



ADAPTATION FUND

AFB/PPRC.38/44
20-21 October 2026

Adaptation Fund Board
Project and Programme Review Committee
Thirty-eight Meeting
Bonn, Germany

Agenda Item 9 c)

PROPOSAL FOR LARGE INNOVATION PROJECT FOR BHUTAN

Background

1. At its thirtieth meeting, having considered document AFB/B.30/5/Rev.1, the Adaptation Fund Board (the Board) decided:

(a) To adopt the medium-term strategy as amended by the Board, as contained in the Annex 1 of the document AFB/B.30/5/Rev.1 (the MTS); and

(b) To request the secretariat:

(i) To broadly disseminate the MTS and work with key stakeholders to build understanding and support;

(ii) To prepare, under the supervision of the MTS task force, a draft implementation plan for operationalizing the MTS, containing a draft budget and addressing key assumptions and risks, including but not limited to funding and political risks, for consideration by the Board at its thirty-first meeting; and

(iii) To draft, as part of the implementation plan, the updates/modifications to the operational policies and guidelines of the Adaptation Fund needed to facilitate implementation of the MTS, for consideration by the Board at its thirty-first meeting.

(Decision B.30/42)

2. Pursuant to decision B.30/42, subparagraph (b) (ii), the secretariat prepared a draft implementation plan for the MTS, including an assessment of assumptions and risks. The secretariat shared a version of the draft with the MTS task force for comments.

3. The draft implementation plan also contains suggestions for specific funding windows that might be opened under the MTS in complement of the Fund's existing funding windows for single-country and regional adaptation projects and readiness support projects. Following the approval of the implementation plan, the secretariat would present specific proposed details for each new funding window at subsequent meetings of the Board for its consideration, in accordance with the timeline contained in the implementation plan.

4. At its thirty-first meeting, the Board discussed the draft implementation plan for the MTS, and members of the Board proposed amendments to the document. The secretariat then presented a revised draft, in document AFB/B.31/5/Rev.1. Having considered that document, the Board decided:

(a) To approve the implementation plan for the medium-term strategy for the Fund for 2018–2022 contained in the Annex I to document AFB/B.31/5/Rev.1 (the plan);

(b) To request the secretariat:

[...]

- (iii) *To prepare, for each proposed new type of grant and funding window, a specific document containing objectives, review criteria, expected grant sizes, implementation modalities, review process and other relevant features and submit it to the Board for its consideration in accordance with the tentative timeline contained in Annex I to document AFB/B.31/5/Rev.1, with input from the Board's committees;*
- (iv) *Following consideration of the new types of support mentioned in subparagraph (b)(iii), to propose, as necessary, amendments to the Fund's operational policies and guidelines Fund to better facilitate the implementation of such new types of support; and*

[...]

(Decision B.31/32)

5. At the second session of its thirty-fifth meeting, the Board considered document AFB/PPRC.26.b/16, Program on Innovation: Large Grants for Innovation, and the Board decided:

- (a) *To approve the process for providing funding for innovation through large grants to Implementing Entities (IEs) as described in document AFB/PPRC.26.b/16; including the proposed objectives, review criteria, expected grant sizes, implementation modalities, review process and other relevant features as described in the document;*
- (b) *That the large grants for innovation would fall outside the country cap approved by the Board in decision B.13/23 or, in the case of regional or multi-regional proposals, the regional provision, whereas they would count against the Multilateral Implementing Entity cap as per decision B.12/9;*
- (c) *To request the secretariat to prepare the first Request for Proposals to IEs for a total amount of US \$30 million to be launched by the first quarter of calendar year of 2021; and*
- (d) *To request the secretariat to consider the need to develop specific objectives and indicators for the innovation aspects of the projects, beyond what is included in the regular project performance reporting process and make relevant recommendations to the Board at its thirty-seventh meeting.*

(Decision B.35.b/8)

6. At its thirty-sixth meeting, the Board considered the document AFB/PPRC.27/28, Programme on Innovation: Operationalization of Large Grants for Innovation, and the Board decided:

- (a) *To approve the Innovation Large Grant Project Proposal template, the Review Criteria template and the Instructions for Preparing a Proposal for Innovation Large Grants, as described in annexes II, III and IV to document AFB/PPRC.27/28;*
- (b) *To launch the request for proposals so that submissions of Innovation Large Grants proposals are invited to be considered as early as the thirty-seventh meeting of the Board.*

(Decision B.36/24)

7. Subsequently, the first call for project and programme proposals under the indicative set-aside amount of US\$ 30 million was issued to eligible Parties to submit large innovation project and programme proposals to the Fund through accredited NIEs, RIEs and MIEs.

8. At its thirty-ninth meeting in October 2022, the Board discussed and adopted the “Medium-term strategy of the Fund for the period 2023–2027” (Decision B.39/61). At the subsequent meeting, the Board adopted, via Decision B.40/72, the *Implementation Plan for Medium-Term Strategy of the Fund for the Period 2023-2027* (document AFB/B.40/.5/Rev.1). Together, these documents include plans for the continuation and expansion of the innovation pillar that was launched and developed during the MTS 2018 to 2022 period.

9. The following concept note proposal document titled “Climate-Resilient Wildfire Prevention and Adaptive Landscape Management in Bhutan” was submitted for Bhutan by United Nations Development Programme (UNDP), which is a Multilateral Implementing Entity of the Adaptation Fund.

10. This is the third submission of the concept-note project proposal, using the two-step submission process.

11. The current submission was received by the secretariat in time to be considered in the forty-seventh Board meeting. The secretariat carried out a review of the project proposal, assigned it the Project ID number AF00000554, and completed a review sheet.

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

13. The secretariat is submitting to the PPRC the summary and, pursuant to decision B.17/15, the final technical review of the project, both prepared by the secretariat, along with the final submission of the proposal in the following section. In accordance with decision B.25/15, the proposal is submitted with changes between the initial submission and the revised version highlighted or with track changes.



ADAPTATION FUND

ADAPTATION FUND BOARD SECRETARIAT
TECHNICAL REVIEW OF PROJECT PROPOSAL FOR
"CLIMATE-RESILIENT WILDFIRE PREVENTION AND ADAPTIVE LANDSCAPE
MANAGEMENT IN BHUTAN"

Project Title Climate-Resilient Wildfire Prevention and Adaptive Landscape Management in Bhutan

Project ID AF00000554

Category Innovation large project

Type Single country project

Stage Concept

Country Bhutan

Implementing Entity UNDP

Financing Requested USD 5,000,000.00

Reviewer Naoki Uozawa

Co-reviewer(s)

IE Contact Person

Aishath Azza, Missale Woldegiorgis, Nancy Bennet, Radhika Dave, Robin Merlier, Siriboon Ketphichai, Wirunpat Meebungprav

Secretariat's Overall Comment

A project formulation grant (PFG) of US \$150,000 has been requested.

The initial technical review raised some areas for improvement, such as Theory of Change, Innovation narrative, ESP screening, full cost of adaptation reasoning, and Executing Entities arrangement as is discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review.

The second technical review raised some areas for improvement, such as clarification of Unidentified Sub-Projects, IE's direct project support, and PFG request format, as is discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review. Please also address the discrepancies between the component names and total amounts in the project document and in the technical summary of the Online submission system. These need to be consistent.

The third and final review finds the pending CRs and CARs to be adequately addressed.

Country Eligibility

Is/are the beneficiary country/countries a developing country/countries Party/Parties to the Kyoto Protocol?

Response: Yes

Secretariat: Bhutan is a developing country Party to both the Paris Agreement and Kyoto Protocol. It ratified the Paris Agreement on 19 September 2017 and the Kyoto Protocol on 26 August 2002

Is the participating country / are all participating countries developing countries particularly vulnerable to the adverse effects of climate change?

Response: Yes

Secretariat: Yes (Page 3-7)

Bhutan's economy and rural livelihoods depend heavily on climate-sensitive forests and watersheds that support hydropower, agriculture and water security, while rising temperatures, changing rainfall patterns and longer dry

periods are increasing forest drying and wildfire risk.

Project Eligibility

Has the designated government authority for the Adaptation Fund / Have the governments' designated authorities for the Adaptation Fund endorsed the project?

Response: Yes

Secretariat: As per the Endorsement letter dated June 23, 2026

Does the project/programme support concrete adaptation actions to assist the country or countries in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience? In case of regional project/programme, is there added value using the regional approach, compared to implementing similar activities in each country individually?

Response: Not Cleared

Secretariat: Please number and title all tables and diagrams consistently throughout the documents.

The proposal is structured three components: Component 1 develops climate-risk intelligence, decision-support and governance systems; Component 2 implements landscape-level prevention and early-intervention measures; and Component 3 strengthens community stewardship, incentives and pathways for institutionalization and scale-up.

