska-Tjentište corridor inherently susceptible to slope processes. This means that biodiversity conservation, maintenance of structurally diverse forests, and careful management of road access and forest use are directly relevant to landslide prevention and should be treated as part of the adaptation rationale for the Foča corridor.

Climate change is already the most significant stressor affecting forest ecosystems and increasing rainfall extremes, together with forest fires, weak road access, and management pressures, are likely to aggravate slope instability in sensitive forest landscapes. In this context, structurally complex forests, protective pine stands, mixed beech-fir-spruce systems, and intact upper-catchment vegetation should be treated as part of the country's natural protective infrastructure. Their degradation reduces both biodiversity value and geotechnical resilience, while their conservation and restoration provide an adaptation pathway that is compatible with long-term slope stabilisation, runoff regulation, and erosion control.

**Uncontrolled hillside construction** is another major amplifier, because excavation, slope cutting, inadequate retaining works, and expansion into unstable terrain increase both fragility and exposure. **Inadequate drainage systems** are a particularly direct climate-linked amplifier. More intense rainfall can overwhelm roadside drains, culverts, and hillside drainage systems, especially where they are undersized, blocked, or poorly maintained. This concentrates runoff into unstable ground, increases infiltration and pore pressure, accelerates toe erosion, and raises the likelihood of landslide initiation or reactivation. These interacting geophysical and anthropogenic conditions justify the project's focus on climate-informed landslide risk reduction, catchment and slope management, improved monitoring, and site-specific adaptation planning.

### 3.1 Preliminary landslide susceptibility and exposure screening

A preliminary national GIS screening of landslide susceptibility and exposure was undertaken during Concept Note preparation to identify the municipalities where climate-sensitive landslide risk is likely to have the greatest consequences for people, infrastructure, and service continuity. The analysis uses the 2016 Bosnia and Herzegovina landslide susceptibility map, normalised to a 0 to 10 scale at 50 m resolution, and combines it with municipal boundaries, 2013 census data, road-network data, and available landslide cadastres and inventories for validation and hotspot screening. The 2016 susceptibility map itself was developed using a heuristic multi-criteria approach based on lithology, terrain slope, average historical precipitation, and land use, although it does not yet incorporate climate projections directly. In the 2016 susceptibility mapping, average precipitation was used as a national-scale proxy for long-term slope predisposition, whereas the short-term intensity and cumulative rainfall indices discussed above are more relevant to landslide triggering. As a check on the screening approach, overlay of inventoried landslides against the existing 2016 national landslide susceptibility map (Figure 5 below) shows that only about 10% of inventoried landslides fall in the low and very low susceptibility classes, which gives confidence that the screening is directionally robust for hotspot identification. The existing 2016 national landslide susceptibility map indicates that approximately 29% of the territory of Bosnia and Herzegovina is highly susceptible to landslide processes. Building on that hazard layer, the current GIS-based susceptibility and exposure screening combines the 2016 map with population, road-network, and available inventory data to identify priority hotspot types. The screening identifies two principal hotspot types relevant to project intervention design. The first consists of high population and infrastructure exposure municipalities, notably Banja Luka, Sarajevo (Novi Grad), Zenica, Tuzla, and Mostar, where high susceptibility coincides with concentrated urban exposure. The second consists of infrastructure-critical municipalities, including Foča, Gacko, Goražde, Konjic, Kalesija, Sapna, Lopare, Tešanj, Srebrenik,

and Kakanj, where roads pass through susceptible terrain and landslide disruption could isolate settlements or sever access to essential services.

The road exposure analysis is particularly significant. It indicates that about **925 km** of the classified road network, around **10%** of the total, passes through **high to critical susceptibility zones**, including about **123 km** in **very high or critical zones**. This confirms that landslide risk in BiH is not only a matter of slope stability, but also of connectivity, access, and continuity of services. On that basis, the screening provides a defensible first-order prioritisation framework for the Concept Note and supports a project design focused on urban exposure reduction, corridor protection, geo-early warning, and improved geospatial data systems in the most climate-sensitive and highly exposed municipalities.

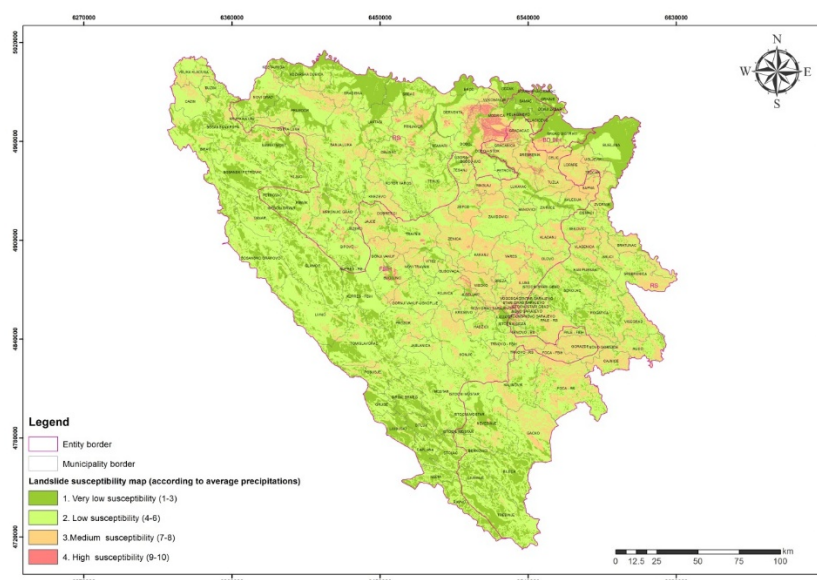


Figure 5: Landslide susceptibility map of Bosnia and Herzegovina (according Abolmasov, 2016)

Table 1: Municipality-level landslide susceptibility of transportation network

| Municipality | Entity | Area(km <sup>2</sup> ) | Very Low Susceptibility (km <sup>2</sup> ) | Low Susceptibility (km <sup>2</sup> ) | Moderate (km <sup>2</sup> ) | Very High Susceptibility (km <sup>2</sup> ) |
|--------------|--------|------------------------|--------------------------------------------|---------------------------------------|-----------------------------|---------------------------------------------|
| Doboj        | RS     | 656,3                  | 85,63                                      | 256,88                                | 166,01                      | 147,78                                      |
| Foča – RS    | RS     | 1118,4                 | 0,53                                       | 613,18                                | 384,74                      | 116,94                                      |
| Modriča      | RS     | 326,7                  | 93,01                                      | 36,085                                | 90,33                       | 107,29                                      |
| Kalinovik    | RS     | 679,5                  | 0,40                                       | 412,16                                | 206,77                      | 60,15                                       |
| Prijedor     | RS     | 834,0                  | 137,50                                     | 494,13                                | 148,73                      | 53,69                                       |
| Gradačac     | FBiH   | 215,2                  | 25,27                                      | 86,97                                 | 59,858                      | 43,15                                       |
| Gračanica    | FBiH   | 215,3                  | 16,89                                      | 71,48                                 | 87,39                       | 39,55                                       |
| Prnjavor     | RS     | 629,9                  | 75,73                                      | 225,77                                | 289,02                      | 39,45                                       |
| Derventa     | RS     | 516,6                  | 63,39                                      | 260,07                                | 157,03                      | 35,94                                       |
| Banja Luka   | RS     | 1238,8                 | 35,01                                      | 844,53                                | 323,43                      | 35,91                                       |
| Višegrad     | RS     | 449,0                  | 3,09                                       | 288,29                                | 121,90                      | 34,82                                       |
| Lopare       | RS     | 297,8                  | 24,20                                      | 43,81                                 | 195,03                      | 34,79                                       |
| Gradiška     | RS     | 761,6                  | 351,89                                     | 283,05                                | 94,21                       | 31,28                                       |
| Zavidovići   | FBiH   | 555,6                  | 4,20                                       | 327,36                                | 193,41                      | 30,71                                       |
| Olovo        | FBiH   | 409,3                  | 0,9                                        | 302,54                                | 75,90                       | 30,57                                       |

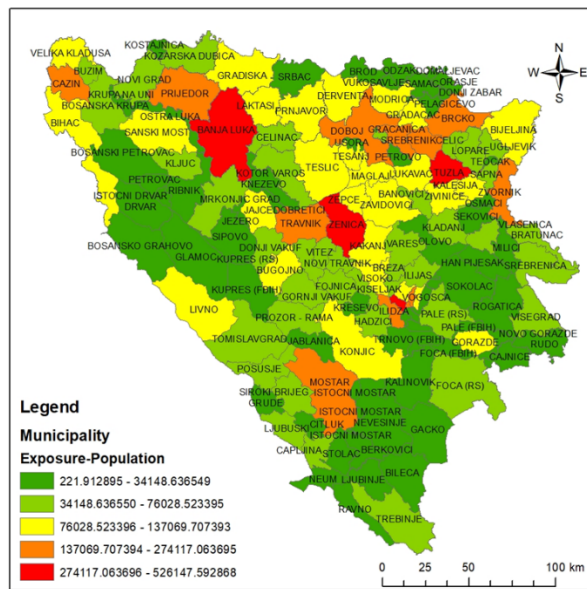


Figure 6: Municipal exposure analysis based on population and landslide susceptibility

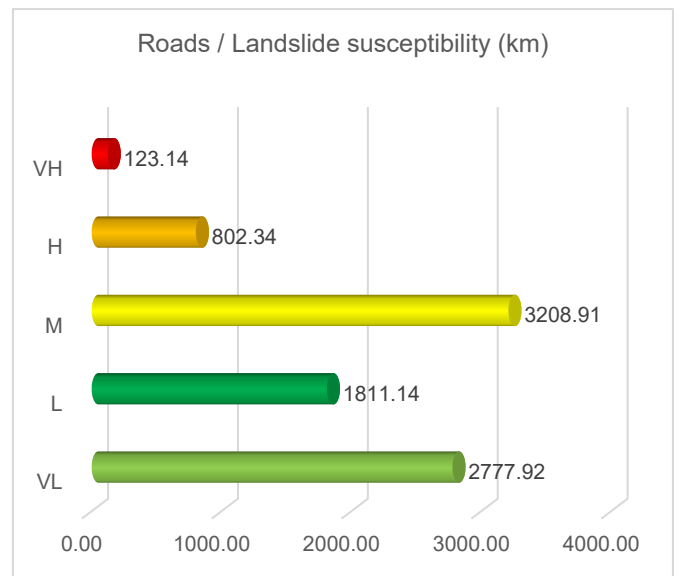


Figure 7: Road lengths (km) by susceptibility class

The forestry and biodiversity analysis completed for this CN provides a more differentiated interpretation of the Tuzla and Banja Luka hotspots. In Tuzla, the analysis points to steep slopes, flysch and diluvial deposits, sensitive soils, fragmented forests, insufficient forest-road planning, and recurrent erosion and shallow instability in urban-forest and peri-urban interfaces. It recommends treating forest cover in the wider Tuzla area as a primary natural barrier to slope failure and integrating protective forests, green infrastructure, road drainage, and slope bioengineering into land-use planning. In Banja Luka, the analysis emphasises the importance of peri-urban forests, green slopes, riparian buffers, and connected urban green infrastructure as preventive protective infrastructure, especially where urban expansion, vegetation removal, and altered drainage patterns are increasing landslide exposure. These findings support a broader framing in which urban and peri-urban green infrastructure is part of landslide risk reduction rather than a purely environmental co-benefit.

#### 4. Regulatory, institutional, and financing arrangements for landslide risk management in Bosnia and Herzegovina

##### 4.1 Regulatory context

Bosnia and Herzegovina does not have a single stand-alone national law or unified national authority for landslide risk management. Instead, relevant responsibilities are distributed across the country's multi-level governance system, with competences divided among the state, entities, Brčko District, cantons in the Federation, and municipalities. The National Adaptation Plan notes that the current legislative framework does not provide a sufficient basis for addressing climate change impacts adequately, and that environmental legislative competences lie primarily with the entities and Brčko District. It also notes that climate change is addressed only broadly in most legislation, which is not sufficient for an integrated adaptation response.

At policy level, however, landslides are already recognised within Bosnia and Herzegovina's broader climate adaptation and disaster risk reduction framework. The National Adaptation Plan identifies increasing heavy precipitation as a driver of both floods and landslides and refers to the Flood and Landslide Risk Assessment Study for the Housing Sector as evidence that climate change is already

linked to urban landslide risk. The Climate Change Adaptation and Low-Emission Development Strategy 2020 to 2030 also positions adaptation as a cross-cutting governance, finance, data, early warning, and implementation challenge. Together, these instruments provide an entry point for a more coherent landslide adaptation agenda, even though a dedicated regulatory framework for landslide management is still lacking.

## 4.2 Institutional arrangements for landslide risk

The institutional framework for landslide risk management reflects the country's complex constitutional structure and remains fragmented across state, entity, cantonal, district, and municipal levels. No single institution holds a comprehensive national mandate for landslide risk assessment, monitoring, and response. The official Landslide Risk Management Study in BiH, prepared with UNDP support, reviewed this system in detail after the 2014 floods and landslides showed that responsibilities were not clearly defined and that regulation and practice required improvement.

The two entity Geological Surveys, namely the **Geological Survey Institute of the Federation of Bosnia and Herzegovina** and the **Geological Survey Institute of Republika Srpska**, are the main technical institutions for landslide cadastres, susceptibility assessment, and supporting geological mapping, but both face major staffing, equipment, and budget constraints. Coordination between them remains limited and largely ad hoc, contributing to uneven coverage and methodological inconsistency. Republika Srpska has a more formalised rulebook for maintaining the landslide cadastre, while equivalent arrangements are weaker in the Federation. Brčko District does not have a geological survey, and related responsibilities fall to the Public Safety Sector.

The entity hydrometeorological institutes, the Federal Hydrometeorological Institute and the Republic Hydrometeorological Institute of Republika Srpska, are responsible for precipitation monitoring and forecasting and maintain the core station networks relevant to landslide-trigger analysis. These capacities have been strengthened through earlier and ongoing flood-risk initiatives, including the completed Vrbas River Basin project, the current GCF-funded CRFM project, which is upgrading the entity hydrometric networks for climate-resilient flood risk management. However, these hydrometeorological and flood early warning capacities are not yet operationally integrated with landslide susceptibility mapping, landslide cadastres or inventories, locally calibrated rainfall-trigger thresholds, or ground-movement monitoring, and Bosnia and Herzegovina still does not have a systematic threshold-based landslide early warning system. This is consistent with the Disaster Response Capacity Assessment and Roadmap for Bosnia and Herzegovina and the World Bank's Ready 2 Respond assessment which identified major weaknesses in information systems and highlighted the absence of a reliable public early warning system. More directly, landslide-related risk management has been supported through projects such as the completed RESPONSa Interreg initiative, which piloted landslide and flash-flood EWS activities in Tuzla and Brčko District, and the ongoing LADY Interreg project, which is supporting LiDAR-based landslide inventory development and improved risk assessment methodologies. Together, these initiatives provide a useful institutional and technical foundation on which a future multi-hazard, climate-informed landslide early warning system can be built.

At municipal level, responsibility is often split or unclear between civil protection, urban planning, and spatial planning functions, and the quality of landslide cadastres varies sharply. Municipalities such as **Banja Luka, Tuzla, and Sarajevo** maintain relatively strong georeferenced inventories, while many others rely on partial or event-driven records only. Overall, the system is characterised by incomplete and inconsistent cadastres, weak inter-entity coordination, limited technical capacity in key institutions, poor operational linkage between geological and hydrometeorological data, and weak integration of landslide information into planning and infrastructure management. These institutional weaknesses directly justify the project's focus on strengthening municipal cadastres, building Geological Survey capacity, establishing cooperation protocols between geological and hydrometeorological institutions, and mainstreaming landslide susceptibility information into planning and infrastructure decisions.

### 4.3 Disaster risk reduction and civil protection arrangements relevant to landslide risk management

Bosnia and Herzegovina has an established disaster risk management and civil protection system, but it remains more response-oriented than prevention-oriented. The country's Sendai reporting indicates that the overall approach is moving gradually from reactive to proactive disaster risk management, but preparedness and response still dominate operational practice. This is highly relevant for landslides, where effective management depends on continuous inventorying, monitoring, slope and drainage management, zoning, and preventive action rather than emergency response alone.

The DRM system is highly decentralised and operates across state, entity, cantonal, district, city, and municipal levels. At state level, the Council of Ministers and the Ministry of Security play the main coordination role, while operational responsibilities lie primarily with the entity civil protection administrations and the Brčko District Department of Public Safety. In practice, the system functions according to subsidiarity, with municipalities and cities acting as the first line of protection and rescue. This gives local authorities a central role, but also means that system performance depends heavily on local capacity, which remains uneven. Assessments cited in the DRR expert note show that, although the legal basis for protection and rescue is broadly adequate, implementation capacity is weaker, especially at municipal level. The Disaster Response Capacity Assessment and Roadmap for BiH and the World Bank-supported emergency preparedness and response diagnostic both identify weaknesses in management and coordination, preparedness planning, financing, training infrastructure, information systems, and institutional capacity. The World Bank diagnostic gave Bosnia and Herzegovina an overall score of **144 out of 360** and found particularly weak performance in information systems, facilities, and legal and institutional responsibilities, together with the absence of a reliable public early warning system.

There are approximately **13,000 recognised landslides** across the country, including around **8,000** in the Federation of BiH, **5,000** in Republika Srpska, and about **100** in Brčko District. An assessment of DRM for landslides management found that preparedness is particularly weak in the pre-event phase, with insufficient plans, preventive measures, monitoring, and digital data systems, and that Bosnia and Herzegovina remains significantly behind European standards in landslide risk management and data digitalisation. Continuous ground-movement monitoring for large or potentially catastrophic landslides is largely absent, GIS-based spatial work in many local communities is minimal, and local and entity-level data systems remain incomplete. These findings reinforce the project's rationale for investing in landslide-specific data systems, municipal and institutional capacity, geo-early warning, and stronger integration of landslide risk into preparedness, prevention, and recovery arrangements.

### 4.4 Financing arrangements and practice

The financing framework for landslide risk management is also fragmented and remains largely reactive. In practice, financing comes from a combination of ordinary municipal, entity, and sector budgets for local roads, drainage, emergency works, geological investigations, and planning functions, together with post-disaster response and recovery allocations and externally financed projects that support studies, systems, and resilience investments. The broader adaptation strategy confirms that climate adaptation in Bosnia and Herzegovina requires stronger attention to finance, including better local and entity-level capacity to attract, manage, and account for adaptation funding.

Current arrangements support parts of landslide management, but not yet a fully institutionalised national system. The Landslide Risk Management Study shows that many local governments affected by the 2014 floods and landslides could not absorb the resulting costs within municipal budgets and required donor, entity, and state support. It also makes clear that even a first phase of more systematic landslide management, including databases, GIS, field survey, staffing, and web services, would require dedicated resources. In practice, this means that Bosnia and Herzegovina still lacks predictable and structured financing for preventive landslide risk reduction, and remains

heavily dependent on emergency allocations and *ad hoc* project support. This creates a strong case for the proposed project's financing component, which aims to establish more sustainable investment frameworks, local financing mechanisms, and pathways to bankable follow-on investment.