CR1: The concept note currently appears to present Components 1 and 2 as a largely linear sequence, with Component 1 generating risk information and Component 2 applying it in the field. However, implementation may benefit from a more iterative approach, whereby field assessments, intervention results and monitoring findings inform the refinement of risk models, alert thresholds and future priorities. Please consider reflecting these feedback loops in the Theory of Change and work plan, and clarify whether the components will be implemented sequentially or in parallel through phased testing and refinement.

CR2: The Theory of Change diagram (p.15) appears to present a results hierarchy—linking the project objective, outcomes, components and outputs—rather than a Theory of Change. A Theory of Change should also explain the causal and temporal pathways through which one change is expected to lead to another, together with the key assumptions underlying those links. Please consider adding these causal pathways, feedback loops and assumptions to the diagram.

CR3: The project activities identify several stakeholders but do not clearly designate the lead institution accountable for delivering each activity and achieving the intended results. Please clarify the broad division of responsibilities among the institutions involved.

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CR1: Cleared (pp.12-14)

The revised concept note clarifies the parallel and iterative implementation of the three components and reflects the feedback loops in the Theory of Change (pp. 12–14).

At the fully developed proposal stage, please provide a detailed implementation plan showing how these feedback loops will operate across the three components over time.

CR2: Cleared (pp.12-15).

The revised Theory of Change more clearly articulates the causal pathways and key assumptions through the narrative and Project Logic table, and these elements are also reflected in the revised Theory of Change diagram.

CR3: Cleared (pp. 18–27, 44–46).

The revised concept note clarifies MoENR (DoFPS) as the lead institution for project execution and identifies the lead and supporting institutions for individual activities.

Does the project/programme help spread innovative adaptation practices, tools and technologies that have demonstrated success in one country to another country, countries or regions; and/or Does the project/programme pilot at larger scale innovative adaptation practices, tools or technologies generated that have demonstrated viability at a small scale?

Response: Not Cleared

Secretariat: CR4: The concept note assigns individual innovation areas to each component. While this provides some traceability, it risks fragmenting the innovation narrative and understating the innovativeness of the project as a whole. The proposal would be strengthened by articulating innovation primarily at the project level, clearly distinguishing the integrated model from the existing baseline and specifying the hypotheses to be tested. Component descriptions could then briefly explain their functional contribution to the integrated innovation model, rather than restating separate innovation labels.

CR5: Several proposed elements—such as Fire Weather Index methodologies, predictive risk systems, prescribed burning, fire-smart landscape management and performance-based community incentives—build on approaches applied elsewhere, while others may represent new adaptations or integration within Bhutan. Please clarify which elements are established approaches, which are being adapted or integrated in a new way, and which are genuinely novel in the Bhutanese context. Please also describe the evidence base, readiness level, key uncertainties and assumptions associated with each major innovative element.

CR6: The proposed “No Fire – Credits to the Community” mechanism is innovative in linking verified wildfire-prevention outcomes with community incentives and climate-resilient livelihood benefits, thereby rewarding prevention rather than response. However, the concept note does not yet clarify what a “credit” would represent—for example, a cash payment, grant, voucher, points-based entitlement, in-kind livelihood support or capital contribution to a community enterprise—or how funds would flow. Please clarify the possible forms of the credit, eligible recipients, and payout rules. Please also explain how potential perverse incentives—such as under-reporting fires, rewarding areas with inherently lower fire risk, or penalizing communities for fires beyond their control—would be prevented. If the final design cannot yet be determined at the concept stage, please outline the main options under consideration. These elements should be fully specified at the fully developed

proposal stage.

CR7: The concept note states that lessons from the InAF-Bhutan project directly inform the design of the “No Fire – Credits to the Community” mechanism (page 36). Please provide more information on the specific lessons learned, and explain how these lessons will be incorporated into the design and implementation of the proposed mechanism.

Response: Not Cleared

IE:

Response: Not Cleared

Secretariat: CR4: Cleared (p. 27).

The revised Innovation Rationale clearly presents the project-level innovation as an integrated prevention-oriented model centered on the No Fire – Credits to the Community mechanism and supported by climate-risk intelligence, fire-smart landscape management, adaptive governance and community incentives.

CR5: Cleared (pp.28-20)

The revised Innovation Rationale and Table 4 clearly distinguish between internationally established approaches, approaches adapted or integrated for Bhutan, and elements that are novel in the Bhutanese context.

CR6: Cleared at the concept stage (pp. 23-25 and 28)

The revised concept note provides at this stage on the possible forms of the credits and eligible recipients, and acknowledges the importance of verification, benefit-sharing arrangements and safeguards against perverse incentives. It also clarifies that credits would be earned collectively by eligible CFFMGs and redeemed for community adaptation investments rather than individual cash payments. The detailed design of these elements will be further developed during the PFG phase.

At the fully developed proposal stage, please fully specify the operational design of the mechanism, including the form and value of credits, eligibility and performance criteria, fund-flow and redemption arrangements, verification procedures, benefit-sharing arrangements, and safeguards against perverse incentives.

CR7: Further clarification is needed.

The revised concept note clarifies that the InAF-Bhutan project has only recently entered implementation and that emerging lessons on community engagement, verification and benefit-sharing will be reviewed during the full formulation phase and incorporated into the detailed design of the No Fire – Credits to the Community mechanism, where relevant (Table 10)

Please indicate when the InAF-Bhutan project started implementation and its expected implementation period, to provide context on the extent to which relevant implementation experience may be available during the PFG phase.

At the fully developed proposal stage, please provide an update on relevant implementation lessons emerging from InAF-Bhutan and explain how these have informed the design of the proposed mechanism.

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CR7: Cleared (p. 34). Table 10 now confirms that InAF-Bhutan commenced implementation on 4 March 2026 and is expected to run until 4 September 2031. It also explains that emerging lessons will be reviewed during the anticipated 2027–2028 PFG phase and incorporated into the detailed design, where relevant.

Recommendation for the fully developed proposal: Provide an update on relevant lessons from InAF-Bhutan and explain how they have informed the proposed mechanism, particularly regarding community engagement, verification, benefit-sharing and performance-based adaptation financing.

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: Not Cleared

Secretariat: The proposal classifies the entire population of the 11 gewogs and two urban–wildland interfaces 170,373 people as direct beneficiaries, while the principal on-the-ground interventions comprise approximately 400 ha of forest treatments, 15 reservoirs, 50 high-value assets and five CFFMGs participating in the incentive mechanism. The proposal also adds institutional participants to the total without clarifying whether they are already included in the geographic population estimates (pp. 29–30).

CR8: Please revise and substantiate the direct and indirect beneficiary estimates, using the Fund’s applicable methodologies. Distinguish people directly receiving services, incentives, livelihood support or demonstrable risk reduction from the wider population potentially covered by information or governance systems; avoid double counting institutional beneficiaries; and clarify how the 143,000 ha reported as benefiting relates to the 400 ha directly treated. Please also reconcile the proposed involvement of approximately 40 Community Forest Groups with the targets of 12 CFFMGs and only five CFFMGs participating in the credits mechanism.

The proposal identifies relevant benefits but several remain expressed as generalized risk reduction rather than measurable outcomes. For example, reduced exposure across 143,000 ha and protection of hydropower, tourism and cultural assets are not supported by baselines or defined methodologies (pp. 29–31).

CR9: Please refine the expected benefits using realistic baselines and measurable targets, including anticipated changes in wildfire exposure, fire intensity or affected area; ecosystem and watershed condition; livelihood resilience; community preparedness; and protection of identified assets. Please distinguish adaptation benefits from environmental, mitigation and development co-benefits.

Response: Not Cleared

IE:

Response: Not Cleared

Secretariat: CR8: Further clarification is needed.

The revised concept note clarifies the distinction between direct beneficiaries receiving targeted project support and indirect beneficiaries benefiting from broader project interventions (pp. 30-33).

However, there appears to be an inconsistency in the description of the community groups. The proposal states that the project will target 12 of the 40 Community Forest Groups (p. 9), while it states that approximately 40 CFFMGs exist within the project landscapes (p. 27). Given that the acronym list distinguishes CFMGs (Community Forest Management Groups) from CFFMGs (Community-based Forest Fire Management Groups), please reconcile these references and clarify the relationship between these groups and the 12 CFFMGs to be directly supported by the project.

CR9: Further clarification is needed.

The revised concept note more clearly distinguishes the project's primary adaptation benefits from broader co-benefits and provides indicative methodologies and data sources (Section II.D and Table 5). However, the baselines and measurable outcome targets for key adaptation benefits are yet to be established and are expected to be developed during the PFG phase. Please reflect this work explicitly in the PFG Template/ budget notes.

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CR8: Cleared (pp. 9, 20 and 26–27). The revised concept note now clarifies that approximately 40 CFMGs operate within the project landscapes, that 12 existing CFMGs will receive direct support, and that CFFMGs are operational subgroups rather than a separate beneficiary category.

Recommendation for the fully developed proposal: Apply the official term “Community Forest Management Groups (CFMGs)” consistently. Several references still use “Community-based Forest Management Groups (CFMGs),” including on pp. 20, 26–28, 35, 39 and 45. Retain “CFFMGs” only when specifically referring to the operational forest-fire management subgroups.

CR9: Cleared (PFG Request, pp. 1–2). The PFG activities and budget notes now explicitly include establishing baselines and measurable outcome targets for key adaptation benefits through baseline data collection and analysis, methodology and indicator development, the Wildfire Risk and Landscape Assessment, and the Ecosystem Services Valuation and Economic Analysis.

Does the project engage, empower and/or benefit the most vulnerable communities and social groups?

Response: Cleared

Secretariat: Cleared (Pages 4, 8, 25, 30, etc)

The concept note consistently focuses on climate-vulnerable communities and includes measures to engage, empower and benefit them through participation, capacity-building and equitable access to project support.

Does the project advance gender equality and the empowerment of women and girls?

Response: Not Cleared

Secretariat: The initial gender analysis identifies women’s dependence on forests, unpaid care responsibilities and underrepresentation in decision-making. However, the proposed response relies principally on 30–40% participation targets. Some targets combine “women and youth” into a single percentage, and the design does not address women’s control over credits or enterprise income, land and Community Forest membership, time burdens, occupational safety or leadership (pp. 24–25 and 30–31).

CR10: Please strengthen the initial gender analysis and explain how the project will address gender-differentiated vulnerabilities and structural barriers. Separate targets for women and youth; include measures and indicators for women’s leadership and decision-making; assess women’s access to and control over credits, enterprise assets and income. The full proposal should include a costed GAP with sex-disaggregated baselines, indicators and responsibilities.

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CR10: Cleared at the concept stage (p. 34).

The revised concept note strengthens the gender analysis by addressing gender-differentiated vulnerabilities, women’s leadership and decision-making, and women’s access to and control over project benefits. It also confirms that a comprehensive Gender Assessment and costed GAP will be prepared during the PFG phase.

At the fully developed proposal stage, please ensure that targets for women and youth are presented separately, including where they are currently combined.

Is the project/programme cost-effective? In the case of regional project/ programmes, does the regional approach support cost effectiveness? Does the project engage, empower and/or benefit the most vulnerable communities and social groups?

Response: Not Cleared

Secretariat: The proposal provides a qualitative comparison between prevention-oriented and reactive wildfire management but does not compare the costs of alternative prevention approaches or provide quantitative evidence supporting the selected scale and technology mix (pp. 31–33).

CR11: Please strengthen the cost-effectiveness analysis by comparing feasible technical and institutional alternatives, including, for example, different combinations of remote sensing, weather stations, drones, community monitoring, fuel treatments, prescribed burning, reservoirs and other water-access arrangements.

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CR11: Cleared (pp. 35–37).

The revised cost-effectiveness analysis compares feasible technical and institutional alternatives and provides the rationale for the proposed mix of wildfire intelligence, fuel management, community response and water-

access measures. A full quantitative cost-effectiveness analysis, including unit costs and avoided-loss assumptions, is expected to be undertaken during the PFG phase.

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: Not Cleared

Secretariat: CR12. The concept note describes alignment with national and subnational policies, including the NDC, NAP and other relevant policies and standards. Please also clarify its alignment with Technology Needs Assessment (TNA) and Technology Action Plans (TAPs), where relevant. Please refer to this website: <https://unfccc.int/ttclear/tna/reports.html>

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CR12: Cleared (p. 38)
The alignment with TNA and TAPs are included.

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

Response: Cleared

Secretariat: Cleared (Page 34-35)
Relevant national technical standards are provided.

The proposal identifies relevant legislation but defers most compliance assessment to the PFG phase. Further specificity is needed for prescribed burning, thinning, fire lines, reservoirs, water use, drones, cultural heritage sites and work in protected or biodiversity-sensitive landscapes (pp. 34–35).

At full proposal stage, please identify the applicable technical standards, permits and responsible authorities for each relevant activity; describe the process and timing for obtaining approvals.

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

Response: Cleared

Secretariat: Cleared (Page 35-36)
The concept note briefly identifies relevant projects and programmes and describes potential synergies and complementarities.

At the fully developed proposal stage, please provide more detail on the specific linkages, coordination arrangements, and lessons to be applied.

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

Response: Not Cleared

Secretariat: CR13: The concept note includes a learning and knowledge management approach and identifies specific knowledge products (page 36-37). Please briefly clarify when these products will be developed and disseminated, and which institution will lead each process. If Components 1, 2 and 3 are intended to be developed iteratively, please also explain how field evidence and lessons will feed back across the components to refine systems and implementation.

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CR13: Cleared at the concept stage (p. 41-42).

The revised Knowledge Management section clarifies the indicative broad timing of knowledge products, institutional responsibilities, and how evidence and lessons will feed back across the three components to support iterative learning and refinement. The detailed knowledge management plan, including milestones, responsibilities and dissemination arrangements, will be finalized during the PFG phase.

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: Not Cleared

Secretariat: The concept note describes a consultative process, including consultations with relevant government agencies, local authorities, communities, civil society organizations and other stakeholders, as presented on pages 37–40 and in the Annex.

CR14: Please further clarify, where relevant, how consultations with the final target communities have informed the local design and implementation of activities, including community roles, benefit-sharing arrangements and safeguard measures.

Response: Not Cleared

IE:

Response: Not Cleared

Secretariat: CR14: Not Cleared.

The concept note indicates that the pilot areas have already been selected, while Section II.J states that the “final pilot sites” will be identified during the PFG phase (p. 42). Please clarify this distinction.

If specific intervention locations are not identified at the proposal stage to allow environmental and social risks to be adequately identified, the relevant activities may need to be treated as Unidentified Sub-Projects (USPs). In that case, please provide a brief overview at the concept note stage of how the USPs will be identified, screened and managed, in accordance with the Adaptation Fund’s Updated Guidance on USPs:

<https://www.adaptation-fund.org/document/guidance-document-for-project-programme-with-unidentified-sub-projects/>

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CR14: Cleared (pp. 9, 36 and 42–43). The revised concept note clarifies that the five project landscapes, 11 gewogs, two urban–wildland interface areas and participating CFMGs have been identified. The PFG phase will refine the precise treatment footprints, technical designs and implementation arrangements within these identified intervention areas and undertake the corresponding site-specific environmental and social assessments. This is reasonable at concept note stage and does not currently require the activities to be treated as USPs.

Recommendation for the fully developed proposal: Identify the precise locations and designs of the prescribed-burning, thinning, fire-line, reservoir and related infrastructure activities and include the corresponding risk assessments and management measures. If any locations remain insufficiently defined at submission, classify the relevant activities as partially unidentified USPs and address them in accordance with the Fund’s Updated USP Guidance.

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

Response: Not Cleared

Secretariat: CAR1: The concept note explains primarily on AF additionality and the limitations of existing financing on Section L. This Section should describe the project activities that are relevant in addressing its adaptation objectives and that, taken solely, without additional funding from other financial resources, they will help achieve these objectives.

Response: Not Cleared

IE:

Response: Not Cleared

Secretariat: CAR1: Further Clarification is Needed.

The revised concept note clarifies that AF resources will finance an integrated package of prevention-oriented adaptation activities (pp. 47-48). Please also confirm that the AF-financed activities are designed to achieve the stated adaptation objective without reliance on additional financing from other funding sources.

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CAR1: Cleared (p. 41). Section II.L now explicitly confirms that the AF-financed activities constitute a self-contained and integrated package sufficient to achieve the project’s adaptation objective without reliance on additional financing or co-financing. Other government, development partner and climate-finance investments are described as complementary and relevant only to broader resilience and future scaling.

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

Response: Cleared

Secretariat: Cleared (Page 45-46).

The concept note provides the SRF alignment table in the prescribed format and uses the indicators from the updated SRF.

Please note that the results framework appropriately references AF Outcomes 1, 5 and 8, but several indicators measure delivery or formal endorsement rather than adaptation results or innovation performance. Indicators such as hectares treated, reservoirs constructed and fire lines maintained are primarily outputs. The framework also omits an indicator for key findings on effective and efficient innovation and contains limited gender-responsive or sex-disaggregated indicators (pp. 45–46).

At full proposal stage, please revise the results framework to include outcome-level measures of reduced wildfire vulnerability, improved ecosystem resilience, institutional use of risk information, community adaptive capacity, effectiveness and efficiency of the innovations, and evidence generated for replication and scaling. Please align the proposal with the revised AF Strategic Results Framework and current guidance, include the applicable innovation indicators, and provide baselines, realistic targets and sex-disaggregation where relevant.