## 5. Economic Context

Bosnia and Herzegovina's economy is already affected by climate-related hazards, and landslides contribute to this burden through direct asset loss, infrastructure disruption, repeated emergency spending, and reduced local productivity. The World Bank's 2024 Country Climate and Development Report<sup>10</sup> notes that the country has maintained macroeconomic stability despite repeated shocks, but also highlights persistent structural weaknesses and the growing constraints imposed by climate risks. In this context, repeated landslide losses place pressure on public finance, local investment capacity, and long-term resilience.

At the macro-economic level, the clearest reference point remains the 2014 floods and landslides. World Bank reporting indicates that the event affected more than one million people, triggered over **3,000 landslides**, and caused damages and losses equivalent to around **15% of GDP**. The shock was severe enough to shift projected 2014 GDP growth from **2.0%** to **-1.1%**, showing that hydro-meteorological disasters linked to landslides can materially affect national economic performance rather than merely generate localised repair costs. The event also damaged transport, communications, agriculture, utilities, public buildings, and housing, confirming that landslide-related disaster effects propagate through multiple sectors and create losses far beyond the immediate slope-failure footprint.

At the micro-economic level, landslides impose direct and repeated costs on households, businesses, farmers, and municipalities. They destroy or damage homes, local roads, productive land, drainage systems, and local infrastructure, while also interrupting access to employment, schools, health care, and markets. The official Landslide Risk Management Study found that the 2014 event damaged or destroyed around **2,000 housing units**, disrupted traffic at more than **150 locations** on the main road network, and generated losses beyond the financial capacity of many affected municipalities. In practice, this means that even where landslide impacts are spatially local, the fiscal burden on municipal budgets can be severe.

The economic consequences are especially serious in corridor-dependent and isolated municipalities. The GIS landslide susceptibility screening shows that municipalities such as **Foča, Goražde, Konjic, Kalesija, Sapna, Lopare, and Gacko** face high exposure where landslides can sever road links and interrupt access to services, markets, and emergency support. In such settings, the economic effect of a landslide is not limited to slope repair. It also includes disrupted supply chains, delayed commuting, loss of service access, reduced business activity, and lower territorial connectivity. This is particularly important in Bosnia and Herzegovina because underlying socio-economic vulnerability, including poverty, unemployment, and outward migration, reduces the capacity of households and municipalities to absorb repeated shocks.

The preliminary economic analysis prepared for this Concept Note confirms that landslide risk already has material economic significance. Using three representative hotspot cases, **Banja Luka, Foča, and Tuzla**, the analysis estimates combined direct exposure of about **USD 564.29 million** and indicative avoided direct losses of about **USD 561.64 million** under the proposed intervention logic. It further estimates that the indicative intervention cost for the three representative hotspot packages is only about **USD 6.33 million**, implying a combined simple avoided-loss to cost ratio of about **89:1**, or **5.8:1** under a more conservative reading that excludes the very high-value Banja Luka health infrastructure case. These estimates do not yet include wider indirect benefits such as avoided service disruption, reduced isolation, lower congestion and logistics costs, lower emergency response expenditure, and reduced tourism losses. The analysis therefore supports a strong

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<sup>10</sup> World Bank (2024), Bosnia and Herzegovina – Country Climate and Development Report.  
<https://openknowledge.worldbank.org/server/api/core/bitstreams/adc53ecc-1fb1-4931-94f3-80cf982d1a10/content>

preliminary conclusion that preventive adaptation is economically justified and that climate-informed landslide risk reduction would protect assets and public functions of substantially greater value than the cost of intervention.

Climate change increases this burden further by intensifying the rainfall conditions that trigger landslides. The Fourth National Communication identifies a general increase in heavy precipitation and states that intense heavy precipitation has become more pronounced since the beginning of the 21st century, while the National Adaptation Plan explicitly links increasing heavy precipitation to both floods and landslides. This means Bosnia and Herzegovina is not only facing the persistence of historical losses. It is facing a likely increase in the frequency and intensity of the climatic conditions that generate them. This creates a strong economic case for adaptation investment that reduces repeated losses, protects critical access routes and public infrastructure, and shifts expenditure from reactive reconstruction toward preventive risk reduction.

## **5.1 Socio-economic Vulnerability to landslides**

Socio-economic vulnerability to landslide risk in Bosnia and Herzegovina is high because landslide-prone terrain intersects with concentrated housing, exposed transport corridors, uneven municipal capacity, and socially vulnerable populations. The National Adaptation Plan notes that the urban areas assessed in the flood and landslide housing study cover around **60 to 70%** of the national housing stock. This means landslide risk is directly linked to housing security, municipal services, and local economic continuity in some of the country's most important urban and peri-urban areas.

Vulnerability is also acute in smaller and more mountainous municipalities where road disruption can isolate settlements and interrupt access to health care, education, markets, and emergency services. The GIS landslide susceptibility screening identifies **Foča, Gacko, Goražde, Konjic, Kalesija, Sapna, Srebrenik, Tešanj, and Lopare** as important infrastructure-critical hotspots because exposed roads pass through landslide-prone terrain and alternative access is limited. In these areas, landslide risk is therefore a matter not only of physical slope instability, but also of social isolation, service continuity, and territorial inequality.

Broader socio-economic conditions further heighten vulnerability. Bosnia and Herzegovina continues to face poverty, unemployment, outward migration, and uneven local development, all of which reduce household and municipal capacity to absorb repeated losses and recover quickly. In practical terms, this means that landslides can have disproportionately severe impacts on low-income households, dispersed rural populations, older persons, and communities dependent on a single exposed road connection or limited local service base. Where municipal budgets are weak and technical capacity limited, repeated landslide losses can also undermine routine service provision and delay other development priorities.

Recent disasters demonstrate how these structural vulnerabilities translate into human and economic impacts. The 2014 floods and landslides and the 2024 flood, mudflow, and landslide event show that landslide risk in Bosnia and Herzegovina is closely linked to housing exposure, displacement, service disruption, damage to public facilities, and local economic loss. Municipal capacity is itself a key dimension of vulnerability. The Landslide Risk Management Study found that many local governments lacked the staff, data systems, equipment, and financial resources needed to manage landslide risk effectively, and that in many cases damage exceeded local budget capacity. Socio-economic vulnerability to landslides in BiH therefore reflects a combination of physical exposure, fragile access, social disadvantage, and uneven local institutional capacity.

The lack of coordination across jurisdictions can further intensify risk. In some locations, landslide impacts and management needs cut across entity boundaries or administrative responsibilities, but institutional arrangements remain fragmented. This increases the likelihood that natural hazards escalate into larger social and economic crises because monitoring, planning, risk reduction, and response are not sufficiently integrated. The resulting vulnerability is therefore both local and systemic. It arises from the interaction of exposed people and assets, climate-amplified hazard

conditions, and an incomplete national framework for inventory, monitoring, prioritisation, and preventive management.

## **5.2 Preliminary Socio-economic analysis of landslide risk in BiH**

The preliminary socio-economic and economic analysis undertaken for this Concept Note provides a strong early indication of the scale of landslide-related vulnerability and the potential value of intervention. Using three representative hotspot cases, **Banja Luka, Foča, and Tuzla**, the analysis identifies quantified direct exposure of approximately **USD 539.13 million** in Banja Luka, **USD 13.24 million** in Foča, and **USD 11.92 million** in Tuzla, giving a combined direct exposure of about **USD 564.29 million**. Based on the proposed project intervention logic, the corresponding indicative avoided direct losses are estimated at **USD 539.13 million**, **USD 10.59 million**, and **USD 11.92 million** respectively, for a combined avoided direct loss of about **USD 561.64 million**. The indicative cost of the three representative hotspot packages is about **USD 6.33 million**, implying a combined simple avoided-loss to cost ratio of about **89:1**, or **5.8:1** under a more conservative reading that excludes the very high-value Banja Luka health infrastructure case. These estimates do not yet include wider indirect and non-monetized benefits such as avoided disruption of hospital access, tourism flows, commuting, freight movement, school access, emergency response, and repeated public repair expenditure.

Taken together, the evidence shows that Bosnia and Herzegovina is experiencing a strengthening climate signal in rainfall extremes that interacts with steep terrain, environmental degradation, institutional fragmentation, and socio-economic vulnerability to produce increasingly severe landslide impacts. Recent disasters demonstrate that the consequences are already nationally significant, while the current institutional and analytical framework remains insufficiently integrated to manage these risks systematically. This creates a clear justification for an adaptation intervention focused on integrated landslide risk reduction, climate-resilient land management, improved risk identification and early warning, and scalable investment planning.

## Project/Programme Objectives:

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

The project **objective** is to **enhance the resilience of communities**, ecosystems, and infrastructure in Bosnia and Herzegovina to **climate-induced landslides** through integrated forest, water, and land management, improved early warning systems, risk-informed spatial planning and financing.

## Project/Programme Components and Financing:

| Project/Programme Components                                                                                        | Expected Outcomes                                                                                                                                                                             | Expected Concrete Outputs                                                                              | Amount (US\$) |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------|
| 1. Component 1: Landslides governance and data management                                                           | Outcome 1.1: Enhanced landslides governance, data management and institutional capacities enable risk-informed landslide management                                                           | Output 1.1.1: Improved regulatory and policy framework                                                 | \$360,000     |
|                                                                                                                     |                                                                                                                                                                                               | Output 1.1.2: Improved data management                                                                 | \$720,000     |
|                                                                                                                     |                                                                                                                                                                                               | Output 1.1.3: Strengthened local and institutional capacities                                          | \$460,000     |
| 2. Component 2: Non-structural and Nature-Based Approaches in Landslides Management                                 | Outcome 2.1: Priority Non-structural and nature-based landslide management approaches result in increased resilience of communities, their assets and livelihoods in high risk municipalities | Output 2.1.1: Established geo-Early Warning System                                                     | \$1,200,000   |
|                                                                                                                     |                                                                                                                                                                                               | Output 2.1.2: Nature-based and combined Solutions implemented as prioritized in Landslides Action Plan | \$6,140,000   |
| 3. Component 3: Sustainable Financing and Incentives for long-term climate-informed landslide risk reduction in BiH | Outcome 3.1: Sustainable financing, incentive schemes and adaptation investment pipelines secure long-term climate-informed landslide risk reduction                                          | Output 3.1.1: Sustainable financing schemes established                                                | \$460,000     |
|                                                                                                                     |                                                                                                                                                                                               | Output 3.1.2: Bankable projects developed                                                              | \$1,556,461   |
| 5. Total Activities cost                                                                                            |                                                                                                                                                                                               |                                                                                                        | \$10,896,461  |
| 6. Project/Programme Execution cost (1.5%)                                                                          |                                                                                                                                                                                               |                                                                                                        | \$163,447     |
| 7. Total Project/Programme Cost                                                                                     |                                                                                                                                                                                               |                                                                                                        | \$11,059,908  |
| 8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) at 8.5%                |                                                                                                                                                                                               |                                                                                                        | \$940,092     |
| Amount of Financing Requested                                                                                       |                                                                                                                                                                                               |                                                                                                        | \$12,000,000  |

## Projected Calendar:

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

| Milestones                                | Expected Dates |
|-------------------------------------------|----------------|
| Start of Project/Programme Implementation | October 2027   |
| Mid-term Review (if planned)              | January 2030   |
| Project/Programme Closing                 | October 2032   |
| Terminal Evaluation                       | April 2032     |

## PART II: PROJECT / PROGRAMME JUSTIFICATION

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

The proposed project addresses the interrelated institutional, regulatory, technical, environmental, financial, and social barriers that currently prevent Bosnia and Herzegovina from managing climate-amplified landslide risk in a systematic, preventive, and inclusive manner. The climate evidence assembled for this Concept Note shows that landslide-triggering rainfall conditions are intensifying, while the geophysical and socio-economic analysis confirms that large parts of the country remain highly susceptible and exposed. At the same time, landslide management remains constrained by fragmented institutional responsibilities, incomplete data and monitoring systems, weak integration of susceptibility information into planning and infrastructure management, degraded slopes and drainage systems, and limited financing for prevention. The project therefore combines governance reform, improved data systems, geo-early warning, nature-based and hybrid risk-reduction measures, and sustainable financing pathways in order to reduce direct losses, avoid disruption to essential services and connectivity, and build the basis for longer-term climate-resilient landslide management in Bosnia and Herzegovina.

### Theory of Change

The theory of change underpinning the project is that if Bosnia and Herzegovina strengthens the governance, regulatory, data, and institutional foundations for landslide risk management; integrates climate adaptation, forest and water management, and spatial planning into a more coordinated system; establishes climate-informed monitoring and geo-early warning in priority areas; implements targeted non-structural, nature-based, and hybrid slope and catchment measures; and creates sustainable financing mechanisms and a pipeline of bankable follow-on investments, then the country will be able to shift from a predominantly reactive, post-disaster approach to a more preventive, climate-informed, and resilient model of landslide risk management.

This change is expected because current losses and disruption are driven not only by hazardous terrain and intensifying rainfall, but also by fragmented institutional arrangements, weak data systems, limited local capacity, degraded slopes and drainage, insufficient warning capacity, and

lack of sustained financing for prevention. In addition, landslide risk reduction depends not only on engineering, warning, and planning measures, but also on the condition of forests, upper catchments, and green infrastructure. By addressing these barriers together, the project will reduce direct physical damage, avoid disruption to roads and essential services, improve preparedness and planning, restore protective ecosystem functions, and create the institutional and financial conditions for longer-term scaling of landslide risk reduction in high-risk municipalities and corridors.

**GOAL STATEMENT:** **IF** Bosnia and Herzegovina strengthens internal coordination and integrates climate adaptation, forest and water management, and spatial planning into a systemic approach to landslide risk management; and **IF** nature-based solutions, early warning systems, and targeted investments are implemented in inclusive, gender responsive way, with strong institutional commitment; **THEN** landslide risks will be significantly reduced, vulnerable groups and communities, human lives and infrastructure better protected, and sustainable land use and rural resilience strengthened, enabling Bosnia and Herzegovina to align its practices with European and global DRR frameworks.

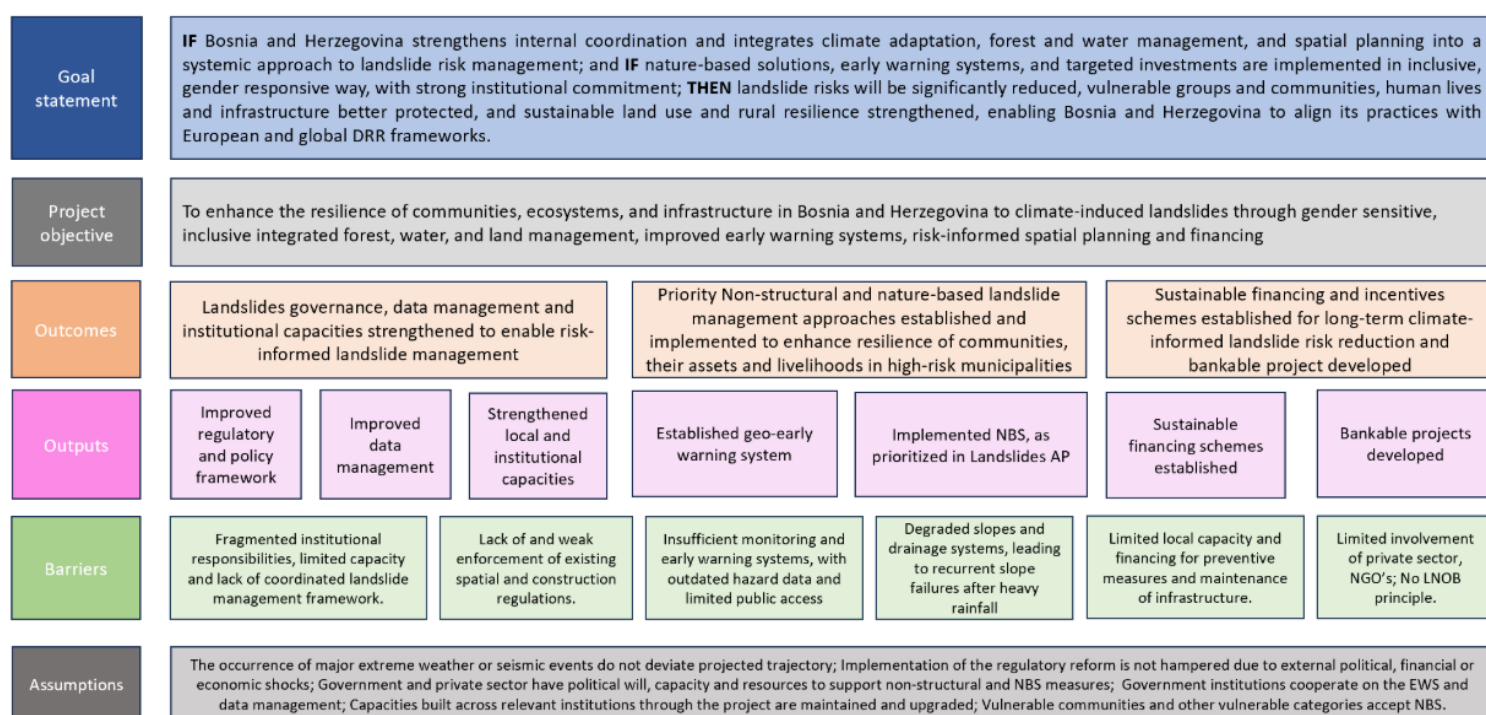


Figure 8: Theory of Change

## Barriers to be addressed by the project

### 1. Fragmented institutional responsibilities, limited capacity, and absence of a coordinated landslide management framework

Landslide risk management in Bosnia and Herzegovina is dispersed across multiple institutions and levels of government, including geological, planning, infrastructure, water, forestry, and civil protection bodies. There is currently no fully coordinated framework linking susceptibility assessment, monitoring, warning, land-use control, infrastructure protection, and post-event learning. Capacity and practice vary significantly across institutions and municipalities, which limits consistent preventive action, reduces the operational use of landslide information, and weakens climate-informed landslide management.

## **2. Weak integration and enforcement of spatial planning and construction controls in landslide-prone areas**

Existing planning and construction controls are not being applied consistently enough to prevent continued exposure in unstable terrain. The current screening shows that several of the most exposed municipalities are densely settled urban and peri-urban areas where landslide susceptibility overlaps with population, housing, and infrastructure. This indicates that susceptibility information is not yet being translated systematically into effective land-use zoning, hillside development control, geotechnical review, and construction practice, allowing risk to continue accumulating in exposed locations.

## **3. Insufficient monitoring and early warning systems, with outdated hazard information and limited data accessibility**

Current landslide information and warning arrangements remain partial, static, and uneven across the country. While hydrometeorological monitoring and flood early warning capacities exist and are being strengthened, the national landslide susceptibility base remains primarily a static screening tool and is not yet systematically integrated with dynamic weather forecasts, climate projections, locally calibrated rainfall-trigger thresholds, ground-movement monitoring, or a harmonised national landslide event database.

## **4. Degraded slopes and inadequate drainage systems that increase the likelihood of recurrent failures after heavy rainfall**

Landslide risk is being amplified by degraded slope conditions, poor runoff control, and inadequate drainage performance. The climate analysis shows that intense rainfall, multi-day accumulation, and prolonged wet periods are becoming more important in several high-exposure municipalities. Under these conditions, poorly managed slopes, degraded catchments, blocked drains, and undersized drainage systems are more likely to fail repeatedly, causing avoidable damage, service interruption, and recurrent pressure on public budgets. The forestry analysis shows that in both protected and production landscapes, canopy interruption, weakened understory, poor forest-road density and maintenance, and inappropriate management on steep and sensitive substrates can all intensify runoff concentration and slope instability. The analysis also confirmed that degraded slopes in the project context are not limited to visibly bare terrain; they also include forested and partially forested slopes whose protective ecological function has been weakened.