Response: Not Cleared

Secretariat: New CAR4: Apologies for reopening this comment. The SRF format has been revised. Please use the revised template available here and the guidance. There are some revisions to the outcome 8 (on Innovation). Revised template: <https://www.adaptation-fund.org/document/alignment-with-adaptation-fund-results-framework-template-and-guidance-dec-2025/> and Detailed Guidance: <https://www.adaptation-fund.org/document/strategic-results-framework-guidance-2026/>

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CAR4: Cleared (pp. 45–47). Section II.F now uses the revised SRF alignment format and the updated Outcome 8 indicators. The remaining issues can be addressed during full proposal formulation.

Recommendations for the fully developed proposal:

- Present Core Indicator 1 as a project-wide indicator capturing beneficiaries across all relevant components, rather than as an indicator specifically under AF Outcome 1. Avoid duplication across beneficiary groups, and do not also count people reported under Indicator 1.2B as beneficiaries under Core Indicator 1.
- Reconsider mapping Indicator 8A across all three project outcomes. Cross-cutting innovation alone is not sufficient: Indicator 8A measures innovations that demonstrably reach scale-up, rather than innovations that are only piloted or have potential scale-up pathways. Map it only where the project commits to an actual scale-up result and target. Indicator 8B may be appropriate where institutions are created or enabled to lead innovation.
- Retain Indicator 8.1B for innovations being piloted and Indicator 8.2 for innovation-focused knowledge and learning. Clearly identify and count each distinct innovation through the identification–piloting–scale-up pathway to avoid double counting.

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

Response: Cleared

Secretariat: Cleared (Page 42-43).

The concept note briefly explains institutional, technical, financial, community and environmental sustainability.

At the fully developed proposal stage, please provide further information on the arrangements outlined in the concept note, including post-project responsibilities.

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: Not Cleared

Secretariat: The preliminary Category B classification appears reasonable, but the screening table is internally inconsistent. Indigenous Peoples and involuntary resettlement are marked as requiring no further assessment even though risks to Brokpa communities and possible restrictions on access to customary forest resources are identified. The final sites and designs for prescribed burning, thinning, fire lines, reservoirs and related infrastructure remain unidentified (pp. 43–45 and Annex 1, pp. 48–50).

CAR2: Please correct the ESP checklist so that the determination for each of the 15 principles is consistent with the risks identified and provide substantiated explanations. Please explicitly identify the activities and locations that remain unidentified and explain how the Fund's requirements for unidentified sub-projects will be applied, including screening criteria, exclusion lists, activity-level assessments, consultation requirements, management instruments, disclosure, grievance arrangements and conditions that must be met before implementation or disbursement. The assessment should cover direct, indirect, cumulative and induced risks, particularly those associated with prescribed burning, critical habitats, water infrastructure, community safety, access restrictions and Indigenous Peoples.

Response: Not Cleared

IE:

Response: Not Cleared

Secretariat: CAR2: Not Cleared.

The concept note provides examples of site-specific activities, while indicating that the specific activities and their site-specific details will be finalized during the PFG phase (p. 49). Section II.J also states that the “final pilot sites” will be identified during the PFG phase (p. 42). Please explicitly clarify which activities and/or intervention sites remain unidentified and which of them will be treated as Unidentified Sub-Projects (USPs). For any activities to be treated as USPs, please explain briefly how the Adaptation Fund's requirements for USPs will be applied.

At the fully developed proposal stage, an Environmental and Social Management Plan (ESMP)—including concrete measures for the management of environmental and social risks in line with the AF's policies – will be required for all USPs. Please see the AF's USP guidance: <https://www.adaptation-fund.org/document/guidance-document-for-project-programme-with-unidentified-sub-projects/>

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CAR2: Cleared (pp. 9, 36 and 42–43). The revised concept note clarifies that the project activities and intervention areas are identified and that no USPs are currently envisaged. The PFG will refine the treatment areas, technical designs, scale and implementation arrangements within the identified areas.

Recommendation for the fully developed proposal: Identify and assess the precise locations and designs of all site-specific activities and include an ESMP covering their environmental and social risks. The wording on pp. 42 and 49 should also be aligned with this approach. If any activity or location remains insufficiently defined at full proposal submission, classify it as a partially unidentified USP and apply the Fund's USP requirements.
<https://www.adaptation-fund.org/document/guidance-document-for-project-programme-with-unidentified-sub-projects/>

Resource Availability

Is the requested project funding within the parameters for large grants set by the Board?

Response: Cleared

Secretariat: N/A

Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project budget before the fee? Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)? For regional projects/programmes, are the administrative costs (Implementing Entity Management Fee and Project/ Programme Execution Costs) at or below 10 per cent of the project/programme for implementing entity (IE) fees and at or below 10 per cent of the project/programme cost for the execution costs?

Response: Not Cleared

Secretariat: The proposed IE and EE fees are within the caps.

CAR3: The Executing Entity is identified inconsistently: page 1 lists UNDP and MoENR, whereas the stakeholder table lists on page 39 DoFPS and MoENR identifies only as the Executing Entities. Please clarify the Executing Entity or Entities and use the same designation consistently throughout the proposal.

If the EEs are UNDP and MoENR, please clarify the execution responsibilities of UNDP and MoENR and identify the portion of project activities and execution costs attributable to each. If UNDP will perform execution functions, please justify this arrangement and demonstrate compliance with the applicable 1.5% limit for the portion executed by the IE. At full proposal stage, provide detailed component, execution-cost and IE-fee budgets and ensure that project management, execution and IE oversight functions are clearly separated.

Response: Not Cleared

IE:

Response: Not Cleared

Secretariat: CAR3: Not Cleared.

The IE and EE are now consistently identified, with UNDP serving as the IE and MoENR, through DoFPS, serving as the EE.

However, the proposal states that UNDP will provide direct project support services to the NIM arrangement, including fiduciary management and procurement support where requested by the Government (p. 52 and response).

If UNDP will perform any execution functions through these direct project support services, please clearly identify the relevant activities and associated costs, and demonstrate compliance with the applicable 1.5% limit for the portion executed by the IE.

Response: Not Cleared

IE:

Response: Cleared

Secretariat: CAR3: Cleared (pp. 44–45). The revised concept note consistently identifies UNDP as the IE and MoENR, through DoFPS, as the EE. It also clarifies that UNDP will not execute project components but may provide limited Direct Project Services on behalf of the EE. Since the total PEC is 9.5%, allocating up to 1.5% of the project cost to UNDP for DPS and the remaining 8% to MoENR/DoFPS is consistent with the applicable limits.

Recommendation for the fully developed proposal: Confirm and cost the specific DPS to be provided by UNDP and clearly separate them from UNDP's IE oversight functions and MoENR/DoFPS's execution responsibilities. Any DPS request should include the IE's justification, confirmation from the EE, endorsement from the Designated Authority and submission for Secretariat clearance, in accordance with the policy. <https://www.adaptation-fund.org/document/opg-annex-7-projectprogramme-implementation/> (paras 5-11).

Eligibility of IE

Is the project submitted through an Implementing Entity accredited by the Board?

Response: Cleared

Secretariat: Accreditation Expiration Date: 10 October 2029



ADAPTATION FUND

SINGLE COUNTRY INNOVATION PROJECT PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme: Climate-Resilient Wildfire Prevention and Adaptive Landscape Management in Bhutan

Country/ Countries: Bhutan

Thematic Focal Area¹: Wildfire Management

Type of Implementing Entity: Multilateral Implementing Entity

Implementing Entity: United Nations Development Programme

Executing Entities: Ministry of Energy and Natural Resources (Department of Forestry and Park Services)

Amount of Financing Requested: 5,000,000 (in U.S Dollars Equivalent)

Project Formulation Grant Request: 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:

1st submission: 3rd July 2026, 1st Technical review 7 August 2026

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

¹ Thematic areas are: Agriculture, Coastal Zone Management, Disaster risk reduction, Food security, Forests, Human health, Innovative climate finance, Marine and Fisheries, Nature-based solutions and ecosystem based adaptation, Protection and enhancement of cultural heritage, Social innovation, Rural development, Urban adaptation, Water management, Wildfire Management.

List of Acronyms

AF	Adaptation Fund
BFL	Bhutan for Life
BPC	Bhutan Power Corporation
CFFMG	Community-based Forest Fire Management Group
CFMG	Community Forest Management Group
CNR	College of Natural Resources
CSO	Civil Society Organization
DECC	Department of Environment and Climate Change
DLGDM	Department of Local Governance and Disaster Management
DoFPS	Department of Forests and Park Services
DoW	Department of Water
EbA	Ecosystem-based Adaptation
ECRUL	Enhancing Climate Resilience of Urban Landscapes & Communities
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
FWI	Fire Weather Index
GAP	Gender Action Plan
GCF	Green Climate Fund
GEF	Global Environment Facility
GRM	Grievance Redress Mechanism
MoENR	Ministry of Energy and Natural Resources
MoF	Ministry of Finance
NAP	National Adaptation Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCHM	National Centre for Hydrology and Meteorology
OHS	Occupational Health and Safety
PFG	Project Formulation Grant
PMU	Project Management Unit
RBP	Royal Bhutan Police
REDD+	Reducing Emissions from Deforestation and Forest Degradation
RRT	Rapid Response Team
RGoB	Royal Government of bhutan
RUB	Royal University of Bhutan
SEP	Stakeholder Engagement Plan
SES	Social and Environmental Standards
SESP	Social and Environmental Screening Procedure
SOP	Standard Operating Procedure
UWICER	Ugyen Wangchuck Institute for Conservation and Environmental Research
WUI	Wildland-Urban Interface

Project Background and Context

1.1 National context and adaptation context

Bhutan is a small, landlocked Himalayan country (population approximately 800,000 people) whose economy, climate resilience and cultural identity are closely linked to its forests and watersheds.² With nearly 70% of its territory under forest cover (2.68 million ha), Bhutan is among the most forested countries in Asia and is constitutionally mandated to maintain at least 60% forest cover.² These forests store an estimated 521 million tonnes of carbon, support globally significant biodiversity, sustain a protected area network covering more than half of the country, and provide watershed services that underpin hydropower generation, agriculture, water security and rural livelihoods.³

Forests and watersheds underpin Bhutan's hydropower sector, with an installed capacity of 2,453 MW against a potential of 30,000 MW, accounting for approximately 63% of total national export revenues.⁴ They support forest-dependent livelihoods across the country, including more than 33,000 Community Forest member households organized through over 800 Community Forest Groups (democratically governed local organizations that manage state forest lands to promote sustainable resource use, prevent and combat forest fires, and uphold Bhutan's commitment to environmental conservation), and approximately 5,900 households participating in Non-Wood Forest Product groups that depend on forest resources for fuelwood, grazing, food security and income generation.⁵

Climate change is placing increasing pressure on these systems through rising temperatures, delayed monsoon onset, increasing rainfall variability, longer dry periods, forest drying and more frequent wildfire-conducive conditions.³ National climate assessments identify forests and biodiversity among Bhutan's most climate-vulnerable sectors, while the National Adaptation Plan (2023) highlights increasing wildfire risk, including growing vulnerability of forest ecosystems that have historically experienced limited fire occurrence.³

1.2 Climate impacts and wildfire-related losses

With wildfires becoming an increasingly significant climate-related risk in Bhutan, climate-related impacts and losses affect ecosystems, watersheds, livelihoods and critical natural-resource assets across the country:

- **Increasing wildfire occurrence and severity** Forest fires occur primarily during the dry winter and early spring seasons. Between 2007 and 2025, Bhutan recorded more than 800 wildfire incidents affecting over 73,000 hectares of forest, and between 2021 and 2026, approximately 152 wildfire events burned more than 22,400 ha across the project landscapes.⁶ Analysis of long-term fire regimes indicates that this is not a function of increased detection or reporting; fire history reconstructions show a shift after 1970 from small, patchy fires to larger and more frequent fire events, while satellite data confirms a persistent, non-random increase in fire occurrence and intensity over recent decades.⁷ The period 2023–2025 coincided with record temperatures and some of the highest wildfire-related losses recorded nationally, highlighting the growing influence of climate change on wildfire risk.⁸ The increasing losses result from a combination of factors: (i) more severe fires and greater areas burned due to prolonged dry periods, forest drying and changing fire-weather conditions⁹; (ii) increasing value of assets exposed to wildfire risk, including settlements, cultural heritage sites, hydropower infrastructure and community forests¹⁰; and (iii) escalating suppression costs associated with responding to fires in remote, mountainous terrain.¹¹
- **Ecosystem and watershed degradation** Repeated wildfire events contribute to biodiversity loss, soil erosion, ecosystem degradation and declining watershed stability. Fire-prone Chir Pine and Blue Pine ecosystems in eastern and western Bhutan are particularly exposed to forest drying, moisture stress and changing fire-weather conditions, increasing risks to ecosystem resilience and long-term forest health.¹²
- **Impacts on hydropower, agriculture and rural livelihoods** Wildfire impacts extend beyond forests. Forest degradation and watershed disturbance can affect water regulation, hydropower generation, agriculture and local water security. Wildfires also threaten biodiversity conservation areas, cultural and religious sites, and forest-dependent livelihood systems that rely on healthy forests and watersheds.³

² Royal Government of Bhutan (RGoB). (2008). Constitution of the Kingdom of Bhutan. <https://www.nationalcouncil.bt>

³ RGoB. (2023). National Adaptation Plan (NAP). <https://www.napglobalnetwork.org>

⁴ Royal Bhutanese Embassy. (2024). Bhutan's Hydropower Sector: Economic Contribution and Export Revenues.

⁵ RGoB. (2016). Community Forest Management Rules.

⁶ DoFPS. (2025). Forest Fire Records and Database 2007-2025; DoFPS. (2026). Wildfire Incident Database 2021-2026.

⁷ Tenzin, K., et al. (2024). Climate and humans interact to shape the fire regime of a chir pine forest in eastern Bhutan. K. P. (2023).

Fractal analysis revealed persistent correlations in long-term vegetation fire data.

⁸ Wangchuk, J., Dorji, T., & Chhetri, D. B. (2024). Wildfire risk under changing climate in Bhutan.

⁹ ICIMOD. (2026). The Hindu Kush Himalaya: Climate Change and Vulnerability. <https://www.icimod.org>

¹⁰ DoFPS. (2025). Forest Fire Records and Database 2007-2025.

¹¹ RGoB. (2024). National Strategy for Wildfire Prevention and Management.

¹² UNDP. (2021). Assessment of Climate Risks on Forests and Biodiversity for the National Adaptation Plan Formulation Process.

- **Economic and operational pressures** Bhutan's mountainous terrain, remote landscapes and limited accessibility complicate fire detection, coordination and early intervention efforts. Existing wildfire management systems face challenges related to limited predictive capacity, fragmented climate-risk information and constrained early warning systems. Timber losses associated with major wildfire events between 2020 and 2025 have been estimated at approximately USD 6.27 million, while increasing fire incidence places growing pressure on public resources and response systems.¹⁰ Human safety risks are also increasing for affected communities and frontline responders operating in difficult mountainous terrain.¹¹

These trends indicate that wildfire risk is evolving from a localized forestry concern into a broader climate adaptation challenge affecting ecosystems, watersheds, infrastructure, livelihoods and national resilience.³

1.3 Vulnerability assessment

The adverse impacts of increasing wildfire risks are not distributed evenly across Bhutan. Vulnerability is concentrated within specific landscapes, ecosystems, livelihood systems and population groups due to differences in exposure, sensitivity and adaptive capacity. Key vulnerabilities relevant to the proposed project include:

- **Vulnerable landscapes, ecosystems and watersheds** Wildfire vulnerability is concentrated within fire-prone forest ecosystems, remote mountain landscapes and peri-urban forest interfaces. The 2021 Assessment of Climate Risks on Forests and Biodiversity identified Chir Pine and Blue Pine ecosystems among the forest types most vulnerable to increasing wildfire risks due to moisture stress, fuel accumulation and changing climatic conditions.¹² Vulnerability is particularly pronounced in dry-valley conifer landscapes, peri-urban forest interfaces and critical watershed areas where ecological sensitivity, infrastructure exposure and human activity intersect.³ Critically, fire risk in Bhutan is shaped by the interaction of climate and human factors: climate change creates more fire-conductive conditions through rising temperatures and longer dry seasons, while human activity provides most ignitions. Repeated wildfire disturbance threatens biodiversity, watershed stability and ecosystem services essential for water regulation, hydropower generation, and climate adaptation. Bhutan's protected area network, which covers more than 52% of the country, is increasingly exposed to wildfire risk.⁶ Given Bhutan's constitutional requirement to maintain at least 60% forest cover and its continued carbon-negative status, increasing wildfire vulnerability represents a national development and climate resilience challenge extending beyond the forestry sector.³
- **Forest-dependent and climate-sensitive livelihoods** Forest-dependent households and community forest groups rely on healthy forests and watersheds for fuelwood, grazing, non-timber forest products, water resources and income generation. Many are located in remote areas with limited livelihood alternatives and lower capacity to absorb climate-related losses. As wildfire frequency and severity increase, these communities face growing risks from ecosystem degradation, reduced ecosystem services and declining livelihood resilience.¹²
- **Institutional and governance vulnerabilities** Wildfire management responsibilities are shared across multiple institutions, including the Department of Forests and Park Services (DoFPS), National Centre for Hydrology and Meteorology (NCHM), Department of Local Governance and Disaster Management (DLGDM), Royal Bhutan Police (RBP) and local governments. While Bhutan has established coordination mechanisms, including the Inter-Agency Forest Fire Coordinating Group, increasing wildfire risks are placing growing pressure on existing systems.¹¹ Limited climate-risk intelligence, early warning capacity and coordinated prevention mechanisms reduce the ability to anticipate and manage escalating wildfire threats, particularly in remote mountainous areas.¹¹
- **Gender and differentiated vulnerability** Climate change and increasing wildfire risks affect different groups differently depending on their dependence on forests and natural resources, access to information and services, participation in decision-making and adaptive capacity. In Bhutan, women play important roles in collecting water, fuelwood and other forest resources and are therefore highly dependent on healthy forest and watershed ecosystems for household wellbeing and livelihood security. National studies indicate that women perform approximately 71% of unpaid household and care work (National Statistics Bureau, 2022) and remain underrepresented in natural resource management and climate-related decision-making processes.¹³ As wildfire risks increase, ecosystem degradation and disruption of forest resources disproportionately affect women, forest-dependent households and remote communities. These differentiated vulnerabilities highlight the importance of inclusive wildfire adaptation approaches that strengthen participation, access to information and equitable access to adaptation benefits.³