## **5. Limited local capacity and financing for preventive works, maintenance, and resilience investment**

Municipalities facing the highest landslide exposure often also face limited technical and financial capacity for preventive action. The GIS susceptibility screening shows that landslide exposure affects both major urban municipalities and corridor-dependent municipalities where road disruption can isolate settlements and interrupt access to services. Around **925 km** of classified roads, or about **10%** of the total, passes through high to critical susceptibility terrain, including **123 km** in very high or critical zones. This indicates a substantial preventive maintenance and protection challenge that many local authorities cannot address adequately through current resources alone, especially where landslide losses compete with other urgent infrastructure and service demands.

## **6. Limited engagement of private sector and civil society actors, and insufficient application of the Leave No One Behind principle**

Current landslide management arrangements rely mainly on public institutions, with limited structured involvement of private sector actors, NGOs, and community-based organisations in prevention, awareness, local monitoring, and resilience-building. In addition, current national-scale data constraints limit the visibility of critical facilities, community assets, and socially differentiated impacts, which can weaken targeting and inclusion. This creates a risk that vulnerable and isolated groups are not adequately reflected in current landslide risk management systems, warning arrangements,

or investment priorities. A stronger Leave No One Behind approach is therefore required to ensure that landslide risk reduction measures respond to differential exposure, access constraints, and social vulnerability.

In response to these barriers, the project combines institutional strengthening, improved landslide data and warning systems, practical slope and catchment risk-reduction measures, and sustainable financing and investment preparation in order to deliver both immediate adaptation benefits in high-risk areas and stronger long-term national capacity for climate-resilient landslide management.

## **Component 1 - Landslides governance and data management**

This component addresses the upstream institutional and information deficits that currently prevent Bosnia and Herzegovina from managing landslide risk in a systematic, climate-informed, and preventive manner. The baseline analysis shows that landslide governance remains fragmented, susceptibility and inventory data are incomplete and unevenly accessible, and local and institutional capacities are too variable to support consistent planning, monitoring, and risk reduction. Component 1 therefore focuses on building the enabling foundations for effective landslide management through stronger policy and regulatory frameworks, improved data architecture, and enhanced local and institutional capacity. These measures are essential to ensure that landslide risk information is not only generated, but also used in planning, preparedness, and investment decisions.

### **Outcome 1.1 – Enhanced landslides governance, data management and institutional capacities enable risk-informed landslide management**

#### **Output 1.1.1. Improved regulatory and policy framework**

This output will address the current weakness of the regulatory and policy framework for landslide risk management in Bosnia and Herzegovina by supporting the development of a more coherent, climate-informed, and cross-sectoral framework for prevention, preparedness, risk reduction, and resilient reconstruction. The baseline evidence indicates that landslide management responsibilities are fragmented across multiple institutions and sectors, while susceptibility information, climate-trigger evidence, infrastructure exposure, and planning controls are not yet systematically integrated into a single operational framework. This output will therefore focus on establishing the strategic, legal, and procedural basis for coordinated landslide risk reduction across geology, spatial planning, construction control, water management, forestry, and disaster risk management.

The following activities will be supported:

The output will support preparation and adoption of a **Strategy for Sustainable Landslide Management**, which will provide the overall policy framework for climate-informed landslide risk reduction and define roles, responsibilities, coordination arrangements, and priority intervention pathways across the relevant sectors. The strategy will be designed to link slope management with forest and water management, land-use planning, infrastructure protection, and municipal risk management, so that landslides are addressed as a cross-sectoral climate resilience issue rather than as a narrow geotechnical problem alone.

Building on the Strategy, the project will support preparation and adoption of a **Landslide Risk Reduction Action Plan**, aligned with the **Sendai Framework for Disaster Risk Reduction 2015 to 2030**, to translate the strategic framework into an implementable programme of measures. The Action Plan will define priority actions, sequencing, institutional responsibilities, indicative financing needs, and implementation arrangements for prevention, monitoring, warning, capacity-building, maintenance, and local interventions in high-risk municipalities. In this way, the Action Plan will serve as the operational bridge between policy commitment and practical implementation.

The output will also support review and improvement of the legal and regulatory basis for **integrating**

**landslide prevention into forest management and water laws**, so that upstream catchment degradation, runoff concentration, erosion, and slope instability are addressed more coherently across sectors. This is important because the baseline evidence indicates that landslide risk is strongly influenced by degraded slopes, forest and catchment condition, and drainage performance, but these factors are not yet consistently handled through integrated regulatory provisions and enforcement practice. The project will therefore support legal and procedural provisions that improve cross-sectoral consistency and clarify how forest, water, and slope management responsibilities contribute to landslide prevention. The project will therefore support designation or recognition of protective forest functions in high-risk landslide areas, supported by provisions on adequate financial mechanisms (payment for ecosystem services schemes); guidance on avoiding canopy-disrupting logging in high-risk slopes; integration of slope stability considerations into forest road planning, maintenance, and rehabilitation; and cross-sector protocols linking forestry, water, spatial planning, and landslide risk management.

A further activity under this output will support the **introduction or strengthening of requirements for geotechnical surveys, slope stabilisation standards, and safe construction practices** for hillside development. This will help address the continued expansion of settlements, infrastructure, and construction in susceptible terrain without sufficiently consistent use of slope stability criteria. The project will support development of technical requirements and guidance so that geotechnical investigation, slope-water management, and stabilisation design become more routine parts of hillside construction and infrastructure development.

Finally, the output will support **integration of slope-stability criteria into construction permits and spatial plans**, so that landslide susceptibility and related development controls are considered systematically in future planning and permitting decisions. This will help ensure that susceptibility and hotspot information generated or refined under the project is translated into planning practice and used to reduce future exposure accumulation in unstable terrain. The activity will help move landslide management from a predominantly reactive mode toward a more preventive and risk-informed planning model at entity, cantonal, and municipal levels.

### **Output 1.1.2. Improved data management**

This output will strengthen the data foundation required for climate-informed landslide risk management in Bosnia and Herzegovina. The current landslide-related data are fragmented, uneven in quality, and often inaccessible across institutions and administrative levels. Susceptibility information, landslide inventories, hydrological and geological datasets, and infrastructure exposure data are not yet organised within a single interoperable system that can support planning, monitoring, early warning, prioritisation, and investment decisions. This output will therefore focus on establishing a more coherent, standardised, and operational data architecture for landslide management, which will form the basis for early warning systems developed through other activities. The following activities will be supported:

The first activity under this output will support the **digitisation and harmonisation of geological and hydrological data through a unified GIS-based platform** that is accessible to municipalities and, where appropriate, the public. This will include consolidation of relevant spatial datasets held by geological, hydrometeorological, water, planning, and municipal institutions into a common structure with agreed metadata, formats, and protocols for updating and use. The intention is to move from isolated datasets and institution-specific records toward a shared geospatial evidence base that can support risk-informed landslide management across sectors. The platform will provide the basis for integrating susceptibility mapping, rainfall-trigger information, exposure layers, and local landslide records into a common analytical environment.

A second activity will support the **development and updating of landslide inventory and susceptibility mapping**, with priority given to high-risk and high-exposure areas such as **Banja Luka, Sarajevo (Novi Grad), Zenica, Tuzla, and Mostar** municipalities, where high susceptibility coincides with concentrated urban exposure; and infrastructure-critical municipalities such as **Foča**,

**Gacko, Goražde, Konjic, Kalesija, Sapna, Lopare, Tešanj, Srebrenik, and Kakanj**, where landslides potentially isolate communities and disrupt lives and livelihoods along transportation corridors. This activity will build on the current national susceptibility screening and available local cadastres, while progressively improving the spatial and analytical quality of landslide information in priority municipalities and corridors. The work will help distinguish between broad national-scale susceptibility screening and more operational local products needed for planning, monitoring, and intervention design. By focusing first on the most exposed areas, the project will generate usable evidence where the need for improved management is greatest and where subsequent project investments are most likely to be targeted. Improved data management will include georeferenced information on protective forests, burned areas, forest-road networks, and upper-catchment condition in priority hotspots, and, where feasible, integration of forestry and geomorphological data to support early identification of hidden instabilities.

The output will also support the creation of a **landslide loss and damage database**. This is important because current evidence on landslide impacts is incomplete and inconsistently recorded, which limits economic analysis, prioritisation, and the design of financing mechanisms. The database will support systematic recording of damage to housing, roads, public infrastructure, utilities, productive assets, and community facilities, as well as service disruption and, where feasible, impacts on livelihoods and local access. Over time, this will improve the evidence base for assessing recurrent losses, identifying high-consequence hotspots, and demonstrating the economic case for preventive investment and climate adaptation measures.

Taken together, these activities will create the core data systems needed to shift landslide management from a fragmented and reactive practice toward a more anticipatory, evidence-based, and climate-informed system. The output will improve the availability, consistency, and usability of landslide-related data for technical institutions, municipalities, and entity and cantonal authorities, and will provide an essential foundation for later activities on monitoring, early warning, prioritisation of interventions, and development of bankable investments.

### **Output 1.1.3. Strengthened local and institutional capacities**

This output will strengthen the technical, operational, and institutional capacities required to implement climate-informed landslide risk management at municipal and inter-institutional levels. The baseline evidence indicates that landslide management capacity is uneven across Bosnia and Herzegovina, with significant variation in technical staffing, data use, planning practice, emergency preparedness, and ability to maintain preventive systems. Even where susceptibility and hotspot information exists, many institutions lack the practical capacity, procedures, and coordination arrangements needed to translate that information into routine prevention, preparedness, and response. This output will therefore focus on building the human, organisational, and cooperative capacities necessary to operationalise the regulatory, policy, and data-management improvements supported under Outputs 1.1.1 and 1.1.2. The following activities are proposed:

The first activity under this output will support the **training of municipal engineers, planners, and civil protection officers in landslide risk assessment, prevention, and response**. This will include practical training on the interpretation and use of susceptibility and hotspot information, slope and drainage risk factors, local exposure analysis, preventive maintenance needs, and the role of landslide information in planning, permitting, preparedness, and emergency management. The intention is to strengthen the ability of local actors to identify and manage landslide-prone areas before failures occur, rather than relying primarily on post-event response. Training will also help bridge the current divide between technical assessments and their operational use in municipal decision-making.

A second activity will support the development of **community awareness and preparedness programmes**, with emphasis on safe construction practices, vegetation protection, drainage maintenance, and local understanding of landslide warning signs and risk-reducing behaviour. This is important because landslide risk in Bosnia and Herzegovina is shaped not only by institutional and

engineering factors but also by household and community practices related to slope modification, drainage blockage, vegetation removal, and development in unstable terrain. Awareness and preparedness programmes will help reduce local drivers of slope degradation, strengthen public understanding of risk, and support more inclusive and community-based resilience building in exposed municipalities.

The output will also promote **inter-municipal cooperation through shared technical services, data exchange, and joint emergency response exercises**. This activity is important because many municipalities, especially smaller or more exposed ones, are unlikely to have sufficient technical depth or financial capacity to manage landslide risk independently. Shared arrangements can help pool expertise, improve consistency in the use of geospatial and monitoring information, and support more coordinated preparedness and response in areas where road exposure, corridor disruption, and cross-boundary hazard processes create common risks. Joint exercises and shared technical support will also help clarify roles and improve operational coordination between municipalities, civil protection structures, and relevant technical agencies.

Together, these activities will strengthen the institutional readiness required to make landslide management more preventive, coordinated, and climate-informed. By improving technical skills, public awareness, and inter-municipal cooperation, the output will help ensure that the policy and data-management improvements supported under the project are translated into practical local action, including better planning, slope management, maintenance, preparedness, and response in high-risk municipalities.

## **Component 2 – Non-structural and Nature-Based Approaches in Landslides Management**

This component translates the improved governance and evidence base into practical climate adaptation action in priority municipalities and catchments. It responds directly to the project's core adaptation rationale, namely that landslide risk in Bosnia and Herzegovina is being intensified by increasingly severe rainfall triggers interacting with degraded slopes, poor drainage, and exposed settlements and transport corridors. Component 2 therefore focuses on establishing climate-informed geo-early warning and implementing priority non-structural, nature-based, and hybrid slope and catchment measures that can reduce direct damage, avoid disruption to roads and essential services, and demonstrate practical risk-reduction models for replication and scale-up.

The biodiversity and forestry evidence shows that structurally complex, mixed, and uneven-aged forests represent the most effective and environmentally sound long-term bioengineering measure for reducing landslide risk, particularly on steep and sensitive terrain. It further identifies practical adaptation measures such as designation of permanent protective forests in high-risk zones, avoidance of canopy-disrupting logging, retention of deadwood and understory to reduce surface runoff, vegetative barriers and live fascines on steep slopes, protection of black pine and mountain pine stands on carbonate and scree areas, and integrated monitoring of rainfall, soil moisture, vegetation condition, and silent slope movements. These measures fit well within the existing project logic and provide stronger ecological specificity for the nature-based and hybrid intervention package.

### **Outcome 2.1: Priority non-structural and nature-based landslide management approaches result in increased resilience of communities, their assets and livelihoods in high risk municipalities**

#### **Output 2.1.1. Established geo-early warning system**

This output will establish the foundations of a climate-informed geo-early warning system for landslides in selected high-risk areas of Bosnia and Herzegovina. The baseline evidence assembled to date shows that landslide monitoring and warning capacity is currently limited, while rainfall-trigger conditions relevant to landslides are intensifying in several hotspot municipalities through stronger daily and multi-day rainfall, longer wet spells, and more frequent exceedance of landslide-relevant

threshold conditions. At the same time, the current susceptibility and exposure screening identifies municipalities and corridors where landslides threaten dense populations, critical roads, and access to services. This creates a strong case for moving beyond static susceptibility mapping toward an operational system that links terrain susceptibility, rainfall triggers, monitoring data, and local alerting arrangements. The following activities will be implemented:

The first activity under this output will support the **installation of automated rainfall gauges and slope stability sensors in priority basins**, linked to real-time alerting for municipal authorities and emergency services. The purpose is to generate near-real-time information on rainfall intensity, accumulation, and local slope response in selected hotspots where landslide consequences are expected to be highest. This will allow more timely identification of critical trigger conditions, especially in municipalities where prolonged wet periods and short intense rainfall events are increasingly associated with slope instability. Sensor placement will be guided by the hotspot and prioritisation work undertaken under Component 1, with attention to both densely populated municipalities and infrastructure-critical locations where road disruption could isolate communities.

A second activity will support the **integration of geotechnical monitoring into the broader Early Warning System** chain involving the water agencies and the entity hydrometeorological institutes. This is important because landslide risk in Bosnia and Herzegovina is closely linked to the same hydro-meteorological conditions that drive flash/torrential flooding, high runoff, and catchment instability. By linking geotechnical observations and slope-trigger information with hydrometeorological station data, rainfall forecasts, and the observation and forecasting systems used by water agencies, the project will support a more integrated multi-hazard warning approach. This will help move landslide monitoring from isolated local observations toward an institutionalised warning chain in which rainfall observations and forecasts, slope response indicators, and local thresholds can inform alerts, preparedness, and operational decision-making.

This output will be designed in close complementarity with the **Climate Resilient Flood Risk Management (CRFM) project**, which is establishing and enhancing flood early warning systems in Bosnia and Herzegovina. This linkage is important because the same observation networks, hydrometeorological services, data transmission arrangements, alert dissemination channels, and institutional coordination mechanisms that support flood early warning are also potentially usable for landslide warning. The proposed geo-early warning system will therefore build, where feasible, on the monitoring, data management, forecasting, and warning architecture being strengthened under the CRFM project, while adding the specific geotechnical, slope-stability, and landslide-trigger elements needed for landslide risk management. This will improve cost-effectiveness, avoid duplication, strengthen interoperability between flood and landslide warning functions, and support a more coherent multi-hazard early warning approach in high-risk municipalities and basins.

The output will also support establishment of **geo-early warning systems in three priority areas**, including **one in the Federation of Bosnia and Herzegovina, one in Republika Srpska, and one covering the Sarajevo and East Sarajevo urban area**. These pilot areas will be selected based on the hotspot screening and prioritisation analysis described earlier, while also taking account of institutional and operational feasibility. This three-area approach will allow the project to demonstrate warning models in different institutional and geomorphological contexts while also supporting cross-entity learning and operational coordination. The selected pilot areas are expected to reflect different landslide risk settings, including urban exposure hotspots and corridor-dependent municipalities, and will provide practical lessons for scaling up climate-informed landslide monitoring and warning in later phases. Where possible, pilot design and implementation will be aligned with CRFM-supported flood early warning investments and institutional arrangements so that landslide and flood warning capacities reinforce one another rather than develop in parallel.

Together, these activities will establish a first operational basis for landslide early warning in Bosnia and Herzegovina by linking rainfall monitoring and forecasting, slope monitoring, hotspot prioritisation, and institutional alerting arrangements. The output will strengthen preparedness and

anticipatory action in the most exposed municipalities, reduce the time lag between hazardous conditions and response, and provide a practical model for integrating landslide warning into broader climate-resilient and multi-hazard disaster risk management systems.

### **Output 2.1.2. Nature-based and combined solutions implemented as prioritised in the Landslides Action Plan**

This output will support the implementation of priority non-structural and nature-based solutions to reduce climate-amplified landslide risk in selected hotspot municipalities and catchments. The baseline evidence shows that landslide risk in Bosnia and Herzegovina is being intensified not only by changes in rainfall extremes and wet-spell persistence, but also by degraded slopes, poor catchment condition, concentrated runoff, inadequate drainage, and unsustainable land-use practices. The project will therefore support practical measures that stabilise slopes, regulate runoff and infiltration, reduce erosion, and improve catchment resilience, while complementing the governance, data, and early warning investments under Components 1 and 2. The project will prioritize nature-based solutions and/or combined nature-based and structural measures to maximize risk reduction/adaptation impact. The following activities are planned:

The first activity will support the **integration of forest and water management in upper catchments to regulate runoff and infiltration**. This is important because landslide processes are often conditioned by upstream land degradation, altered flow pathways, loss of vegetative cover, and poor control of slope-water interactions. The project will support coordinated catchment management measures that reduce rapid runoff concentration, improve infiltration regulation, and help restore hydrological functions that reduce pressure on unstable slopes downstream. This will also strengthen the linkage between landslide risk reduction, forest condition, and broader watershed resilience. Types of measures will include conservation and restoration of structurally complex protective forests in high-risk slopes; support to mixed species stands and site-adapted native species with deep and diverse root systems; vegetative reinforcement, live fascines, wattling, and vegetative barriers on steep unstable slopes; rehabilitation of terrace agriculture and grasslands where these contribute to slope stability; improved design, maintenance, and hydrologically informed rehabilitation of forest roads and hillside access roads; and integration of forest, water, and slope measures in upper catchments, especially in the Foča-Sutjeska and Tuzla landscapes.

A second activity will support the **rehabilitation of traditional terrace agriculture and grasslands as natural slope stabilisers**. In many hilly and mountainous areas, abandonment or degradation of traditional land management systems has contributed to worsening runoff behaviour, soil instability, and slope erosion. The project will support restoration or rehabilitation of such systems in selected locations where they can contribute to slope stability, reduce shallow failure risk, and provide local co-benefits for land productivity and landscape management. These measures are intended as targeted, site-specific demonstrations rather than large-scale labour-intensive restoration works, and would, wherever possible, focus on public land, communal land, rights-of-way, or other locations where implementation does not create land-tenure or safeguards complications. This will help demonstrate that slope resilience can be improved not only through engineering measures, but also through better land stewardship and restoration of historically stabilising land-use practices.

A third activity will support the **upgrading and maintenance of drainage infrastructure, torrents, and hillside canals**. Although this output is framed around nature-based approaches, the baseline evidence indicates clearly that landslide risk is frequently amplified by blocked, undersized, or poorly maintained drainage systems. The project will therefore support priority drainage improvements in selected hotspot areas, especially where concentrated runoff, hillside drainage failure, or torrent erosion repeatedly contributes to slope instability. These measures will be designed to complement vegetative and catchment-based approaches and to reduce recurrent failure caused by unmanaged slope water. Their design and implementation would be based on site-specific hydrological and geotechnical assessment, use climate-resilient design criteria where relevant, and be subject to environmental and social screening and management measures in line with the scale and risk profile

of each intervention.

The output will also support the use of **ecosystem-based adaptation measures that combine vegetative reinforcement with controlled drainage and small-scale engineering works**. This integrated approach is particularly important in Bosnia and Herzegovina, where slope failures often result from the combined effects of vegetation loss, poor drainage, concentrated runoff, and unstable materials. The project will therefore promote practical packages of measures such as re-vegetation, bioengineering, small retaining features, controlled runoff diversion, and slope-surface stabilisation in selected pilot areas. This will help ensure that nature-based measures are applied realistically, in ways that respond to the physical drivers of instability rather than being treated as stand-alone landscape improvements.

A further activity will support the **restoration of wetlands and riparian buffers to reduce surface runoff and sediment load during heavy rains**. In suitable locations, these measures can help moderate runoff peaks, trap sediment, reduce erosive energy, and improve catchment buffering under increasingly intense rainfall. Their role in the project will be to support broader slope and catchment stability by improving upstream and valley-bottom hydrological function, especially in areas where degraded riparian systems and poorly managed runoff contribute to downstream instability.

Implementation under this output will be guided by the **Landslide Risk Reduction Action Plan** developed under Output 1.1.1 and by the hotspot and prioritisation analysis developed under Component 1. This means that nature-based and related slope-management measures will not be applied generically, but will be selected according to the specific geomorphological, hydrological, land-use, and exposure conditions of priority municipalities and catchments. In practice, this may include urban and peri-urban hotspots where slope drainage and vegetative reinforcement are needed, as well as corridor-dependent or upper-catchment areas where runoff control, erosion reduction, and slope restoration can reduce downstream consequences.

Together, these activities will demonstrate how nature-based and ecosystem-based approaches can reduce landslide risk while also improving catchment condition, water regulation, and local environmental resilience. By combining slope restoration, runoff regulation, drainage improvement, and ecosystem rehabilitation, the output will help shift landslide management toward more preventive and climate-resilient approaches that can complement structural measures and reduce recurrent losses in high-risk municipalities.

### **Component 3 –Sustainable Financing and Incentives for long-term climate-informed landslide risk reduction in BiH**

This component addresses one of the main structural constraints to sustained landslide risk reduction in Bosnia and Herzegovina, namely the absence of predictable and climate-informed financing for prevention, maintenance, and follow-on investment. Current practice remains heavily dependent on fragmented public budgets, post-disaster response expenditure, and ad hoc corrective works, which is not sufficient to address the scale of current and future climate-amplified landslide risk. Component 3 therefore focuses on establishing sustainable financing arrangements and developing a pipeline of bankable projects so that the institutional, technical, and pilot gains delivered under the project can be maintained, replicated, and expanded beyond the project period.

#### **Outcome 3.1: Sustainable financing, incentive schemes and adaptation investment pipelines secure long-term climate-informed landslide risk reduction**

##### **Output 3.1.1. Sustainable financing schemes established**

This output will address one of the central constraints to effective landslide risk management in Bosnia and Herzegovina – the lack of predictable, structured, and climate-informed financing for

preventive action, maintenance, and long-term resilience investment. Effective landslide management is currently constrained by fragmented public budgets, post-disaster response (reactive) spending, and *ad hoc* corrective works, while many municipalities with high susceptibility and exposure lack the fiscal space and technical capacity to invest in prevention. At the same time, the national hotspot analysis shows that landslide exposure affects both major urban municipalities and corridor-dependent municipalities where road disruption can isolate settlements and interrupt access to services. This creates a strong need for financing arrangements that move the system away from reactive recovery and toward sustained preventive risk reduction. The following activities will be supported:

The first activity under this output will support the development of a **national investment framework for climate-induced landslides**. This framework will identify priority investment categories, indicative financing needs, institutional roles, and potential financing sources for landslide risk reduction across the short, medium, and longer term. It will be designed to align with the Strategy for Sustainable Landslide Management and the Landslide Risk Reduction Action Plan developed under Component 1, so that policy priorities, hotspot evidence, and investment planning are linked. The framework will help structure future financing around clearly defined categories such as monitoring and early warning, data systems, drainage rehabilitation, slope stabilisation, catchment restoration, and local preventive maintenance, rather than leaving investment decisions to post-event emergency pressures alone.

A second activity will support the establishment of a **dedicated financing line within entity environmental funds** to finance small-scale local interventions, with priority given to high-risk communities. This is intended to create a more accessible and practical mechanism for municipalities to implement preventive measures that are often too small to attract large-scale external financing but are critical for reducing recurrent losses. Eligible measures could include local drainage rehabilitation, small slope-stabilisation works, runoff control, vegetative reinforcement, minor protective structures, and monitoring-related improvements in exposed municipalities. By creating a targeted financing window, the project will help demonstrate how climate adaptation funding can be channelled toward practical landslide risk reduction at local level.

The output will also support the development of **public-private partnership schemes for sustainable hillside management and insurance-related approaches for vulnerable households**. This activity recognises that public financing alone is unlikely to be sufficient to address the scale of preventive and resilience needs associated with landslide risk. The project will therefore explore structured partnerships that can mobilise private investment or service provision for slope management, maintenance, catchment rehabilitation, monitoring, or related resilience functions in areas where public and private interests overlap. In this regard, during full project development, the project would assess feasible financing and incentive mechanisms to support protective forest and catchment functions in landslide-prone areas. Potential options to be evaluated could include use of public financing windows to support permanent protective forest management in high-risk zones, incentive mechanisms to reduce pressure for forest exploitation where canopy continuity and uneven forest structure provide critical slope-stabilising functions, and financing support for climate-resilient seed collection and nursery systems needed to supply suitable planting material for slope and catchment restoration. The project would also assess the feasibility of financing long-term monitoring of protective forest condition, soil moisture, vegetation vitality, and related forestry-geomorphological indicators on risk-prone slopes. Any ecosystem-service, carbon-related, or other incentive-based mechanism would be subject to explicit feasibility assessment during full project development before being taken forward as a project-supported financing instrument. This approach is further supported by the findings from the Biofin process. So far, Policy and Institutional Reviews (PIRs) and Biodiversity Expenditure Reviews (BERs) for RS and FBIH were finalized and both documents clearly recommend work on reforming current PES schemes that does not have explicit functional link to biodiversity.

The project will also examine options for risk transfer and insurance-related mechanisms for

households exposed to landslide losses, while recognising the need for such mechanisms to be grounded in improved hazard information, vulnerability targeting, and affordability considerations.

Together, these activities will help establish the building blocks of a more sustainable financing architecture for landslide risk reduction in Bosnia and Herzegovina. The output will strengthen the ability of institutions to identify, prioritise, and fund preventive action; support municipalities in accessing resources for local resilience measures; and create the basis for combining public, environmental, and private financing instruments in support of long-term climate-informed landslide management. In this way, the project will help shift financing practice from episodic post-disaster spending toward planned, risk-informed, and more sustainable investment in resilience.

### **Output 3.1.2. Bankable projects developed**

This output will translate the project's policy, data, hotspot prioritisation, and financing work into a pipeline of investable landslide risk reduction projects that can attract follow-on financing from international financial institutions and other funding sources. The baseline evidence from past events, and the preliminary economic analysis undertaken for this CN indicate that Bosnia and Herzegovina faces substantial landslide-related investment needs, particularly in high-exposure municipalities and infrastructure corridors, but does not yet have a sufficiently developed pipeline of technically prepared, climate-informed, and financing-ready projects. The purpose of this output is therefore to move beyond diagnosis and pilot action by preparing a set of concrete investment opportunities that can be taken forward after the project.

The first activity under this output will support the preparation of **pre-feasibility studies for selected landslides requiring engineering investment**, together with support to applicants in developing those concepts into bankable projects. The pre-feasibility work will be based on the hotspot screening, prioritisation framework, climate rationale, and investment logic developed under the earlier components of the project, so that project concepts are grounded in evidence rather than in *ad hoc* local demand. The studies will assess the nature of the landslide problem, exposure and consequence profile, climate rationale, likely intervention options, indicative costs and benefits, implementation feasibility, safeguards considerations, and institutional arrangements for delivery. In this way, the project will help create the technical and economic foundation needed to advance from hotspot identification to investment structuring.

A **two-tier selection process** will be used to ensure that support is directed toward the most relevant and feasible investment opportunities. The first tier will identify the municipalities or cities for which pre-feasibility studies should be developed, based on criteria such as susceptibility and exposure level, road and service criticality, social and economic consequences, climate sensitivity, local readiness, and alignment with the project's prioritisation framework. The second tier will then select a smaller number of municipalities or project concepts for development into bankable projects, based on the strength of the pre-feasibility findings, investment rationale, implementation readiness, and financing potential. This staged approach will allow the project to work systematically from a wider hotspot universe toward a smaller, higher-quality investment pipeline.

The output will also support the **development and submission of at least three bankable projects to international financial institutions**. These projects are expected to reflect different landslide management needs and financing profiles, for example engineering stabilisation works in high-consequence sites, corridor protection in municipalities vulnerable to isolation, or integrated slope and drainage interventions linked to urban resilience or catchment management. The intention is not only to prepare technically sound proposals, but also to ensure that they are structured in a way that meets the requirements of potential financiers, with adequate economic justification, climate rationale, implementation arrangements, safeguards consideration, and evidence of local and institutional commitment.

This output is important because it creates a bridge between the Adaptation Fund project and longer-term investment mobilisation. While the AF project can establish governance, data systems, warning capacities, nature-based solutions, and financing mechanisms, the scale of landslide risk in Bosnia and Herzegovina will require further capital investment beyond the life of the project. By preparing a credible pipeline of bankable projects, the project will increase the likelihood that priority municipalities and corridors can attract larger-scale financing for structural and hybrid resilience measures in the future. It will also strengthen national and municipal capacity to formulate investment-grade adaptation projects in the landslide sector.

Together, these activities will ensure that the project leaves behind not only improved systems and pilot actions, but also a practical pathway for scaling up climate-informed landslide risk reduction through external investment. The output will help convert the project's analytical and institutional gains into a longer-term programme of investable interventions, thereby improving the prospects for sustained resilience-building in the most exposed areas of Bosnia and Herzegovina.

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

The proposed project will generate significant economic, social, and environmental benefits by reducing the drivers and consequences of climate-amplified landslide risk in the municipalities and corridors most exposed to recurrent slope instability in Bosnia and Herzegovina. The evidence assembled for this Concept Note shows that landslide exposure is concentrated both in densely populated urban and peri-urban municipalities such as **Banja Luka, Sarajevo, Zenica, Tuzla, and Mostar**, and in infrastructure-critical municipalities such as **Foča, Gacko, Goražde, Konjic, Kalesija, Sapna, Lopare, Tešanj, Srebrenik, and Kakanj**, where road disruption can isolate settlements and interrupt access to services. The national screening further shows that around **925 km** of classified roads, approximately **10%** of the total, pass through high to critical landslide susceptibility terrain, including about **123 km** in very high or critical zones. These patterns indicate that the project's benefits will extend beyond slope protection alone to include protection of access, service continuity, local livelihoods, and municipal functionality in the most exposed areas.

Economically, the project will help reduce recurrent losses associated with damage to housing, local infrastructure, roads, productive land, and public facilities, as well as the repeated emergency and rehabilitation costs that follow major rainfall events. Based on proposed project intervention assumptions, the indicative avoided direct losses are estimated at USD 539.13 million in Banja Luka, USD 10.59 million in Foča, and USD 11.92 million in Tuzla, for a combined avoided direct loss of about USD 561.64 million. (please see section C below). The climate analysis shows that landslide-trigger conditions are intensifying through stronger daily and multi-day rainfall, longer wet spells, and more frequent threshold exceedances in key hotspot municipalities. By strengthening governance, improving data systems, establishing geo-early warning, implementing nature-based and hybrid slope and drainage measures, and preparing bankable follow-on investments, the project will support a shift from reactive spending toward more cost-effective prevention. Expected benefits include avoided asset damage, reduced access disruption, lower emergency and recovery costs, and improved readiness for larger-scale resilience investment. The preliminary economic analysis indicates that preventive adaptation is economically justified and that the value of avoided losses and avoided disruption is likely to exceed intervention costs by a substantial margin, even before wider social and environmental co-benefits are counted.

Socially, the project will improve safety, preparedness, and continuity of access to essential services for communities exposed to landslide impacts. This is especially important in municipalities where landslide-prone roads provide the main access to schools, health care, markets, and administrative centres. Planned investments in hotspot identification, monitoring, warning, community awareness, local capacity-building, and slope and drainage management will reduce disruption and improve resilience for households living in unstable terrain and for settlements vulnerable to temporary or prolonged isolation. The project will also generate social benefits through more accessible landslide information, improved municipal planning, stronger institutional coordination, and more predictable local preparedness arrangements.

The project will place particular emphasis on vulnerable communities and groups within affected municipalities. Current evidence already indicates the need to focus on households living on highly susceptible slopes and in poorly serviced settlements, communities dependent on a single exposed road connection, and populations whose access to health care, education, and emergency support can be easily disrupted by landslide events. In line with the Leave No One Behind principle, the project will seek to ensure that **women, women-headed households, older persons, persons with disabilities, low-income households, isolated rural populations, and other socially vulnerable groups** are explicitly considered in the design of warning systems, awareness activities, local preparedness measures, and pilot investments. More specific social targeting will be refined during full proposal development and early implementation as additional vulnerability data become available.

Gender considerations will be integrated throughout project design and implementation in line with the Adaptation Fund Gender Policy. Landslide risk and disaster disruption are not gender-neutral, as women and men may experience different patterns of exposure, access to information, mobility constraints, care responsibilities, and participation in local decision-making. The project will therefore aim to ensure that women are meaningfully represented in consultations, awareness and preparedness activities, and local planning processes; that warning communication is accessible to both women and men; and that project-supported capacity development takes account of different needs and constraints. Gender-responsive indicators and targeting approaches will be further developed at full proposal stage.

Environmentally, the project will generate benefits through improved catchment and slope management, reduced erosion and sediment mobilisation, restoration of vegetative cover, and better regulation of runoff and infiltration in landslide-prone areas. The planned nature-based and ecosystem-based measures, including slope revegetation, runoff regulation, riparian and wetland restoration, rehabilitation of terrace agriculture and grasslands, and improved drainage management, are expected to improve slope stability and strengthen watershed resilience under changing rainfall conditions. These measures will also provide adaptation co-benefits by improving ecosystem function, reducing runoff concentration, and supporting more resilient land and water management in vulnerable catchments. Forests and green infrastructure are public safety assets with benefits beyond environmental co-benefits. The project forestry interventions will improve slope stability, reduce erosion and runoff, strengthen protective forest functions, and generate biodiversity-positive resilience benefits, especially in Foča and urban/peri-urban hotspots such as Tuzla and Banja Luka.

The project is designed to avoid or mitigate negative environmental and social impacts in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund, as well as UNDP social and environmental standards. Most project activities are expected to be low to moderate risk and focused on policy strengthening, data systems, capacity-building, monitoring, early warning, and small-scale non-structural or nature-based measures. Where pilot physical interventions are undertaken, they will be selected and designed to avoid, reduce or mitigate adverse impacts on natural habitats, watercourses, land tenure, livelihoods, and community access. Site-specific environmental and social screening will be carried out before implementation of physical works, and mitigation measures will be incorporated where required. Particular attention will be given to avoiding

involuntary resettlement, restricting access to resources without due process, and causing unintended destabilisation through poorly designed drainage or earthworks. Small-scale engineering and drainage works will therefore be designed using appropriate geotechnical and environmental criteria and, where relevant, combined with vegetative and ecosystem-based approaches.

The project will also seek to avoid social exclusion by ensuring that consultation, awareness, training, and local engagement processes are inclusive and accessible. This will include attention to gender balance, participation of vulnerable groups, accessibility of information, and transparency in the selection of pilot locations and local measures. In this way, the project will combine immediate climate adaptation benefits with progressive strengthening of the safeguards, inclusion mechanisms, and institutional practices needed for longer-term landslide resilience programming in Bosnia and Herzegovina.

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

The proposed project is cost-effective because it combines targeted risk-reduction investments in high-consequence landslide hotspots with system-level measures that improve prevention, preparedness, and future investment prioritisation across Bosnia and Herzegovina. While the preliminary economic analysis does not present a full cost-benefit analysis at Concept Note stage, it does provide a credible and proportionate avoided-loss rationale based on three representative hotspot cases, Banja Luka, Foča, and Tuzla, selected to reflect the main loss pathways associated with landslides in the country. These include direct damage to housing, business assets, productive land, roads, and critical public infrastructure, as well as wider disruption of access, public services, tourism, and local economic activity.

Using the representative cases, the economic analysis estimates quantified direct exposure of approximately USD 539.13 million in Banja Luka, USD 13.24 million in Foča, and USD 11.92 million in Tuzla, giving a combined direct exposure of about USD 564.29 million across the three cases. Based on proposed project intervention assumptions, the indicative avoided direct losses are estimated at USD 539.13 million in Banja Luka, USD 10.59 million in Foča, and USD 11.92 million in Tuzla, for a combined avoided direct loss of about USD 561.64 million. The indicative intervention costs for the three hotspot packages are estimated at about USD 2.41 million in Banja Luka, USD 0.30 million in Foča, and USD 3.61 million in Tuzla, or about USD 6.33 million in total. This implies a simple avoided-loss to cost ratio of about 223.7:1 for Banja Luka, 35.3:1 for Foča, and 3.3:1 for Tuzla, with an overall combined ratio of about 89.1:1 across the three cases. Because the Banja Luka case is dominated by the very high proxy value of the University Clinical Centre of Republika Srpska, the analysis also provides a more conservative combined reading using only Tuzla and Foča, which still yields an avoided-loss to cost ratio of about 5.8:1.

These estimates are conservative because they capture mainly direct asset protection and do not fully monetise wider economic and social benefits. In Foča, for example, the intervention protects not only directly exposed housing, businesses, and road sections, but also a disruption-sensitive corridor linked to settlement access, tourism flows, and access to University Hospital Foča. In Tuzla, the intervention protects a landslide-prone area affecting houses, businesses, productive land, and a road section linked to the wider Tuzla-Živinice-Kalesija urban-economic area and access to Tuzla International Airport. In Banja Luka, the cost-effectiveness logic is driven not only by avoided physical damage, but by protection of critical public health infrastructure serving approximately one million insured persons. The preliminary economic analysis therefore concludes that the full adaptation value of the project exceeds the quantified direct-loss figures because it also includes avoided service disruption, reduced isolation, lower emergency response and rehabilitation costs, lower congestion and delay costs, reduced tourism losses, and reduced long-term fiscal burden on public institutions.