1.4 Climate trends and future projections

Observed Climate trends: Bhutan is already experiencing measurable climate change, with increasing temperatures, changing rainfall patterns and growing climate variability affecting forests, watersheds and natural-

¹³ National Statistics Bureau. (2022). Bhutan Labour Force Survey Report 2022.

resource-dependent livelihoods.¹⁴ Mean annual temperature increased by approximately 0.8°C between 1976 and 2005.¹⁵ The National Centre for Hydrology and Meteorology (NCHM) reported 2024 as the warmest year on record, with an annual average temperature of 17.2°C compared to the long-term average of 16.3°C.¹⁵ Furthermore, Bhutan's climate data over the past five years points to a consistent rise in temperatures, with the annual average maximum temperature increasing from 22.54°C in 2019 to 23.31°C in 2024.¹⁶ National climate assessments indicate that warming trends are contributing to increased forest drying, moisture stress, and wildfire risk.¹⁶

Rainfall patterns are also showing observable changes. While the national annual average rainfall is approximately 1,800 mm (NCHM, 2021), the seasonal distribution is shifting.¹⁷ Winter precipitation is showing a decreasing trend and the monsoon onset is becoming more variable.⁹ High interannual rainfall variability is already observed (NCHM, 2021), with some years experiencing delayed monsoon arrival and prolonged dry spells.⁹

Future Climate Projections: Future climate projections indicate continued warming across Bhutan. Mean temperatures are projected to increase by approximately 0.8–2.8°C under RCP4.5 and by more than 3.2°C under RCP8.5 by the end of the century.³ The NCHM forecasts that Bhutan's average temperature will rise by more than 1°C by 2040, with northern districts expected to experience hotter temperatures over the next 15 years.¹⁶

Regarding precipitation, while annual rainfall may increase overall in some regions, projections indicate significant spatial and seasonal shifts. Northern, western, and south-western regions are projected to receive increased precipitation, while eastern and south-eastern districts are likely to experience reduced rainfall, raising concerns about potential droughts.¹² The monsoon onset is expected to become increasingly uncertain, with onset dates varying up to 2-3 weeks between years, compared to historical variability of approximately 1 week.⁹ While total monsoon rainfall may increase, it is projected to be concentrated in fewer, more intense events, with longer dry spells between rainfall events.⁹ Daily extreme rainfall events are projected to increase in frequency and intensity, while the number of rainy days may decrease.⁹ The pre-monsoon dry season (November-May) is expected to lengthen, with delayed monsoon onset and more frequent prolonged dry spells within the monsoon season.⁹

Implications for Wildfire Risk: These observed and projected changes in temperature and rainfall have direct implications for wildfire risk across Bhutan. Rising temperatures are expected to increase evapotranspiration, reduce fuel moisture and create more favorable conditions for wildfire occurrence and spread.¹⁵ Changes in rainfall patterns, including decreasing winter precipitation and more variable monsoon timing, are expected to increase the likelihood of prolonged dry periods and drought conditions despite increases in total annual rainfall in some regions.⁹ Projections show declining fuel moisture content and increased forest fire risk under SSP5-8.5, particularly during the dry season.⁸

As a consequence of these climatic changes, Bhutan's 2021 Assessment of Climate Risks on Forests and Biodiversity projects substantial increases in wildfire risk under RCP4.5 and RCP8.5 by the 2050s, with fire behavior modelling indicating increasing flame lengths, rates of spread and overall fire intensity.¹² Approximately 90% of Chir Pine forests and more than 60% of Blue Pine forests are projected to fall within high wildfire-risk zones under future climate conditions.¹² The assessment also indicates increasing wildfire exposure in some broadleaf forest ecosystems that have historically experienced limited fire occurrence.¹²

Together, these trends indicate that wildfire risk is becoming an increasingly important climate adaptation challenge affecting ecosystems, watersheds, biodiversity, hydropower generation, livelihoods and critical infrastructure across Bhutan. Strengthening climate-informed prevention, early warning and adaptive management systems is therefore essential to reduce future climate risks.³

Table 1: Climate trends and projections relevant to wildfire risk in Bhutan

Climate hazard / driver	Observed trend	Future projection	Relevance for wildfire risk and adaptation
Rising temperatures	Mean annual temperature increased by approximately 0.8°C between 1976 and 2005. NCHM reported 2024 as the warmest year on record (17.3°C) compared to the long-term average of 16.3°C. ¹⁵	Mean temperatures projected to increase by approximately 0.8–2.8°C under RCP4.5 and by more than 3.2°C under RCP8.5 by the end of the century. ³	Higher temperatures increase evapotranspiration, forest drying, fuel flammability and the duration of wildfire-conductive conditions. ¹⁵

¹⁴ Kharal, D. K., Chhetri, D. B., & Thapa, S. (2017). Climate change and its impact on forest fire in Bhutan. *Journal of Forest and Natural Resource Management*

¹⁵ NCHM. (2025). *State of Climate Report 2024*.

¹⁶ Dorji, T., Dorji, Y., & Tobgay, S. (2021). Climate change impacts on forest ecosystems in Bhutan: A review. *Journal of Bhutan Studies*.

¹⁷ NCHM. (2021). *Climate Data and Rainfall Patterns in Bhutan*.

Rainfall variability and seasonality	Rainfall is becoming more seasonally concentrated. Observed trends indicate reduced dry-season precipitation and increased wet-season precipitation (FAO, 2025). Summer monsoon rainfall shows high interannual variability with projected changes ranging from -8% to +22% under SSP585 by the 2050s ¹⁸	Winter rainfall (November–February) is projected to decrease by up to 25% under the high-emissions scenario while summer rainfall may increase (RCP8.5/SSP5-8.5 for 2050s). Maximum dry-spell length is projected to increase from a baseline of 10–24 days to up to +1 to +4 days longer nationally under SSP585. Monsoon onset is also becoming more variable, with potential delays of up to two weeks in some years. ⁹	Longer dry periods and seasonal moisture stress may increase wildfire risk despite projected increases in total annual rainfall, because the rainfall that does occur is more concentrated in fewer, more intense events, while dry-season precipitation - critical for fuel moisture -declines. ⁹
Drought conditions and forest drying	Seasonal drought is increasing, particularly in late winter and spring. The 3-month SPEI drought index is projected to decrease (i.e., become drier) during winter months, most pronounced in February. Dry-season moisture stress already affects fire-prone forest ecosystems. ¹⁰	Under the SSP5-8.5 scenario, increased frequency and severity of late-winter and spring droughts are projected, with maximum dry-spell length expected to increase from 32 days to up to 36 days in some districts by the 2050s. ⁹	Increased fuel flammability, longer fire seasons and greater wildfire intensity. Drought risk increases despite higher total annual rainfall because winter/spring dry seasons become drier and longer, while summer rains are more intense but less frequent—creating greater moisture stress during the peak fire season. ⁹
Fire-prone forest ecosystems	Fire occurrence is concentrated in Chir Pine and Blue Pine ecosystems—these are naturally fire-prone forest types, but climate change is expanding their vulnerability. ¹⁰	Under RCP4.5, by 2050, an estimated 921 km ² of Chir Pine forests and 626 km ² of Blue Pine forests will be at high fire risk. Over 9,000 km ² of broadleaved forests (below 2000m) are also projected to be at high fire risk under both RCP4.5 and RCP8.5. ¹²	Increased ecosystem vulnerability and exposure of communities, watersheds and critical infrastructure. An estimated 18,490 households are at increased fire risk under RCP4.5 by 2050. ¹²
Fire behavior and wildfire risk	Wildfire occurrence and burned area have increased significantly in recent years. Between 2007 and 2025, Bhutan recorded more than 800 wildfire incidents affecting over 73,000 hectares of forest. Annual fire incidences average about 57 events, scarring an average of about 200 ha annually. ¹⁰	Both flame length and rate of fire spread are expected to increase in all forest types (except fir) under both RCP4.5 and RCP8.5, for all time slices (UNDP, 2021). Fire hazards in Blue Pine forests are projected to increase two-fold under climate change scenarios. ¹⁹	More intense and faster-spreading fires increase risks to ecosystems, livelihoods, infrastructure and response systems. Forest fires will be more intense with increasing possibility of more crown fires, and coupled with a faster rate of spread, the possibility of larger fires burning over longer periods is an imminent possibility. ¹²