The project is also cost-effective because it does not rely only on stand-alone site works. The representative hotspot packages account for about USD 6.33 million of the proposed USD 12 million AF investment, while the remaining resources support enabling investments that improve the cost-effectiveness and scalability of future action. These include improved governance and planning, hazard and loss-and-damage information systems, geo-early warning capacity, nature-based and hybrid risk-reduction measures, and preparation of future bankable investments. Ecosystem-based and protective-forest measures are expected to improve cost-effectiveness by reducing recurrent slope degradation and drainage pressure over time, especially where they complement rather than replace targeted engineering works. In other words, the project is designed not only to reduce direct losses in selected hotspots, but also to lower the future cost of landslide risk management nationally by improving how interventions are identified, prioritised, and financed. This strengthens the overall cost-effectiveness case because it creates benefits beyond the immediate pilot locations and reduces reliance on repeated post-disaster repair.

Overall, the preliminary analysis supports a strong cost-effectiveness conclusion. Even under conservative assumptions, the proposed project is expected to protect assets and public functions of substantially greater value than the cost of intervention, while also delivering broader adaptation benefits that are not yet fully monetised. The project therefore represents a cost-effective use of adaptation finance because it shifts Bosnia and Herzegovina away from a recurrent damage-repair model and toward a more preventive, climate-informed, and fiscally efficient approach to landslide risk management.

**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.**

The proposed project is fully consistent with Bosnia and Herzegovina's national climate adaptation and disaster risk reduction framework and will help operationalise existing policy commitments on climate resilience, risk-informed development, early warning, and preventive investment in the context of climate-amplified landslide risk.

The proposed project is consistent with Bosnia and Herzegovina's core climate adaptation and disaster risk policy framework because it addresses a climate-sensitive hazard that is already recognised in national planning instruments and does so through the same policy pillars those instruments prioritise – risk assessment, adaptation integration, institutional strengthening, data and monitoring improvement, and resilience-oriented investment. The project's focus on climate-amplified landslide risk, hotspot-based prioritisation, early warning, ecosystem-based measures, and financing for preventive action is therefore aligned with the direction of national policy rather than creating a parallel agenda.

The project is directly consistent with the **National Adaptation Plan of Bosnia and Herzegovina**, which is intended to integrate climate change adaptation into relevant social, economic, and environmental policies and actions, and to identify concrete medium-term adaptation measures (NAP, p. 12). The NAP explicitly recognises that increasing heavy precipitation results particularly in floods and landslides, and cites the Flood and Landslide Risk Assessment Study for the Housing Sector in Bosnia and Herzegovina as evidence that climate change is already linked to urban landslide risk (NAP, pp. 51 to 52). It further notes that the urban areas covered by that study account for 60 to 70% of the national housing stock and identifies Tuzla, Sarajevo, Kladanj, Mostar, Zenica, Vogošća, Kakanj, Šipovo, and Banja Luka as municipalities with the highest landslide risk indices (NAP, pp. 51 to 52). The NAP also includes a clear adaptation and disaster risk reduction interface through proposed measures such as development of early warning systems for meteorological and

climatic extremes (NAP, p. 58) and by recommending that the adaptation monitoring and evaluation system be linked to the Sendai Framework for Disaster Risk Reduction loss-and-damage data system (NAP, pp. 95 to 96 and p. 127). The proposed project directly operationalises these objectives by strengthening landslide governance, improving landslide-related data systems, linking climate-trigger analysis with municipal hotspot identification, establishing early warning capacity, and implementing preventive and nature-based measures in high-risk areas. It therefore operationalises the NAP in a hazard domain, namely landslides, where climate change impacts are already material and where adaptation needs remain insufficiently addressed.

The project is also consistent with the **Climate Change Adaptation and Low-Emission Development Strategy for Bosnia and Herzegovina 2020 to 2030**, which calls for stronger climate governance, improved adaptation financing, better monitoring and information systems, and integration of climate resilience into sector policy and development planning. The proposed project responds directly to those priorities by developing a strategic and regulatory framework for landslide risk reduction, improving geospatial and loss-and-damage data systems, supporting climate-informed early warning, and creating financing mechanisms and bankable projects for longer-term resilience investment. Its emphasis on coordination across forestry, water management, urban planning, civil protection, and municipal action is also consistent with the Strategy's cross-sectoral adaptation approach.

The project is further aligned with Bosnia and Herzegovina's **Fourth National Communication** under the UNFCCC. The FNC identifies increasing precipitation variability and heavier rainfall extremes as important climate signals and documents the growing relevance of hydro-meteorological hazards. The supplementary analyses prepared for this Concept Note build directly on that national evidence base by showing that rainfall indices relevant to landslide triggering are intensifying in key hotspot municipalities. The project therefore translates the climate evidence presented in the FNC into a practical adaptation response through improved warning systems, risk-informed planning, slope and drainage management, and institutional strengthening.

The project is also consistent with Bosnia and Herzegovina's broader disaster risk reduction agenda and with the **Sendai Framework for Disaster Risk Reduction 2015 to 2030**, to which the country is aligned. The Sendai Framework emphasises understanding disaster risk, strengthening disaster risk governance, investing in resilience, and enhancing preparedness for effective response and recovery. The proposed project reflects each of these priorities through susceptibility and exposure screening, improved data and loss records, strengthened governance and planning frameworks, integrated landslide early warning, local capacity-building, and preparation of investment-ready projects. Bosnia and Herzegovina's own Sendai-related reporting also indicates that the country is moving from a predominantly reactive approach toward a more proactive DRR model, and this project supports that transition in the specific context of landslide risk.

The project is also consistent with the long-standing close-to-nature forest management tradition in BiH and with the logic of ecosystem-based adaptation and biodiversity-compatible protective forest management, in line with the **EU Forest Strategy for 2030**.

The project is additionally consistent with national climate commitments expressed through Bosnia and Herzegovina's **NDC**, which recognises that the negative effects of climate change are already visible in the country and that adaptation action is necessary. By reducing the vulnerability of exposed municipalities, critical roads, settlements, and local ecosystems to climate-amplified landslides, the project contributes to implementation of the adaptation dimension of the national climate agenda. It also complements ongoing resilience-related investment and institutional strengthening efforts, including those linked to hydrometeorological modernisation and multi-hazard early warning.

At sub-national level, the project is also designed to be consistent with entity, cantonal, and municipal planning functions because its activities will strengthen the practical integration of landslide susceptibility, slope-stability criteria, and climate-informed risk information into spatial plans, construction control, local infrastructure maintenance, and emergency preparedness arrangements.

In this way, the project supports vertical integration between national adaptation and DRR policy and local implementation systems, which is one of the main current gaps identified in the baseline analysis.

**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.**

The project will comply with the applicable **national, entity, cantonal, municipal, and Brčko District technical and regulatory requirements** relevant to its activities. In Bosnia and Herzegovina, environmental and planning competences are not governed through a single unified national technical code – they are exercised largely at entity and Brčko District level, with further application through cantonal and municipal systems where relevant. The National Adaptation Plan states that the current legislative framework is fragmented and that environmental legislative competences lie primarily with the entities and Brčko District<sup>11</sup>.

Accordingly, the project will be implemented in conformity with the **applicable environmental protection, spatial planning, construction, water, forestry, and civil protection legislation** in each jurisdiction where activities occur. For activities in the Federation of Bosnia and Herzegovina and Republika Srpska, this includes compliance with the relevant **environmental protection laws**, which regulate environmental planning, environmental information, public participation, environmental impact assessment, and environmental permitting<sup>12</sup>. For activities involving physical works, permitting, or site development in Republika Srpska, the applicable **Law on Spatial Planning and Construction**<sup>13</sup> governs spatial planning documents, site conditions, building permits, technical documentation, construction, supervision, use, and removal of facilities. Equivalent jurisdiction-specific planning and construction requirements will be applied in the Federation, cantons, and Brčko District as relevant to the selected intervention sites.

In practical terms, this means that all physical interventions supported by the project, such as drainage improvements, slope stabilisation, small protective works, sensor installation, access works, catchment restoration, or ecosystem-based measures, will be subject to screening against the applicable **environmental assessment, permitting, geotechnical, land-use, and construction-control requirements** of the competent jurisdiction. Where required by law, site-specific environmental impact assessment, environmental permitting, water or forestry approvals, land-use conformity review, and construction or site-condition approvals will be completed before works commence. Interventions in and around protected areas, especially NP Sutjeska, will need to be compatible with biodiversity conservation objectives and protected-area management regimes. Technical designs for hillside interventions will be prepared and reviewed using the applicable geotechnical, drainage, slope-stability, and construction requirements of the relevant authority, and all works will be implemented under qualified supervision and standard occupational health and safety procedures.

Because the project is still at Concept Note stage, the exact package of jurisdiction-specific technical standards will be confirmed during full proposal preparation for each pilot area and intervention type. This is particularly important in Bosnia and Herzegovina's multi-level governance context, where the detailed permitting route and applicable technical rules can differ by entity, canton, municipality, and

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<sup>11</sup> UNFCCC, 2022. Bosnia and Herzegovina National Adaptation Plan – NAP with proposed measures

<sup>12</sup> 2021 Law on Environmental Protection of the Federation of Bosnia and Herzegovina (FBiH)

<sup>13</sup> The Law on Spatial Planning and Construction of the Republic of Srpska (Official Gazette of RS no. 40/13, 2/15, 106/15, 3/16, 104/18, and 84/19)

sector. The project will therefore include a legal and technical compliance check as part of detailed design and pre-implementation screening for each site.

The project will also fully comply with both the UNDP Social and Environmental Standards and the **Environmental and Social Policy of the Adaptation Fund** and is expected to fall into an overall Moderate Social and Environmental Risk rating (in UNDP classification) and Category B (In Adaptation Fund classification) because of the risks presented in section K.

To comply with the UNDP Social and Environmental Standards and the Adaptation Fund Environmental and Social Policy, the full proposal will be accompanied by the Environmental and Social Management Framework (ESMF) that will further detail the potential environmental and social risks and ensure that adverse impacts are avoided where possible and minimised or mitigated where they cannot be fully avoided during implementation. The ESMF will elaborate the following approach: first, **site selection and intervention design will prioritise avoidance of harm** to natural habitats, watercourses, unstable slopes, community access, livelihoods, and culturally sensitive sites. Second, **site-specific environmental and social screening** will be carried out and, where required, follow-up assessments will be conducted before physical activities are approved. Third, where risks are identified, the project will apply proportionate **mitigation measures**, such as erosion and sediment control, drainage management, construction supervision, vegetation restoration, waste management, occupational health and safety measures, and community safety provisions during works. Fourth, activities that could trigger significant involuntary resettlement, major habitat conversions, adverse impacts on critical ecosystems or endangered species, or any other severe irreversible impacts will not be financed under the project.

The project will also comply with the **UNDP Gender Equality Strategy 2026–2029** and the **Gender Policy of the Adaptation Fund** and Action Plan by integrating gender considerations into consultation, targeting, training, warning-system design, and local preparedness activities. With these policy documents, both UNDP and AF aim to mainstream equal access and strengthen resilience for both women and men. In practical terms, the project will ensure that women are meaningfully included in stakeholder engagement and local decision-making, that communication and awareness materials are accessible to different user groups, and that vulnerable populations, including women-headed households, older persons, persons with disabilities, and isolated communities, are considered in risk reduction and warning arrangements. A more detailed gender and social inclusion analysis will be incorporated at full proposal stage and reflected in the project results framework and social and environmental safeguards procedures.

Overall, the project's compliance approach will therefore combine:

- (1) adherence to the applicable **jurisdiction-specific technical and legal standards** in Bosnia and Herzegovina;
- (2) **site-specific environmental and social screening and management** for physical measures; and
- (3) full conformity with the **Environmental and Social Policy and Gender Policy of the Adaptation Fund** and **UNDP Social and Environmental Standards and Gender Equality Strategy**. This approach is appropriate to the project's mix of policy, data, capacity-building, early warning, and targeted pilot interventions, and will be elaborated further in the full proposal.

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

The proposed project does not duplicate existing funding. It addresses a specific and currently underserved gap in Bosnia and Herzegovina's climate adaptation portfolio – **integrated, climate-informed**

**landslide risk management.** Existing and recent initiatives in the country address related areas such as flood risk management, broader disaster risk reduction, flood protection infrastructure, land degradation neutrality, and forest or landscape restoration, but none appears to provide a comprehensive package focused specifically on landslide governance, harmonised landslide data systems, climate-informed landslide early warning, nature-based slope and catchment management, and preparation of bankable landslide resilience investments. The proposed project is therefore designed to be complementary rather than duplicative.

The closest and most important area of complementarity is the **GCF-funded Scaling up Climate Resilient Flood Risk Management in Bosnia and Herzegovina (CRFM)** project, implemented by UNDP. The CRFM project is establishing an integrated, gender-responsive climate-resilient flood risk management approach and strengthening institutional, technical, and financial capacity for long-term flood risk management, including structural, non-structural, and ecosystem-based measures. The proposed landslide project is designed to work in close cooperation with CRFM and to build on its institutional and technical architecture where this is efficient, especially in relation to hydrometeorological observation systems, data management, forecasting and alerting arrangements, and multi-hazard preparedness at municipal level. The Adaptation Fund project would add the **slope-stability, landslide-trigger, geotechnical monitoring, hillside planning, and landslide-specific governance and financing elements** that sit outside CRFM's main flood management mandate. This creates a clear multi-hazard synergy rather than duplication, and is expected to improve the efficiency of AF financing by avoiding parallel system development and making use of existing or emerging observation, communication, and alerting infrastructure supported through CRFM.

The proposed project is also complementary to broader **disaster risk reduction programming** in Bosnia and Herzegovina. The Joint Swiss-UN Programme on **Disaster Risk Reduction for Sustainable Development in Bosnia and Herzegovina**, including its second phase, supports disaster risk governance, localised and cross-cutting DRM interventions, and improved institutional and community capacities. This programme provides an important DRR foundation and creates opportunities for coordination on local governance, preparedness, social inclusion, and municipal resilience. However, it is broader in scope and not focused specifically on climate-informed landslide systems, slope management, or landslide investment pipelines. The proposed project would therefore deepen and operationalise DRR practice in one specific high-risk hazard domain while drawing on the governance and inclusion architecture already being promoted under the DRR programme.

In the **water management and flood protection** sphere, the World Bank is financing flood protection and climate adaptation investments in Bosnia and Herzegovina, including support expected to improve flood protection for around **300,000 people in the Sava and Drina river corridors**<sup>14</sup>. These initiatives are highly relevant to the proposed project because flood and landslide processes often interact in the same basins and corridors, and because flood-related hydrometeorological and warning infrastructure can support a multi-hazard approach. However, their principal focus remains flood protection infrastructure and flood risk management rather than landslide-specific prevention, monitoring, and governance. The proposed project will therefore seek synergies with these investments, especially where flood and landslide hazards overlap and where existing basin and warning investments can be used to strengthen landslide preparedness and risk reduction.

In the **forestry, land restoration, and catchment management** sphere, FAO is supporting Bosnia and Herzegovina through land degradation neutrality, forest restoration, sustainable land management, and related policy and implementation work. FAO's current programme explicitly prioritises sustainable forest management, agroforestry, and land degradation neutrality, while recent FAO work has focused on translating evidence into funded restoration action. These initiatives create strong opportunities for synergy with the proposed project's nature-based and ecosystem-based

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<sup>14</sup> Sava and Drina Rivers Corridors Integrated Development Program

landslide measures, especially in relation to degraded slopes, upper catchments, erosion control, forest restoration, and improved land and soil governance. However, FAO's work is broader in landscape restoration terms and is not structured around landslide hotspot identification, landslide early warning, or landslide investment preparation. The proposed project would therefore complement these efforts by applying restoration and catchment-management approaches within a targeted landslide risk reduction framework.

The proposed project will also build on relevant **past recovery and resilience efforts** following major flood and landslide disasters, including post-2014 recovery interventions supported by UNDP, the World Bank, and other partners. Those efforts were important for recovery and for demonstrating the scale of housing, infrastructure, and service impacts caused by hydro-meteorological disasters, but they were not designed as a sustained, climate-informed landslide management programme. The proposed project therefore responds to a remaining structural gap: the absence of a dedicated, preventive, and scalable landslide adaptation framework in Bosnia and Herzegovina.

In practical terms, duplication will be avoided through close coordination with the CRFM project and with other relevant ongoing initiatives during full proposal development and implementation. The project will seek explicit alignment on geographic focus areas, data-sharing arrangements, early warning architecture, catchment and restoration measures, and institutional capacity-building activities so that current efforts in flood risk management, DRR, forestry, and water management are used as enabling foundations rather than replicated. The project's distinctive contribution will be its integrated focus on **landslide-specific governance reform, harmonised landslide data systems, hotspot-based risk reduction, geo-early warning, climate-informed slope and drainage management, and preparation of bankable landslide investments**. That package is not currently being delivered by any other identified funding source in Bosnia and Herzegovina.

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

A strong learning and knowledge management component is integral to the proposed project because Bosnia and Herzegovina currently lacks a sufficiently harmonised and operational system for generating, sharing, and applying lessons on climate-informed landslide risk management across institutions, entities, cantons, municipalities, and sectors. The project is designed not only to reduce risk in selected hotspots, but also to establish practical models, datasets, tools, and institutional arrangements that can be replicated and scaled. Learning and knowledge management will therefore be treated as a core function of implementation rather than as a stand-alone communication activity.

The project will capture lessons at three levels. First, it will document lessons from **policy, governance, and institutional coordination**, including the development of the Strategy for Sustainable Landslide Management, the Landslide Risk Reduction Action Plan, inter-institutional data-sharing arrangements, and the integration of landslide information into planning and infrastructure management. This will help identify which legal, procedural, and coordination mechanisms are most effective in a complex multi-level governance context such as Bosnia and Herzegovina. Second, it will capture lessons from **technical implementation**, including landslide cadastre development, susceptibility and hotspot screening, geo-early warning, rainfall-trigger analysis, drainage and slope management, and the application of nature-based and hybrid measures in different geomorphological settings. The project will include learning on protective forest management in landslide-prone terrain; integration of forestry and geomorphological monitoring; and forest-road planning methodologies that explicitly account for terrain stability and hydrological processes.

Third, it will capture lessons from **local implementation and financing**, including municipal capacity-building, community awareness, inter-municipal cooperation, use of small-scale financing windows, and preparation of bankable follow-on investments.

To support this, the project will establish a structured knowledge management approach linked to the improved GIS-based data platform, landslide inventory, hazard and loss-and-damage databases, and monitoring systems developed under Component 1. This will allow data, methods, intervention results, and lessons from pilot areas to be recorded in a more systematic and reusable form. The project will also develop practical knowledge products such as technical guidance notes, training materials, methodological briefs, standard operating procedures for data collection and monitoring, and case studies from selected municipalities and pilot areas. These products will be designed for use by geological institutions, hydrometeorological institutes, civil protection authorities, municipal planners and engineers, water and forestry institutions, and other relevant stakeholders.

Dissemination of lessons learned will take place through training, workshops, peer exchange between municipalities, inter-institutional technical sessions, and targeted communication products tailored to different user groups. Particular emphasis will be placed on sharing lessons across entity boundaries and between municipalities with different landslide risk profiles, for example urban and peri-urban hotspots, corridor and isolation hotspots, and catchment-based nature-based intervention sites. The project will also seek to ensure that lessons are shared with ongoing related initiatives, particularly the CRFM project and other relevant DRR, forestry, and water management programmes, so that flood and landslide resilience work can evolve in a more coherent multi-hazard framework.

At the end of the project, the learning and knowledge management component is expected to leave behind more than individual pilot results. It will create a stronger national basis for replication, scale-up, and future investment by ensuring that methods, operational experience, and institutional lessons from the project are captured, validated, and made available for wider use in Bosnia and Herzegovina's evolving climate adaptation and disaster risk reduction agenda.

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

The Concept Note was prepared by UNDP at the request of the relevant authorities in Bosnia and Herzegovina responsible for forest and water management and civil protection, triggered by the recent and continuously increasing occurrence of natural disasters, particularly landslides, which are not being systematically addressed and are expected to increasingly impact people, infrastructure, ecosystems, and the economy under climate change. Given the country's complex governance structure, involving multiple levels of government and institutions, as well as the lack of a comprehensive regulatory framework and technical capacities to address landslide risks, UNDP was approached to provide support in developing an integrated and coordinated response.

Between December 2025 and April 2026, consultative meetings were held with stakeholders from the state, entity, cantonal, and local levels, including state-level ministries (Ministry of Foreign Trade and Economic Relations and Ministry of Finance and Treasury), relevant entity institutions and ministries responsible for water and forest management, environment and spatial planning, civil protection authorities, hydrometeorological institutes, and geological institutes. Consultations also involved academia (faculties of forestry, civil engineering, and natural sciences), representatives of the most affected local communities (including Tuzla, Foča, Herzegovina-Neretva Canton, and Sarajevo Canton), as well as representatives of ongoing development projects and civil society organizations. The project concept and proposed activities were discussed and refined through these consultations.

The consultations validated the need for the establishment of a comprehensive and unified landslide

risk management system, alongside the implementation of risk reduction measures at the local level linked to the ongoing National Adaptation Plan (NAP) process and broader disaster risk reduction priorities.

Stakeholders highlighted significant institutional, technical, and financial gaps related to landslide monitoring, prevention, and response across Bosnia and Herzegovina. Representatives of civil protection and spatial planning institutions emphasized the absence of harmonized methodologies for landslide risk mapping and the insufficient integration of climate risk considerations into spatial and urban planning processes. Water management and civil protection authorities stressed that increasingly frequent extreme rainfall events are triggering slope instability, erosion, flash floods, and severe damage to critical infrastructure, particularly in vulnerable mountainous and peri-urban areas. Stakeholders also noted that existing landslide inventories are fragmented, incomplete, and often outdated, while municipalities frequently lack the technical expertise and financial resources necessary to implement preventive measures or monitor unstable slopes.

Academic institutions and hydrometeorological services identified the absence of an integrated system for landslide monitoring, early warning, and data sharing as a critical gap and recommended strengthening coordination and information exchange among institutions across all administrative levels. Forestry, environment, and spatial planning authorities further highlighted the role of deforestation, forest degradation, illegal construction, and unsustainable land use practices in increasing slope instability and erosion risks, emphasizing the importance of ecosystem-based approaches, sustainable watershed management, and improved enforcement of spatial planning regulations.

Local governments and civil society organizations advocated for community-based and nature-based solutions for landslide risk reduction. Stakeholders also emphasized the importance of raising public awareness, strengthening institutional and local capacities, and implementing pilot interventions in highly vulnerable municipalities in order to demonstrate scalable, sustainable, and cost-effective landslide risk reduction measures.

During the implementation, UNDP will make the results of the environmental and social screening and any draft environmental and social assessments (if required), including any proposed management plan, available for timely, effective, and inclusive public consultations in a locally appropriate manner in the potentially affected communities in accordance with the UNDP Social and Environmental Standards and the Adaptation Fund Environmental and Social Policy.

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

The funding requested is justified because the proposed project addresses the **incremental cost of adapting Bosnia and Herzegovina's landslide management system to climate-amplified risk**, rather than financing routine development or ordinary maintenance. The baseline situation is already characterised by high landslide susceptibility, degraded slopes and drainage systems, incomplete data, weak monitoring, fragmented institutional responsibilities, and limited local financing for prevention. Under current conditions, these weaknesses already generate repeated damage and disruption. Climate change adds a further and distinct burden by increasing the intensity, persistence, and variability of rainfall conditions relevant to landslide triggering, particularly through stronger short-duration rainfall, stronger multi-day accumulations, longer wet spells, and more frequent exceedance of prolonged threshold conditions in high-exposure municipalities. Climate change is also increasing stress on forests and maintaining their stabilising role is part of adaptation rather than routine environmental management. The requested funding is therefore needed to cover the additional measures required to manage this worsening risk environment, beyond what would be required for routine infrastructure upkeep or ordinary local development, and includes the incremental cost of maintaining or restoring protective ecosystem functions, and warning systems.

The socio-economic and investment analysis prepared for the Concept Note applies the full cost of adaptation logic directly. It distinguishes between the **development baseline**, in which landslide risk is already elevated because of weak planning control, insufficient monitoring, degraded drainage and slope conditions, and incomplete data systems, and the **climate-amplified risk**, in which more intense and more variable rainfall increases the probability and consequence of slope failure. The annex states clearly that routine development would include ordinary road rehabilitation, standard drainage cleaning, ordinary land-use administration, or post-disaster reconstruction, whereas adaptation consists of measures specifically designed to reduce the additional risk created by climate-amplified landslide conditions. These adaptation measures include improved regulatory and policy frameworks, harmonised landslide inventories and hazard mapping, a unified GIS-based data platform, a landslide loss-and-damage database, geo-early warning systems with rainfall and slope-stability monitoring, nature-based and hybrid slope and drainage measures, and financing mechanisms for future climate-resilient landslide investments.

The requested Adaptation Fund resources are therefore justified because they will finance activities that are not currently financed through ordinary public budgets and that would not occur at the necessary scale or quality without dedicated adaptation support. This is particularly true for the project's system-building components, including climate-informed hotspot screening, harmonised landslide data systems, threshold-based warning development, municipal and Geological Survey capacity strengthening, and preparation of bankable landslide resilience investments. These measures generate broad public benefits but do not create immediate revenue streams that would attract private financing, nor can they be delivered adequately through the fragmented and reactive financing arrangements that currently dominate landslide management in Bosnia and Herzegovina.

The investment rationale also shows that the cost of adaptation is proportionate to the scale of avoided loss. The preliminary economic analysis estimates quantified direct exposure of about **USD 564.29 million** across the three representative hotspot cases of **Banja Luka, Foča, and Tuzla**, with indicative avoided direct losses of about **USD 561.64 million** under concept-stage intervention assumptions. By contrast, the indicative cost of the three representative hotspot packages is about **USD 6.33 million**, implying a very strong avoided-loss to cost ratio, even under more conservative readings that exclude the exceptionally high-value Banja Luka public health infrastructure case. These figures do not yet include wider avoided benefits such as reduced service disruption, reduced isolation, reduced tourism and logistics losses, and reduced repeated fiscal burden on public institutions. This means that the requested funding is not only adaptation-relevant, but also economically justified as a means of avoiding much larger future losses under climate-intensified conditions.

The full cost of adaptation reasoning is also reflected in the structure of the project budget. Only part of the proposed financing is directed toward hotspot-level physical interventions. The remainder supports the enabling conditions required to make landslide management climate-resilient and sustainable at system level: governance reform, institutional coordination, data and loss-record systems, early warning, municipal capacity-building, nature-based planning, and financing frameworks. These are precisely the types of incremental adaptation costs that are usually underfunded in conventional development programming, even though they are essential to reducing long-term climate risk. In this sense, the requested funding will not replace normal development expenditure. It will fill the gap between the current reactive system and the more preventive, climate-informed, and risk-based system required under worsening rainfall and landslide conditions.

Overall, the funding request is justified because it covers the additional cost of moving Bosnia and Herzegovina from a pattern of repeated emergency response and post-disaster repair toward a more anticipatory and climate-resilient landslide management model. The Adaptation Fund resources will finance the incremental measures needed to address the climate signal, reduce future damages and disruption, and build the institutional and technical foundation for sustained resilience beyond the life of the project.

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

Sustainability has been built into the project design through a combination of **institutional embedding, regulatory reform, strengthened data systems, local capacity development, integration with existing hydrometeorological and disaster risk management structures, and the creation of financing and investment pathways beyond the project period**. The project is therefore designed not as a stand-alone set of pilot activities, but as a transition toward a more durable, climate-informed landslide risk management system in Bosnia and Herzegovina.

First, institutional sustainability is addressed by anchoring the project's core outputs in **formal strategies, action plans, legal and procedural improvements, and inter-institutional arrangements** rather than in temporary project structures. The development of a Strategy for Sustainable Landslide Management, a Landslide Risk Reduction Action Plan, and improved regulatory provisions for integrating landslide prevention into spatial planning, construction practice, forest management, and water management will help ensure that project-supported approaches continue to guide decision-making after project completion. This is important in a context where landslide responsibilities are currently fragmented and capacities uneven, and where long-term sustainability depends on stronger institutional mandates, clearer procedures, and routine use of landslide information in planning and infrastructure management.

Second, technical sustainability is addressed through the establishment of **improved data systems, georeferenced inventories, hazard and loss-and-damage databases, and a unified GIS-based platform** that can continue to support municipalities, Geological Surveys, hydrometeorological institutes, civil protection authorities, and planning institutions after the project ends. These systems are designed to improve how landslide risk is recorded, updated, analysed, and used operationally, rather than producing one-off studies. The same logic applies to the geo-early warning component, which is designed to build on and complement existing and emerging hydrometeorological and flood early warning architecture, including synergies with the CRFM project, so that landslide monitoring and warning functions become embedded in wider multi-hazard systems rather than operating as isolated pilots.

Third, sustainability is strengthened through **capacity development at both institutional and municipal levels**. The project does not rely only on equipment, mapping, or pilot works – it also invests in training municipal engineers, planners, civil protection personnel, and technical institutions, as well as in community awareness and preparedness. This is essential because landslide risk management in Bosnia and Herzegovina is highly dependent on local implementation, and sustainability will only be achieved if municipalities and relevant technical bodies are able to use the project's tools, data, and procedures in routine practice. Inter-municipal cooperation and shared technical services are also intended to improve sustainability in smaller municipalities that may not be able to maintain specialist capacity independently.

Fourth, environmental and operational sustainability are addressed by prioritising **nature-based, ecosystem-based, and hybrid interventions** that reduce recurrent risk drivers rather than relying only on one-off remedial works. Measures such as catchment restoration, vegetative reinforcement, runoff regulation, drainage upgrading, terrace and grassland rehabilitation, and riparian buffering are intended to improve the long-term stability of slopes and hydrological systems while also reducing maintenance burdens and increasing resilience under future climate conditions. Sustainability relies partly on the long-term maintenance of protective forest functions, integrated catchment management, and financing mechanisms that reduce adverse pressure for extraction in high-risk protective forests, which is relevant in PA such as Sutjeska, where there is a paradox between protective ecological function and pressure for forest exploitation. Where engineering measures are required, the project design emphasises their integration with drainage, slope management, and long-term monitoring so that interventions remain functional beyond the initial implementation period.

Fifth, financial sustainability is addressed explicitly under Component 3 through the development of a **national investment framework for climate-induced landslides**, the creation of **dedicated financing windows for small-scale local interventions**, and the preparation of **bankable follow-on projects** for larger-scale investment. This is a critical element of sustainability because Bosnia and Herzegovina's current landslide management system remains heavily dependent on reactive expenditure and fragmented funding. By establishing financing mechanisms and investment pipelines, the project aims to ensure that the systems, priorities, and pilot interventions developed during implementation can be maintained, replicated, and scaled after the Adaptation Fund grant ends.

Finally, the project has been designed for **replication and scale-up**. Pilot areas are intended to demonstrate approaches that can later be extended to other municipalities and corridors, while the learning and knowledge management component will capture methods, institutional lessons, and technical experience for wider dissemination. This means sustainability is understood not only as the continuation of specific project outputs, but also as the ability of Bosnia and Herzegovina's institutions to apply, adapt, and finance similar approaches more broadly in the future.

Overall, sustainability has been taken into account by ensuring that the project strengthens the permanent systems that determine whether landslide risk can be managed over time – policy and regulatory frameworks, institutional coordination, technical data and warning systems, local implementation capacity, practical maintenance and slope-management approaches, and long-term financing arrangements. This integrated design increases the likelihood that project outcomes will continue to generate benefits after the project period and will serve as a foundation for broader climate-resilient landslide risk reduction in Bosnia and Herzegovina.

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

Based on the current project design, most environmental and social risks are expected to be **low to moderate** and site-specific, with the main risks associated with physical pilot interventions, inclusion and targeting, and compliance with jurisdiction-specific safeguards and permitting requirements. These risks are expected to be manageable through screening, avoidance, mitigation, inclusive consultation, and supervision during full proposal development and implementation.

| Checklist of environmental and social principles | No further assessment required for compliance                                                                                                                                                                                                                                                                                                                                                                                                    | Potential impacts and risks – further assessment and management required for compliance                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Compliance with the Law</i>                   | During full proposal development, a legal and regulatory compliance review will be required for each intervention type and pilot site, covering entity, cantonal, municipal, and Brčko District requirements for environmental permitting, spatial planning, construction, water, forestry, protected areas, and civil protection. During implementation, site-specific permitting and compliance checks will be required before works commence. | <b>Risk level: Moderate.</b> Risk that site-level activities proceed without full alignment with applicable permitting, land-use, forestry, water, or construction requirements in the relevant jurisdiction. <b>Mitigation:</b> jurisdiction-specific legal screening, confirmation of permits and approvals before works, implementation of a compliance checklist for each site, and supervision by competent authorities and qualified technical staff. |
| <i>Access and Equity</i>                         | During full proposal development, targeting criteria, beneficiary analysis, and consultation design should be reviewed to ensure equitable access to project benefits across hotspot municipalities and user groups. During implementation, monitoring should confirm that warning systems, training, and local measures are accessible to women, remote communities, persons with disabilities, and low-income households.                      | <b>Risk level: Moderate.</b> Risk that project benefits are captured mainly by better-served municipalities, institutions, or neighbourhoods, while high-risk but less visible communities receive weaker support. <b>Mitigation:</b> transparent site and beneficiary selection criteria, inclusive consultation, accessibility measures for communication and training, and disaggregated monitoring of beneficiaries and service access.                 |
| <i>Marginalized and Vulnerable Groups</i>        | During full proposal development, social and vulnerability screening should identify groups facing heightened exposure or weaker coping capacity, including isolated rural populations, women-headed households, older persons, persons with disabilities, and low-income households. During implementation, these groups should be explicitly tracked in consultations, preparedness activities, and local targeting.                           | <b>Risk level: Moderate.</b> Risk that vulnerable groups are insufficiently reflected in local planning, warning arrangements, and pilot interventions. <b>Mitigation:</b> targeted outreach, participatory local assessments, use of LNOB criteria in prioritisation, accessible warning channels, and grievance mechanisms that can be used by vulnerable groups.                                                                                         |
| <i>Human Rights</i>                              | No standalone human-rights assessment is expected beyond the project's standard environmental and social screening, provided all activities remain within the current design envelope and avoid displacement or restriction of rights. During implementation, human-rights considerations should be mainstreamed through consultation, transparency, non-discrimination, and grievance redress.                                                  | <b>Risk level: Low.</b> No significant adverse human-rights impacts are anticipated from the project design, but exclusion, weak consultation, or unfair local decisions could create local grievances. <b>Mitigation:</b> transparent decision-making, inclusive consultation, non-discrimination safeguards, accessible grievance redress, and monitoring of adverse social impacts.                                                                      |

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|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Gender Equality and Women's Empowerment</i> | During full proposal development, a gender analysis should be completed and reflected in the results framework, consultation approach, warning design, and beneficiary targeting. During implementation, sex-disaggregated monitoring and gender-responsive outreach should be applied.                                                                                             | <b>Risk level: Moderate.</b> Risk that women participate less in consultations, receive less usable warning information, or benefit less from local planning and resilience investments. <b>Mitigation:</b> gender analysis, quotas or minimum thresholds for women's participation where appropriate, sex-disaggregated indicators, women-targeted consultation and awareness activities, and design of communication channels that reflect different mobility and care roles.                                                                                                         |
| <i>Core Labour Rights</i>                      | During full proposal development, labour-management requirements should be defined for contractors, suppliers, and any community-based works. During implementation, contracts and supervision should verify compliance with labour law, occupational safety, non-discrimination, and prohibition of child and forced labour.                                                       | <b>Risk level: Moderate.</b> Risk of weak labour conditions, inadequate occupational safety, or non-compliance by contractors during slope, drainage, restoration, or equipment installation works. <b>Mitigation:</b> inclusion of labour and OHS requirements in bidding documents and contracts, contractor supervision, worker grievance procedures, and periodic compliance checks.                                                                                                                                                                                                |
| <i>Indigenous Peoples</i>                      | No further assessment is expected to be required, subject to confirmation during full proposal development that no activities affect groups that meet applicable criteria under Adaptation Fund or UNDP standards.                                                                                                                                                                  | <b>Risk level: No.</b> No specific risks to Indigenous Peoples are anticipated in the Bosnia and Herzegovina project context.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>Involuntary Resettlement</i>                | During full proposal development, all candidate physical interventions should be screened to confirm that they do not require physical displacement, permanent economic displacement, or involuntary restriction of access. During implementation, any site with such risk should be redesigned, reduced in scope, or excluded unless a compliant safeguards approach is developed. | <b>Risk level: Moderate.</b> The project is not expected to finance involuntary resettlement, but small-scale works could temporarily affect access, parking, local movement, or use of adjacent land. <b>Mitigation:</b> avoid sites requiring displacement, apply access management plans, consult affected users, minimise temporary disruption, and, where relevant, apply temporary access arrangements and compensation or other remedial measures as required under the applicable safeguards framework; exclude activities that would trigger significant resettlement impacts. |
| <i>Protection of Natural Habitats</i>          | During full proposal development, ecological screening should be undertaken for all physical interventions, especially in upper catchments, riparian areas, steep forested slopes, and areas near protected habitats. During implementation, site-specific method statements and supervision should                                                                                 | <b>Risk level: Moderate.</b> Risk of local habitat disturbance from slope works, drainage rehabilitation, sensor installation, or access improvements, especially in ecologically sensitive terrain. <b>Mitigation:</b> avoid high-sensitivity sites where feasible, minimise footprint, restrict clearance, restore disturbed                                                                                                                                                                                                                                                          |

|                                                     |                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                     | control vegetation clearance, runoff, and disturbance.                                                                                                                                                                                                                                                                                                                          | areas, apply erosion and sediment controls, and align measures with protected-area and habitat management requirements.                                                                                                                                                                                                                                                                                                                                       |
| <i>Conservation of Biological Diversity</i>         | During full proposal development, biodiversity screening should identify whether any pilot interventions are located in or near protected areas, key habitats, or areas with important protective forest functions. During implementation, biodiversity-sensitive design and restoration should be applied.                                                                     | <b>Risk level: Moderate.</b> Risk that poorly designed interventions, inappropriate planting, or access works could affect biodiversity values, especially in areas such as protected forests or park landscapes. <b>Mitigation:</b> biodiversity screening, use of native and site-appropriate species, no introduction of invasive species, compatibility with protected-area objectives, expert ecological input where needed, and post-works restoration. |
| <i>Climate Change</i>                               | No additional climate-risk assessment is required beyond the climate rationale and technical analyses already undertaken, but full proposal development should confirm that all physical measures are designed for future rainfall intensity, runoff, and slope conditions. During implementation, technical specifications should reflect climate-resilient design parameters. | <b>Risk level: Low to Moderate.</b> Risk that interventions are designed to current rather than future climate conditions, reducing long-term effectiveness. <b>Mitigation:</b> apply climate-informed design criteria, use projected rainfall and runoff information where available, include adaptive safety margins, and review technical designs against future climate stress.                                                                           |
| <i>Pollution Prevention and Resource Efficiency</i> | During full proposal development, likely material inputs, spoil generation, drainage discharge, fuel use, and waste streams should be reviewed for physical interventions. During implementation, contractors should apply waste, fuel, and materials management procedures.                                                                                                    | <b>Risk level: Low to Moderate.</b> Risk of local pollution from excavation spoil, fuel and lubricant handling, construction waste, sediment discharge, or poor storage of materials. <b>Mitigation:</b> contractor environmental management plans, controlled spoil disposal, sediment management, safe fuel storage and handling, preference for resource-efficient and locally appropriate materials, and site supervision.                                |
| <i>Public Health</i>                                | During full proposal development, public health and safety considerations should be assessed for civil works, warning systems, access restrictions, and community exposure during implementation. During implementation, site-specific health and safety measures and emergency procedures will be needed.                                                                      | <b>Risk level: Moderate.</b> Risk of accidents, temporary access disruption, unsafe worksites, or failure of warning communication to reach intended users. <b>Mitigation:</b> occupational and community health and safety plans, traffic and access management, clear signage, emergency response procedures, safe installation standards, and testing of warning communication protocols.                                                                  |

|                                |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical and Cultural Heritage | During full proposal development, site screening should identify any cultural heritage features, cemeteries, religious sites, or culturally sensitive locations that may be affected by pilot measures. During implementation, chance-find procedures should be applied.           | <b>Risk level: Low to Moderate.</b> Risk that local works in landslide-prone settlements or corridor areas affect known or previously unidentified heritage features. <b>Mitigation:</b> pre-works screening, avoidance of sensitive sites where possible, consultation with competent authorities and communities, and application of chance-find procedures during excavation or earthworks.                                   |
| Lands and Soil Conservation    | During full proposal development, all physical and nature-based interventions should be assessed for their effects on slope stability, soil erosion, sediment transport, and downstream impacts. During implementation, geotechnical review and site supervision will be required. | <b>Risk level: Moderate.</b> Risk that poorly designed drainage diversion, earthworks, planting, or access improvements could worsen erosion or destabilise slopes locally. <b>Mitigation:</b> geotechnical review, hydrologically informed design, staged works where needed, erosion and sediment controls, use of hybrid vegetative and engineering solutions, and post-implementation monitoring of slope and soil response. |