1.5 Problem statement and systemic barriers

Despite strong forest conservation achievements and a long-standing commitment to environmental stewardship, Bhutan's wildfire governance and management system was largely developed for a lower-risk fire regime and is increasingly challenged by climate-driven changes in fire risk. Responsibilities for wildfire prevention, preparedness, response and climate information are distributed across multiple institutions, including the Department of Forests and Park Services (DoFPS), the National Centre for Hydrology and Meteorology (NCHM), the Department of Local Governance and Disaster Management (DLGDM), the Royal Bhutan Police (RBP) and local governments.¹¹

While important coordination mechanisms, forecasting systems, digital monitoring initiatives and community-based approaches are already in place or emerging, these efforts remain fragmented and have not yet evolved into an integrated prevention-oriented wildfire adaptation system. Increasing wildfire risks are exposing systemic barriers that limit the effectiveness of existing approaches.¹⁰ Key barriers include:

- **Reactive management and limited predictive climate-risk intelligence** Bhutan's wildfire management approach remains predominantly reactive and suppression-oriented, mobilizing personnel and resources after fires have already spread rather than systematically investing in prevention, early action and climate-informed risk reduction.¹¹ Existing systems remain largely detection- and response-oriented, with limited integration of fire weather, fuel conditions, climate projections and exposure information into operational planning and decision-making. Resource

¹⁸ FAO. (2025). Climate Change Impacts on Agriculture and Forestry in Bhutan. <https://www.fao.org>

¹⁹ Vilà-Vilardell, L., et al. (2020). Fire hazard projections in Blue Pine forests

pre-positioning, land-use planning, watershed protection and prevention investments are therefore not yet routinely guided by climate-informed wildfire risk assessments.¹²

- **Fragmented mandates and weak coordination** Wildfire-related responsibilities are distributed across multiple institutions with complementary mandates for forest management, climate services, disaster management and emergency response. While the Inter-Agency Forest Fire Coordinating Group provides a platform for coordination, there is currently no integrated mechanism that systematically aligns climate-risk information, prevention planning, resource allocation and adaptive management across sectors and levels of government.¹¹

- **Weak incentives and financing for prevention and risk reduction** Wildfires impose increasing costs through forest degradation, ecosystem service losses and risks to critical infrastructure, including hydropower assets and watersheds. However, financing remains focused largely on emergency response and recovery, with limited investment in proactive fuel management, ecosystem-based adaptation, community incentives, and other preventive measures.¹¹

- **Limited community-centred prevention systems** Historically, rural communities played an important role in maintaining fire-resilient landscapes through local stewardship and land-management practices. However, rural out-migration, changing livelihood patterns, and weakening traditional incentive structures have reduced the effectiveness of these informal prevention systems. Existing community-based fire management groups and volunteer networks often lack the technical capacity, operational support and incentives needed to sustain long-term prevention efforts. Women, youth and vulnerable groups are also not yet systematically engaged as key actors in wildfire adaptation and prevention planning.

- **Growing gap between wildfire risks and management capacity** Bhutan's current wildfire management framework has been effective in supporting forest conservation and biodiversity protection under historical climate conditions. However, increasing fuel accumulation, changing climate conditions, and more extreme fire-weather patterns are creating risks that existing approaches were not designed to address.¹¹ Without a transition toward climate-informed prevention, adaptive governance and ecosystem-based resilience, wildfire risks may increasingly exceed the capacity of suppression-focused systems to respond effectively.³

These barriers cannot be addressed through incremental improvements to existing suppression-focused systems alone.¹¹ Addressing these barriers requires innovation across technical, financial, ecosystem-based and governance dimensions of wildfire adaptation. The proposed project therefore seeks to test and institutionalize an integrated prevention-oriented wildfire adaptation system capable of addressing climate risks that existing approaches were not designed to manage.¹¹

Beyond the direct environmental impacts, increasing wildfire risk also creates growing economic costs for Bhutan. Wildfires damage timber resources, watersheds, biodiversity, community assets and critical infrastructure, while generating increasing expenditures for fire suppression and emergency response. Forest degradation and post-fire erosion can reduce water regulation services that support hydropower generation, drinking-water supplies, agriculture and tourism, creating impacts that extend well beyond the burned area itself.¹⁰ As climate change increases the frequency and severity of wildfire events, reliance on suppression alone is likely to become increasingly costly and less effective. Strengthening prevention-oriented adaptation therefore represents not only an environmental imperative, but also a cost-effective strategy to safeguard ecosystem services, reduce future response costs and protect climate-sensitive economic sectors that depend on healthy forest landscapes.³

1.6 Adaptation and Innovation pathways for Wildfire Resilience

The project addresses escalating climate-driven wildfire risks through an integrated prevention-oriented wildfire adaptation_innovation system comprising three mutually reinforcing adaptation pathways and four mutually reinforcing innovation areas to be piloted, evaluated and refined through the Adaptation Fund Innovation Window. The project builds on Bhutan's existing wildfire monitoring, forest management and community-based fire prevention systems while introducing internationally recognized approaches for anticipatory wildfire adaptation, including climate-informed risk forecasting, decision-support and adaptive governance, adapted to Bhutan's mountain ecosystems and institutional context.²⁰ Innovation lies primarily in integrating these technical, ecological, financial and governance innovations into one coherent prevention-oriented adaptation system rather than implementing them as stand-alone interventions.

- **Pathway 1: Anticipatory governance and climate-informed prevention systems**
This pathway strengthens the institutional ability of national and local institutions to anticipate prepare for and manage climate-driven wildfire risks by focusing on the knowledge systems and governance mechanisms that enable risk-informed decision-making. Building on Bhutan's existing wildfire monitoring and early warning

²⁰ World Meteorological Organization (WMO). (2022). Early Warnings for All: Executive Action Plan 2023-2027.

systems, the project will develop localized fire-weather and wildfire-risk methodologies, predictive risk assessments, decision-support tools, early warning systems and strengthened multi-agency coordination. Together, these outputs enable institutions to anticipate high-risk periods, prioritize prevention measures and support adaptive governance, providing the climate intelligence and governance foundation for the integrated innovation model.²¹

- **Pathway 2: Climate-resilient fire prevention and adaptive landscape management**

This pathway translates climate intelligence into physical interventions that reduce wildfire vulnerability. It implements tangible, on-the-ground measures including targeted ecosystem-based adaptation and fire-smart landscape management such as fuel management, prescribed burning, forest restoration, fire-line maintenance and protection of critical assets (settlements, cultural heritage sites, watersheds and hydropower infrastructure). By reducing fuel loads and strengthening ecosystem resilience, the project seeks to reduce wildfire severity while maintaining biodiversity and ecosystem services, demonstrating how climate intelligence can be translated into effective adaptation action.²¹

- **Pathway 3: Community stewardship, incentives and scaling systems**

This pathway strengthens long-term resilience by positioning communities as central actors in wildfire prevention and adaptation. The proposed No Fire – Credits to the Community mechanism will co-design and pilot a performance-based incentive mechanism through which communities earn verified credits linked to agreed wildfire-prevention and stewardship outcomes. The mechanism will be tested and refined during implementation before informing potential scale-up. Participating communities earn credits linked to climate-resilient livelihood benefits, such as community enterprises or alternative livelihoods, by maintaining fire-free seasons, managing fire lines and adopting safe land-management practices. Combined with strengthened community-based fire management groups, learning systems and institutionalization pathways, the approach seeks to create sustainable incentives for prevention while generating models that can be replicated and scaled nationally.¹²

The proposal is strongly aligned with the objectives of the Adaptation Fund Innovation Window. It shifts wildfire management from reactive suppression towards anticipatory adaptation through climate-risk intelligence, ecosystem-based prevention measures and performance-based community incentives. It strengthens adaptive decision-making through climate-informed planning, multi-agency coordination and innovation-learning systems, while addressing wildfire risk as a cross-sectoral climate adaptation challenge affecting forests, watersheds, biodiversity, communities, cultural heritage and critical infrastructure. The project is designed to generate replicable models through standardized approaches, institutionalized learning systems and partnerships that support long-term sustainability and replication, thereby supporting long-term uptake and institutionalization of the integrated innovation model.¹²

The project will pilot, evaluate and institutionalize one integrated prevention-oriented wildfire adaptation system comprising four mutually reinforcing innovation areas:

- 1) anticipatory climate intelligence and predictive wildfire-risk management
- 2) the No Fire – Credits to the Community performance-based incentive mechanism
- 3) climate-informed fire-smart landscape management as adaptation infrastructure
- 4) adaptive governance and learning systems.