## PART III: IMPLEMENTATION ARRANGEMENTS

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

| Project Objective(s) <sup>1</sup>                                                                                             | Project Objective Indicator(s)                                                                                                                                                                                                                                                                                             | Fund Outcome                                                                                                                          | Fund Outcome Indicator                                                                                                          | Grant Amount (USD) |
|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Enhance the resilience of communities, ecosystems, and infrastructure in Bosnia and Herzegovina to climate-induced landslides | 01: Number of people with increased resilience to climate-induced landslides as a result of project interventions:<br>(a) Direct beneficiaries (male and female)<br>(b) Indirect beneficiaries (male and female)<br><br>02: Number of hectares of productive land and ecosystems under improved forest and land management | Outcome 1: Reduced exposure to climate-related hazards and threats                                                                    | 1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis                          | 1,920,000          |
|                                                                                                                               |                                                                                                                                                                                                                                                                                                                            | Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses | 2.1. 2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased | 460,000            |
|                                                                                                                               |                                                                                                                                                                                                                                                                                                                            | Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets                          | 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress                                | 3,070,000          |
|                                                                                                                               |                                                                                                                                                                                                                                                                                                                            | Outcome 5: Increased ecosystem resilience in response to climate change and variability induced stress                                | 5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress    | 3,070,000          |
|                                                                                                                               |                                                                                                                                                                                                                                                                                                                            | <b>Outcome 7:</b> Improved policies and regulations that promote and enforce resilience measures                                      | 7. Climate change priorities are integrated into national development strategy                                                  | 360,000            |
|                                                                                                                               |                                                                                                                                                                                                                                                                                                                            | <b>Outcome 8:</b> Support the development and                                                                                         | 8. Innovative adaptation practices are rolled out, scaled up, encouraged                                                        | 2,016,461          |

|                                                                                                                                                                                                         |                                                                                                                                                                                                                                           |                                                                                                                                                                |                                                                                                                                                       |                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
|                                                                                                                                                                                                         |                                                                                                                                                                                                                                           | diffusion of innovative adaptation practices, tools and technologies                                                                                           | and/or accelerated at regional, national and/or subnational level                                                                                     |                           |
| <b>Total objective level grant amount</b>                                                                                                                                                               |                                                                                                                                                                                                                                           |                                                                                                                                                                |                                                                                                                                                       | <b>10,896,461</b>         |
| <b>Project Outcome(s)</b>                                                                                                                                                                               | <b>Project Outcome Indicator(s)</b>                                                                                                                                                                                                       | <b>Fund Output</b>                                                                                                                                             | <b>Fund Output Indicator</b>                                                                                                                          | <b>Grant Amount (USD)</b> |
| <b>Outcome 1.1:</b><br>Enhanced landslides governance, data management and institutional capacities enable risk-informed landslide management                                                           | <b>1.1.1:</b> Number of formal policy, regulatory, or inter-institutional coordination instruments adopted and operationalised for climate-informed landslide risk management.                                                            | <b>Output 7.1:</b><br>Improved integration of climate resilience strategies into country development plans                                                     | 7.1. No. of policies introduced or adjusted to address climate change risks (by sector)                                                               | 360,000                   |
|                                                                                                                                                                                                         | <b>1.1.2:</b> Number of target institutions and municipalities routinely using harmonized landslide risk information, including susceptibility, inventory, and loss data, in planning, permitting, preparedness, or investment decisions. | <b>Output 2.1:</b><br>Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events                     | 2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)                                                | 460,000                   |
|                                                                                                                                                                                                         |                                                                                                                                                                                                                                           |                                                                                                                                                                | 2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)              | 720,000                   |
| <b>Outcome 2.1:</b><br>Priority Non-structural and nature-based landslide management approaches result in increased resilience of communities, their assets and livelihoods in high risk municipalities | <b>2.1.1:</b> Number of people in target hotspots covered by operational landslide geo-early warning and alert arrangements.                                                                                                              | <b>Output 1.1:</b> Risk and vulnerability assessments conducted and updated                                                                                    | 1.2 No. of early warning systems (by scale) and no. of beneficiaries covered                                                                          | 600,000                   |
|                                                                                                                                                                                                         |                                                                                                                                                                                                                                           | <b>Output 1.2:</b><br>Targeted population groups covered by adequate risk reduction systems                                                                    | 1.2.1. Percentage of target population covered by adequate risk-reduction systems                                                                     | 600,000                   |
|                                                                                                                                                                                                         | <b>2.1.2:</b> Area of priority slopes, catchments, or protective green infrastructure under improved climate-resilient management for landslide risk reduction.                                                                           | <b>Output 4:</b><br>Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability | 4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale) | 3,070,000                 |
|                                                                                                                                                                                                         |                                                                                                                                                                                                                                           | <b>Output 5:</b><br>Vulnerable                                                                                                                                 | 5.1. No. of natural resource assets                                                                                                                   | 3,070,000                 |

|                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                          |                                                                                                                           |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------|
|                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                  | ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability | created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale) |           |
| <b>Outcome 3.1:</b> Sustainable financing, incentive schemes and adaptation investment pipelines secure long-term climate-informed landslide risk reduction and bankable projects developed | <b>3.1.1:</b> Amount of financing mobilized, committed, or advanced for long-term climate-informed landslide risk reduction through project-supported financing schemes or bankable project preparation.<br><br><b>3.1.2:</b> Number of project-supported landslide risk reduction investments that reach financing-ready stage and are submitted to, or taken forward by, public or external financing sources. | <b>Output 8:</b> Viable innovations are rolled out, scaled up, encouraged and/or accelerated.                            | 8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicated              | 2,016,461 |

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

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

### A. Record of endorsement on behalf of the government<sup>2</sup>

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:

|                                                                                                              |                                                |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| (Enter Name, Position, Ministry)<br>Srđan Amidić, Minister of Finance and Treasury<br>Bosnia and Herzegovina | Date: (Month, day, year)<br><br>March 24, 2026 |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|



LOE March 2026 CN  
stage.pdf

### 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 and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                                                                                                         |                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <i>Implementing Entity Coordinator Name and Signature:</i>                                                                                                                              |                                                                                  |
| Nancy Bennet<br>Director, Quality and Impact Hub and<br>Executive Coordinator, Vertical Funds<br>Bureau for Policy and Programme Support (BPPS)<br>United Nations Development Programme |                                                                                  |
| Date:                                                                                                                                                                                   | Tel. and email: <a href="mailto:Nancy.bennet@undp.org">Nancy.bennet@undp.org</a> |
| Project Contact Person: Natalia Olofinskaya                                                                                                                                             |                                                                                  |
| Tel. And Email: +905435323046, <a href="mailto:nataly.olofinskaya@undp.org">nataly.olofinskaya@undp.org</a>                                                                             |                                                                                  |



**BOSNIA AND HERZEGOVINA**  
MINISTRY OF FINANCE  
AND TREASURY

**Letter of Endorsement**

No. 01-02-2-1682-3/26  
Sarajevo, August 05, 2026

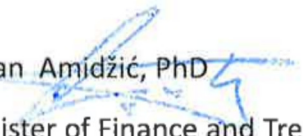
The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: Secretariat@Adaptation-Fund.org  
Fax: 202 522 3240/5

Subject: Endorsement for *Integrated Landslide Risk Reduction and Climate-Resilient Land Management in Bosnia and Herzegovina*

In my capacity as designated authority for the Adaptation Fund in Bosnia and Herzegovina, I confirm that the above project/programme proposal is in accordance with priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Bosnia and Herzegovina.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by the United Nations Development Programme.

Sincerely,

  
Srđan Amidžić, PhD  
Minister of Finance and Treasury  
Bosnia and Herzegovina



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

### Project Formulation Grant (PFG)

**Submission Date:**

**Adaptation Fund Project ID:**

**Country/ies:** Bosnia and Herzegovina

**Title of Project/Programme:** Integrated Landslide Risk Reduction and Climate-Resilient Land Management in Bosnia and Herzegovina

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

**Implementing Entity:** UNDP

**Executing Entity/ies:** UNDP

#### A. Project Preparation Timeframe

|                               |                |
|-------------------------------|----------------|
| <b>Start date of PFG</b>      | December 2026  |
| <b>Completion date of PFG</b> | September 2027 |

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

| <b>List of Proposed Project Preparation Activities</b>                                | <b>Output of the PFG Activities</b>                                                                                                                                                                    | <b>US\$ Amount</b> | <b>Budget note<sup>2</sup></b>                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Detailed hotspot prioritisation, hazard, exposure and pilot feasibility assessment | Refined technical basis for final pilot municipality and site selection, including updated hotspot screening, exposure overlays, prioritisation criteria, and shortlist of feasible intervention areas | 9,729              | GIS and hazard analysis to move from CN-level screening to final pilot selection and feasibility filtering. Includes GIS and landslide specialist input, desk review and spatial analysis, mapping and exposure overlays, field verification travel where needed, stakeholder consultations for pilot-area validation, and associated data processing and mapping costs. |

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

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

|                                                                                                     |                                                                                                                                                                                                                                                                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                     |                                                                                                                                                                                                                                                                                  |        | <p>Total amount of USD 9,729 includes cost coverage for: GIS / remote sensing / mapping specialist (15 days, USD 6,750);</p> <p>Portion for travel, workshops specialised outsourced support through companies in value of USD 2,979.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2. Refinement of landslide-relevant climate trigger analysis for national monitoring and EWS design | Expanded station-based analysis of rainfall extremes and threshold exceedances across representative hydro-climatic zones, with implications for regional trigger logic, pilot selection, and integration of landslide monitoring into the wider national flood EWS architecture | 7,479  | <p>Targeted climate work to strengthen the national-scale rationale for landslide monitoring and EWS design. Includes climate and hydrometeorological expert input, expanded station-based rainfall analysis, processing of historical and projected climate datasets, threshold and regime analysis, and technical consultations to translate findings into implications for national landslide monitoring and EWS design.</p> <p>Total amount of USD 7,479 includes cost coverage for:</p> <p>Climate / hydromet and thresholds specialist (10 days, USD 4,500);</p> <p>Portion for travel, workshops and specialised outsourced support through companies in value of USD 2,979.</p> |
| 3. Landslide geo-early warning system feasibility and technical design study                        | Detailed concept and technical architecture for the proposed geo-EWS pilots, including monitoring logic, rainfall and threshold integration, telemetry needs, institutional roles, warning chain, O&M requirements, and interoperability with CRFM-supported systems             | 11,979 | Specialist geotechnical, hydromet, and systems design input for EWS architecture and operational concept. Includes specialist input for geo-EWS design, hydrometeorological and geotechnical systems integration, review of telemetry and communications requirements, technical consultations with HMIs and                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                                 |                                                                                                                                                                                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                 |                                                                                                                                                                                       |        | <p>water agencies, and preparation of the concept architecture, monitoring logic, thresholds, and institutional warning chain.</p> <p>Total amount of USD 11,979 includes cost coverage for:</p> <p>Engineering geology / geotechnical design and landslide modelling specialist (18 days, USD 8,100);</p> <p>Portion for travel, workshops and specialised outsourced support through companies in value of USD 3,879.</p>                                                                                                                                                                                                                                                                                                                                   |
| 4. Site-specific geotechnical, hydrological and concept engineering studies for priority physical interventions | Concept-level designs and technical parameters for priority slope, drainage, torrent, and hybrid stabilisation measures in selected pilot sites, including preliminary costing inputs | 18,729 | <p>Desk-based and targeted field-based technical studies for concept-level design and costing of physical measures. Includes geotechnical and hydrological specialist input, targeted site visits and reconnaissance, field travel, review of existing site information, concept-level engineering analysis, preliminary sizing and costing inputs, and technical preparation of candidate drainage, slope, torrent, and hybrid stabilisation measures.</p> <p>Total amount of USD 18,729 includes cost coverage for:</p> <p>Geo-EWS, monitoring and interoperability specialist (20 days, USD 9,000);</p> <p>Hydrologist / hydraulic drainage / torrent specialist (15 days, USD 6,750);</p> <p>Portion for travel, workshops and specialised outsourced</p> |

|                                                                                              |                                                                                                                                                                                                                                         |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                              |                                                                                                                                                                                                                                         |        | support through companies at the value of USD 2,979.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 5. Nature-based solutions, forestry and catchment restoration assessment                     | Prioritised NbS package for selected hotspots, including protective forest functions, slope vegetation, terrace and grassland rehabilitation, drainage-connected green infrastructure, and biodiversity-compatible restoration measures | 11,079 | <p>Forestry, biodiversity, and catchment specialist support to define realistic site-specific NbS interventions. Includes forestry, biodiversity, and catchment specialist input, review of protective forest and slope-management options, field verification where required, consultations with local stakeholders and relevant institutions, and development of realistic site-specific NbS and catchment restoration packages.</p> <p>Total amount of USD 11,079 includes cost coverage for:</p> <p>Forestry / catchment restoration / biodiversity specialist (18 days, USD 8,100);</p> <p>Portion for travel, workshops and specialised outsourced support through companies in value of USD 2,979.</p> |
| 6. 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 | 9,729  | Safeguards specialist input 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, consultation costs, site screening travel where necessary, and development of management measures related to biodiversity, access restrictions, temporary                                                                                                                                                                                                                                              |

|                                                                         |                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                         |                                                                                                                                           |        | <p>disruption, and other relevant risks.</p> <p>Total amount of USD 9,729 includes cost coverage for:</p> <p>Environmental and Social Safeguards specialist (15 days, USD 6,750);</p> <p>Portion for travel, workshops and specialised outsourced support through companies in value of USD 2,979.</p>                                                                                                                                                                                                                                                                                                                    |
| 7. 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 | 7,479  | <p>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.</p> <p>Total amount of USD 7,479 includes cost coverage for:</p> <p>Gender and social inclusion specialist (10 days, USD 4,500);</p> <p>Portion for travel, workshops and specialised outsourced support through companies in value of USD 2,979.</p> |
| 8. Economic, financial and cost-effectiveness analysis, including       | Updated economic and financial analysis, refined cost-effectiveness assessment, incremental                                               | 11,979 | Economic and finance specialist support to strengthen AF socio-economic justification and intervention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                                                                                 |                                                                                                                                                                                                                        |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| financing mechanism refinement                                                  | cost reasoning, and feasible financing and incentive mechanism design for long-term landslide risk reduction                                                                                                           |       | <p>cost-benefit analysis. Includes economic and finance specialist input, updating of cost-effectiveness and avoided-loss analysis, review of financing and incentive options, consultation with relevant institutions, and refinement of affordability, sustainability, and investment pipeline assumptions for the full proposal.</p> <p>Total amount of USD 11,979 includes cost coverage for:</p> <p>Economist / financial mechanisms specialist (20 days, USD 9,000);</p> <p>Portion for travel, workshops and specialised outsourced support through companies in value of USD 2,979.</p>                                            |
| 9. Institutional, legal, spatial planning and implementation arrangements study | Detailed implementation architecture, executing arrangements, inter-entity coordination mechanism, institutional mandates for landslide risk management, O&M responsibilities, and implementation readiness assessment | 7,167 | <p>Institutional and legal analysis to convert the CN architecture into implementable full proposal arrangements. Includes institutional and legal specialist input, review of mandates and implementation roles, coordination and consultation meetings, analysis of inter-entity and inter-institutional arrangements, and preparation of implementation, governance, and O&amp;M architecture for the full proposal.</p> <p>Total amount of USD 7,167 includes cost coverage for:</p> <p>Institutional, legal and spatial planning specialist (10 days, USD 4,500);</p> <p>Portion for travel, workshops and specialised outsourced</p> |

|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | support through companies in value of USD 2,667.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 10. Technical Leadership and full proposal drafting                              | Integrated technical leadership, cross-stream coordination and quality assurance for full proposal development, including technical guidance, leadership and QA of technical assessments, consolidation of specialist inputs, refinement of project design, preparation of the overall implementation approach, stakeholder consultations, development of budget and resource plan, final technical shaping and authorship of a coherent Adaptation Fund full proposal package. | 38,400 | <p>Includes CTA input for overall technical leadership, coordination of specialist studies, quality control of all technical outputs, integration of climate, hazard, EWS, NbS, safeguards, financing and institutional workstreams, and preparation of the consolidated implementation logic, budget framework, resource plan, and final full proposal package.</p> <p>Total amount of USD 38,400 includes cost coverage for:</p> <p>International Consultant / CTA to lead and contribute to full proposal development at USD 800/day for 48 days, total USD 38,400.</p> |
| 11. Results framework, M&E, risk management and final proposal packaging support | 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.                                                                                                                                                                          | 4,500  | <p>Includes specialist support for development of the results framework, indicators, M&amp;E system, risk management matrix, implementation schedule, budget presentation, supporting resource planning, and editorial consolidation of the full proposal package.</p> <p>Total amount of USD 4,500 includes cost coverage for:</p> <p>M&amp;E and results framework specialist (5 days, USD 2,250);</p> <p>Technical proposal writing and editorial support (5 days, USD 2,250).</p>                                                                                      |
| Implementing Entity's Management Fee 8.5%                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 11,751 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                        |  |                |  |
|----------------------------------------|--|----------------|--|
| <b>Total Project Formulation Grant</b> |  | <b>150,000</b> |  |
|----------------------------------------|--|----------------|--|

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

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, physical and hybrid slope measures, nature-based and catchment interventions, safeguards-sensitive site selection, and cross-entity implementation arrangements.

### **1. Detailed hotspot prioritisation, hazard, exposure and pilot feasibility assessment**

This activity is required to move from the national and municipal-scale hotspot screening presented in the Concept Note to final selection of pilot municipalities and intervention sites for the full proposal. The Concept Note is supported by an existing national susceptibility base and preliminary exposure screening, but full proposal development requires further refinement of hotspot prioritisation, feasibility filtering, and site selection using more detailed overlays of hazard, exposure, infrastructure, service access, and implementation readiness. This work is needed to ensure that the final proposal is based on technically defensible and operationally feasible pilot locations. The amount requested is justified because this activity requires specialist GIS, hazard, and exposure analysis, associated data processing and mapping support, and targeted consultations and verification to confirm the final shortlist of pilot areas.

### **2. Refinement of landslide-relevant climate trigger analysis for national monitoring and EWS design**

This activity is needed to strengthen the climate basis for national-scale landslide monitoring and geo-early warning system design. The Concept Note already includes a robust climate rationale, but the supplementary trigger analysis remains limited in station coverage and relies on proxy threshold approaches. Full proposal development therefore requires further analysis of rainfall extremes, threshold exceedances, and representative hydro-climatic conditions across Bosnia and Herzegovina in order to strengthen the national relevance of the proposed landslide monitoring and warning architecture. This activity will help define the climatic basis for monitoring logic, trigger interpretation, and alignment with the wider flood early warning architecture. The amount requested is justified because this work requires specialist climate and hydrometeorological input, processing of rainfall and projection datasets, and translation of results into practical design implications for landslide monitoring and EWS.

### **3. Detailed landslide geo-early warning system feasibility, monitoring architecture and interoperability design**

This activity is needed because the Concept Note currently proposes establishment of geo-early warning systems in three priority areas, but full proposal development requires a more detailed technical design of how these systems will function. This includes definition of monitoring architecture, geotechnical and rainfall inputs, instrumentation logic, telemetry and communication requirements, threshold interpretation, institutional responsibilities, operational warning chain, and interoperability with existing and planned CRFM-supported systems. This activity will also explore options for scaling landslide monitoring and warning beyond the pilot areas, including the use of remote sensing and other approaches that could strengthen national monitoring coverage. The activity is also needed to confirm the practical relationship between hydrometeorological services, water agencies, and local and civil protection actors in the warning chain. The amount requested is justified because this is a specialist systems-design task requiring multidisciplinary technical input and coordination across institutions.

#### **4. Site-specific geotechnical, hydrological, hydraulic/drainage and concept engineering studies for priority physical interventions**

This activity is needed because the full proposal will include physical and hybrid interventions such as drainage improvements, torrent and hillside canal rehabilitation, slope stabilisation, and related risk-reduction works. The Concept Note identifies the need for such interventions, but they cannot be credibly included in a full proposal without concept-level technical studies that define the nature of the problem, indicative design parameters, likely costs, and feasibility of intervention. This activity will therefore provide the concept engineering basis for selected pilot investments. The amount requested is justified because this work requires specialised geotechnical, hydrological, and hydraulic input, targeted site visits and reconnaissance, review of available technical information, and preparation of concept-level design and costing assumptions.

#### **5. Nature-based solutions, forestry, protective green infrastructure and catchment restoration assessment**

This activity is needed to convert the Concept Note's NbS and ecosystem-based adaptation logic into a realistic package of interventions for full proposal development. The Concept Note establishes the importance of protective forests, catchment management, vegetative slope reinforcement, terraces, grasslands, and other natural stabilising systems, but more detailed work is required to determine where such measures are feasible, how they relate to specific hotspots, and how they can be integrated with drainage and slope management interventions. This activity will also ensure that the NbS package is compatible with biodiversity objectives and practical land management conditions. The amount requested is justified because this work requires specialist forestry, biodiversity, and catchment restoration expertise, review of available site information, and targeted consultations and verification.

#### **6. Environmental and social safeguards package, including screening and management framework**

This activity is needed because the proposed project includes site-based interventions, pilot monitoring systems, and possible small-scale physical works that will require safeguards screening and management measures at full proposal stage. While the Concept Note includes an initial safeguards narrative, a full proposal will require more detailed screening, definition of site eligibility and exclusion criteria, treatment of temporary access and disturbance issues, biodiversity considerations, consultation arrangements, and grievance provisions consistent with Adaptation Fund and UNDP requirements. This activity will include the development of an ESMF for the overall project. The amount requested is justified because safeguards preparation requires specialist input, targeted consultations, review of likely site-specific risk pathways, and development of appropriate management instruments or framework provisions.

#### **7. Gender, social inclusion and local stakeholder engagement assessment**

This activity is needed to ensure that the full proposal is based on a stronger understanding of differentiated vulnerability, access constraints, gendered impacts, and the needs of socially vulnerable groups in the target areas. The Concept Note already applies a LNOB framing and identifies key vulnerable groups, but full proposal development requires a more detailed gender analysis, social inclusion assessment, stakeholder engagement approach, and preparation of related plan elements such as a Gender Action Plan. The amount requested is justified because this work requires specialist gender and social expertise together with targeted consultations and analysis of how project design can best address vulnerable communities and groups.

#### **8. Economic, financial and cost-effectiveness analysis, including financing mechanism refinement**

This activity is needed to strengthen the economic and financial foundations of the full proposal. The Concept Note includes preliminary quantified evidence on exposure, avoided losses, and the cost-effectiveness of preventive adaptation, but these estimates need to be refined and translated into a more robust proposal-level economic and financial justification. In addition, the project includes a financing and

incentive component that requires further assessment of feasible financing options, affordability, implementation implications, and long-term sustainability. The amount requested is justified because this work requires specialist economic and financial analysis, consultation with relevant institutions, and refinement of assumptions for the final proposal.

**9. Institutional, legal, spatial planning and implementation arrangements study**

This activity is needed because the proposed project will operate across a complex governance environment involving multiple institutions, entities, sectors, and local authorities. The Concept Note has identified major institutional barriers and baseline arrangements, but full proposal development requires a more detailed implementation architecture covering executing arrangements, institutional roles, spatial planning integration, legal and regulatory considerations, inter-entity coordination, and long-term institutional arrangements for landslide risk management, including operation and maintenance responsibilities. This activity is necessary to ensure that the final proposal is institutionally credible and implementable. The amount requested is justified because this work requires specialist institutional, legal, and planning analysis, together with consultation across the relevant institutions and authorities.

**10. Technical leadership, project budgeting, resource planning and full proposal preparation**

This activity is needed to ensure that the full proposal is developed as a coherent technical package rather than as a collection of separate studies. The project combines climate analysis, hazard and exposure work, landslide monitoring and geo-EWS design, physical and hybrid interventions, nature-based solutions, financing mechanisms, safeguards, and institutional reform. Strong technical leadership is therefore required to guide and integrate all specialist workstreams, ensure consistency of design assumptions, lead technical consultation and review processes, prepare the consolidated budget and resource plan, and shape the final proposal into a technically credible whole. The amount requested is justified because this work requires sustained CTA input across the entire proposal development process, including technical review, coordination, integration, and final preparation of the full proposal package.

**11. Results framework, M&E, implementation planning and final proposal packaging**

This activity is needed to convert the final technical design into a complete Adaptation Fund full proposal package. 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 CTA-led technical leadership and is required to ensure that the proposal is internally consistent, properly structured, and submission-ready. 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<br>Coordinator, IE Name | Signature | Date<br>(Month,<br>day, year) | Project<br>Contact<br>Person | Telephone | Email<br>Address |
|---------------------------------------------|-----------|-------------------------------|------------------------------|-----------|------------------|

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| <p>Nancy Bennet,<br/>Director, Quality and<br/>Impact Hub<br/>Executive Coordinator,<br/>Vertical Funds,<br/>Bureau for Policy and<br/>Programme Support<br/>United Nations<br/>Development<br/>Programme</p> | <p>DocuSigned by:<br/><i>Nancy Bennet</i><br/>4EEADA5A5FE9433...</p> | <p>12-Aug-2026</p> | <p>Natalia<br/>Olofinskaya,<br/>Regional<br/>Technical<br/>Advisor</p> | <p>+905435323046</p> | <p><a href="mailto:Nataly.olofinskaya@undp.org">Nataly.olofinskaya@undp.org</a></p> |
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## Initial Consultation Report

The Concept Note was prepared by UNDP at the request of the relevant authorities in Bosnia and Herzegovina responsible for forest and water management and civil protection, triggered by the recent and continuously increasing occurrence of natural disasters, particularly landslides, which are not being systematically addressed and are expected to increasingly impact people, infrastructure, ecosystems, and the economy under climate change. Given the country's complex governance structure, involving multiple levels of government and institutions, as well as the lack of a comprehensive regulatory framework and technical capacities to address landslide risks, UNDP was approached to provide support in developing an integrated and coordinated response.

Between December 2025 and April 2026, consultative meetings were held with stakeholders from the state, entity, cantonal, and local levels, including state-level ministries (Ministry of Foreign Trade and Economic Relations and Ministry of Finance and Treasury), relevant entity institutions and ministries responsible for water and forest management, environment and spatial planning, civil protection authorities, hydrometeorological institutes, and geological institutes. Consultations also involved academia (faculties of forestry, civil engineering, and natural sciences), representatives of the most affected local communities (including Tuzla, Foča, Herzegovina-Neretva Canton, and Sarajevo Canton), as well as representatives of ongoing development projects and civil society organizations. The project concept and proposed activities were discussed and refined through these consultations.

The consultations validated the need for the establishment of a comprehensive and unified landslide risk management system, alongside the implementation of risk reduction measures at the local level linked to the ongoing National Adaptation Plan (NAP) process and broader disaster risk reduction priorities.

Stakeholders highlighted significant institutional, technical, and financial gaps related to landslide monitoring, prevention, and response across Bosnia and Herzegovina. Representatives of civil protection and spatial planning institutions emphasized the absence of harmonized methodologies for landslide risk mapping and the insufficient integration of climate risk considerations into spatial and urban planning processes. Water management and civil protection authorities stressed that increasingly frequent extreme rainfall events are triggering slope instability, erosion, flash floods, and severe damage to critical infrastructure, particularly in vulnerable mountainous and peri-urban areas. Stakeholders also noted that existing landslide inventories are fragmented, incomplete, and often outdated, while municipalities frequently lack the technical expertise and financial resources necessary to implement preventive measures or monitor unstable slopes.

Academic institutions and hydrometeorological services identified the absence of an integrated system for landslide monitoring, early warning, and data sharing as a critical gap and recommended strengthening coordination and information exchange among institutions across all administrative levels. Forestry, environment, and spatial planning authorities further highlighted the role of deforestation, forest degradation, illegal construction, and unsustainable land use practices in increasing slope instability and erosion risks, emphasizing the importance of ecosystem-based approaches, sustainable watershed management, and improved enforcement of spatial planning regulations.

Local governments and civil society organizations advocated for community-based and nature-based solutions for landslide risk reduction. Stakeholders also emphasized the importance of raising public awareness, strengthening institutional and local capacities, and implementing pilot

interventions in highly vulnerable municipalities in order to demonstrate scalable, sustainable, and cost-effective landslide risk reduction measures.

During the implementation, UNDP will make the results of the environmental and social screening and any draft environmental and social assessments (if required), including any proposed management plan, available for timely, effective, and inclusive public consultations in a locally appropriate manner in the potentially affected communities in accordance with the UNDP Social and Environmental Standards and the Adaptation Fund Environmental and Social Policy.

## Initial Gender Assessment

The proposed project will generate significant economic, social, and environmental benefits by reducing the drivers and consequences of climate-amplified landslide risk in the municipalities and corridors most exposed to recurrent slope instability in Bosnia and Herzegovina. The evidence assembled for this Concept Note shows that landslide exposure is concentrated both in densely populated urban and peri-urban municipalities such as **Banja Luka, Sarajevo, Zenica, Tuzla, and Mostar**, and in infrastructure-critical municipalities such as **Foča, Gacko, Goražde, Konjic, Kalesija, Sapna, Lopare, Tešanj, Srebrenik, and Kakanj**, where road disruption can isolate settlements and interrupt access to services. The national screening further shows that around **925 km** of classified roads, approximately **10%** of the total, pass through high to critical landslide susceptibility terrain, including about **123 km** in very high or critical zones. These patterns indicate that the project's benefits will extend beyond slope protection alone to include protection of access, service continuity, local livelihoods, and municipal functionality in the most exposed areas.

Economically, the project will help reduce recurrent losses associated with damage to housing, local infrastructure, roads, productive land, and public facilities, as well as the repeated emergency and rehabilitation costs that follow major rainfall events. Based on proposed project intervention assumptions, the indicative avoided direct losses are estimated at USD 539.13 million in Banja Luka, USD 10.59 million in Foča, and USD 11.92 million in Tuzla, for a combined avoided direct loss of about USD 561.64 million. (please see section C below). The climate analysis shows that landslide-trigger conditions are intensifying through stronger daily and multi-day rainfall, longer wet spells, and more frequent threshold exceedances in key hotspot municipalities. By strengthening governance, improving data systems, establishing geo-early warning, implementing nature-based and hybrid slope and drainage measures, and preparing bankable follow-on investments, the project will support a shift from reactive spending toward more cost-effective prevention. Expected benefits include avoided asset damage, reduced access disruption, lower emergency and recovery costs, and improved readiness for larger-scale resilience investment. The preliminary economic analysis indicates that preventive adaptation is economically justified and that the value of avoided losses and avoided disruption is likely to exceed intervention costs by a substantial margin, even before wider social and environmental co-benefits are counted.

Socially, the project will improve safety, preparedness, and continuity of access to essential services for communities exposed to landslide impacts. This is especially important in municipalities where landslide-prone roads provide the main access to schools, health care, markets, and administrative centres. Planned investments in hotspot identification, monitoring, warning, community awareness, local capacity-building, and slope and drainage management will reduce disruption and improve resilience for households living in unstable terrain and for settlements vulnerable to temporary or prolonged isolation. The project will also generate social benefits through more accessible landslide information, improved municipal planning, stronger institutional coordination, and more predictable local preparedness arrangements.

The project will place particular emphasis on vulnerable communities and groups within affected municipalities. Current evidence already indicates the need to focus on households living on highly susceptible slopes and in poorly serviced settlements, communities dependent on a single exposed road connection, and populations whose access to health care, education, and emergency support can be easily disrupted by landslide events. In line with the Leave No One Behind principle, the project will seek to ensure that **women, women-headed households, older persons, persons with disabilities, low-income households, isolated rural populations, and other socially vulnerable groups** are explicitly considered in the design of warning systems, awareness activities, local preparedness measures, and pilot investments. More specific social targeting will be refined during full proposal development and early implementation as additional

vulnerability data become available.

Gender considerations will be integrated throughout project design and implementation in line with the Adaptation Fund Gender Policy. Landslide risk and disaster disruption are not gender-neutral, as women and men may experience different patterns of exposure, access to information, mobility constraints, care responsibilities, and participation in local decision-making. The project will therefore aim to ensure that women are meaningfully represented in consultations, awareness and preparedness activities, and local planning processes; that warning communication is accessible to both women and men; and that project-supported capacity development takes account of different needs and constraints. Gender-responsive indicators and targeting approaches will be further developed at full proposal stage.

Environmentally, the project will generate benefits through improved catchment and slope management, reduced erosion and sediment mobilisation, restoration of vegetative cover, and better regulation of runoff and infiltration in landslide-prone areas. The planned nature-based and ecosystem-based measures, including slope revegetation, runoff regulation, riparian and wetland restoration, rehabilitation of terrace agriculture and grasslands, and improved drainage management, are expected to improve slope stability and strengthen watershed resilience under changing rainfall conditions. These measures will also provide adaptation co-benefits by improving ecosystem function, reducing runoff concentration, and supporting more resilient land and water management in vulnerable catchments. Forests and green infrastructure are public safety assets with benefits beyond environmental co-benefits. The project forestry interventions will improve slope stability, reduce erosion and runoff, strengthen protective forest functions, and generate biodiversity-positive resilience benefits, especially in Foča and urban/peri-urban hotspots such as Tuzla and Banja Luka.

The project is designed to avoid or mitigate negative environmental and social impacts in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund, as well as UNDP social and environmental standards. Most project activities are expected to be low to moderate risk and focused on policy strengthening, data systems, capacity-building, monitoring, early warning, and small-scale non-structural or nature-based measures. Where pilot physical interventions are undertaken, they will be selected and designed to avoid, reduce or mitigate adverse impacts on natural habitats, watercourses, land tenure, livelihoods, and community access. Site-specific environmental and social screening will be carried out before implementation of physical works, and mitigation measures will be incorporated where required. Particular attention will be given to avoiding involuntary resettlement, restricting access to resources without due process, and causing unintended destabilisation through poorly designed drainage or earthworks. Small-scale engineering and drainage works will therefore be designed using appropriate geotechnical and environmental criteria and, where relevant, combined with vegetative and ecosystem-based approaches.

The project will also seek to avoid social exclusion by ensuring that consultation, awareness, training, and local engagement processes are inclusive and accessible. This will include attention to gender balance, participation of vulnerable groups, accessibility of information, and transparency in the selection of pilot locations and local measures. In this way, the project will combine immediate climate adaptation benefits with progressive strengthening of the safeguards, inclusion mechanisms, and institutional practices needed for longer-term landslide resilience programming in Bosnia and Herzegovina.

The project will also comply with the **UNDP Gender Equality Strategy 2026–2029** and the **Gender Policy of the Adaptation Fund** and Action Plan by integrating gender considerations into consultation, targeting, training, warning-system design, and local preparedness activities. With these policy documents, both UNDP and AF aim to mainstream equal access and strengthen

resilience for both women and men. In practical terms, the project will ensure that women are meaningfully included in stakeholder engagement and local decision-making, that communication and awareness materials are accessible to different user groups, and that vulnerable populations, including women-headed households, older persons, persons with disabilities, and isolated communities, are considered in risk reduction and warning arrangements. A more detailed gender and social inclusion analysis will be incorporated at full proposal stage and reflected in the project results framework and social and environmental safeguards procedures.

Overall, the project's compliance approach will therefore combine:

- (1) adherence to the applicable **jurisdiction-specific technical and legal standards** in Bosnia and Herzegovina;
- (2) **site-specific environmental and social screening and management** for physical measures; and
- (3) full conformity with the **Environmental and Social Policy and Gender Policy of the Adaptation Fund** and **UNDP Social and Environmental Standards and Gender Equality Strategy**. This approach is appropriate to the project's mix of policy, data, capacity-building, early warning, and targeted pilot interventions, and will be elaborated further in the full proposal.