Each innovation area contributes a complementary function within the overall innovation model and will be implemented, monitored and refined as part of an integrated adaptation system rather than as stand-alone innovations. Innovation lies not in any individual technology, but in integrating technological, ecological, financial and governance innovations into a coherent prevention-oriented wildfire adaptation system. Bhutan provides a particularly valuable opportunity to generate evidence on wildfire adaptation in Himalayan mountain landscapes, where practical adaptation experience remains limited.

The project will evaluate the effectiveness, cost-effectiveness and scalability of both the individual innovation areas and, importantly, the hypothesis that their integration delivers greater adaptation benefits than conventional, stand-alone wildfire management approaches, generating evidence to inform future replication and scale-up. This evidence will inform future national investment decisions and contribute practical lessons for other mountainous countries facing increasing climate-driven wildfire risks.

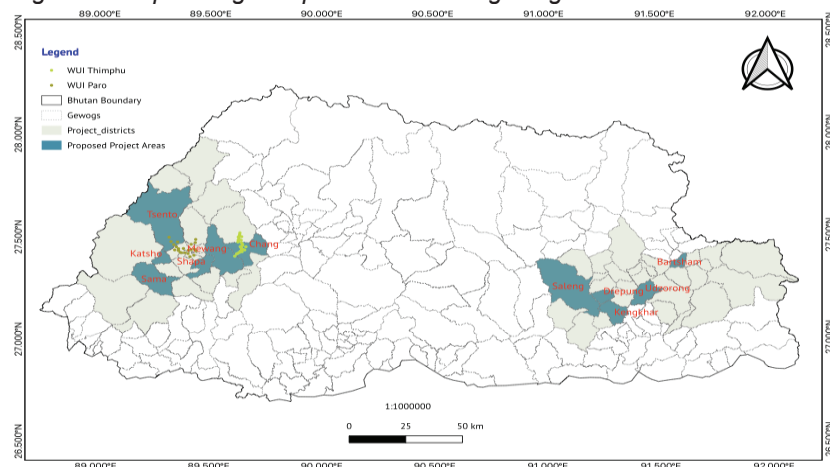
1.7 Project landscapes and geographic focus

The project will be implemented across eleven gewogs (sub-districts) and two urban–wildland interface (UWI) areas in five dzongkhags (districts): Mongar, Trashigang, Thimphu, Paro and Haa. Together, the selected landscapes contain approximately 143,000 ha of forest and support a population of approximately 170,373 people.

²¹ Food and Agriculture Organization of the United Nations (FAO). (2023). Integrated Fire Management Voluntary Guidelines: Principles and Strategic Actions (2nd ed.). Fire Management Working Paper No. 41.

The pilot areas were selected to represent Bhutan's principal wildfire-risk contexts and span the country's two dominant fire-prone forest systems. Mongar and Trashigang represent the Chir Pine landscapes of eastern Bhutan, characterized by dry-valley ecosystems, prolonged dry seasons and recurrent large-scale wildfires. Thimphu, Paro and Haa represent Blue Pine and mixed conifer landscapes in western Bhutan, where increasing anthropogenic ignitions, urban–forest interfaces and exposure of critical infrastructure, cultural heritage sites and water catchments create distinct wildfire-risk profiles.

Figure 1: Map of targeted pilot areas in 11 gewogs and 2 UWI within 5 districts



Site selection was guided by four criteria:

- wildfire frequency and severity
- ecosystem vulnerability and concentration of fire-sensitive vegetation
- population exposure and presence of community forest institutions
- potential for replication across Bhutan's diverse wildfire-risk contexts.

The selected landscapes span an altitude gradient of approximately 600–4,000 m and encompass Bhutan's principal fire-prone forest ecosystems. Approximately 40 Community Forest Management Groups (CFMGs) operate within the project landscapes, of which the project will target 12 CFMGs for direct support, providing a strong foundation for community-based wildfire prevention, stewardship and piloting of the No Fire – Credits to the Community mechanism. In forest prone communities areas where CFMGs do not exist, Community-based Forest Fire Management Groups (CFFMGs) are currently being established to provide an equivalent community-level institutional mechanism specifically focused on forest fire management, however in the project areas, CFMGs are established in all Gewogs (subdistricts). CFFMG membership broadly corresponds to CFMG membership, and CFFMGs should therefore not be understood as an additional or separate category of project. The project will target 12 of the 40 Community Forest Groups that operate within the target areas, providing a strong foundation for community-based wildfire prevention, stewardship and piloting of the No Fire – Credits to the Community mechanism. The beneficiaries.

The project will target representative pilot and priority sites rather than entire districts. Final intervention locations and treatment areas will be refined during the full project formulation phase

The project landscapes and intervention sites have been identified at concept note stage. During the full project formulation phase, the detailed treatment areas, technical designs and implementation modalities within these identified sites will be further refined -through field assessments, participatory mapping and consultations with local communities, dzongkhag administrations and relevant agencies.

Table 2: Overview of project landscapes

Pilot Landscape	Landscape Characteristics	Key Climate and Wildfire Vulnerabilities	Indicative Adaptation Focus
Mongar (Kengkhar, Drepong, Saling)	Eastern dry-valley Chir Pine landscapes with extensive community forests and steep terrain.	Frequent large wildfires, drought-prone conditions, high burned area and degradation of fire-sensitive Chir Pine ecosystems.	Fuel management, prescribed burning, community prevention systems, predictive fire-risk systems and watershed protection.

Trashigang (Bartsham, Udzorong)	Chir Pine transition landscapes with community forests and biodiversity-rich ecosystems.	Recurrent community forest fires, increasing fire intensity, erosion risks and vulnerability of forest-dependent livelihoods.	Community-based fire management, strategic fuel breaks, early warning systems and integration of wildfire risk into local planning.
Thimphu (Mewang, Chang, Thimphu Thromde)	Urban–wildland interface landscapes dominated by Blue Pine forests and critical water catchments.	High ignition risk from human activities, exposure of settlements, infrastructure and municipal water sources.	Urban–forest interface management, defensible space, rapid response systems, awareness campaigns and infrastructure protection.
Paro (Tsento, Shaba, Paro Thromde)	Blue Pine landscapes supporting cultural heritage sites, tourism assets and settlements.	Large high-impact fires threatening cultural heritage, tourism infrastructure, water resources and surrounding communities.	Fuel management around critical assets, predictive fire-risk systems, visitor awareness and contingency planning.
Haa (Katsho, Sama)	Blue Pine and mixed conifer landscapes supporting agro-pastoral livelihoods and community forests.	Increasing fire-weather risks, anthropogenic ignitions and vulnerability of rural livelihoods and ecosystem services.	Community-based prevention, low-cost fuel management, local alert systems and wildfire governance mechanisms.

Project Objective

The objective of the project is to support Bhutan’s transition from reactive wildfire response toward climate-resilient wildfire prevention and adaptive landscape management systems through climate intelligence, ecosystem resilience and adaptive governance approaches.

Project Components and Financing

Project Components	Expected Outcomes	Expected Outputs	Country	Amount (US\$)
1. Climate Intelligence, Early Warning and Adaptive Governance Systems	Outcome 1: Climate-informed wildfire-risk governance, predictive systems, early warning & adaptive institutional coordination strengthened	1.1 Climate-risk intelligence & predictive wildfire-risk systems developed & operationalized.	Bhutan	762,000
		1.2 Adaptive and effective governance, monitoring & innovation learning systems enabled		624,305
2. Climate-Resilient Landscape Management, Prevention & Early Intervention Systems	Outcome 2: Ecosystem resilience, fire-smart landscape management & prevention-oriented adaptation strengthened in vulnerable wildfire-prone landscapes	2.1 Ecosystem resilience, fire-smart landscape management & prevention-oriented adaptation strengthened in vulnerable wildfire-prone landscapes		782,511
		2.2 Innovative early intervention and operational support systems for wildfire management piloted & evaluated to generate evidence for potential replication & scale-up		552,500
3. Community Incentives, Innovation Financing & Scaling Pathways	Outcome 3: Community stewardship, adaptive capacity, innovation financing & scaling pathways for wildfire resilience strengthened	3.1 Community stewardship and safe, prevention-oriented wildfire management practices and volunteer coordination systems for wildfire prevention operationalized		640,500
		3.2 Climate-resilient livelihoods & local adaptation capacities enhanced through the “No Fire – Credits to the Community” performance-based incentive system		563,000
		3.3 Adaptive management, innovation learning & scaling pathways developed for replication and scale-up of successful wildfire adaptation solutions		245,691

Total Component Cost (components 1-3)	4,170,507
6. Project/Programme Execution cost	437,788
7. Total Project/Programme Cost	4,608,295
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (IE fee)	391,705
Amount of Financing Requested	5,000,000

Projected calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	Jan 2028
Mid-term Review (if planned)	Jan 2030
Project/Programme Closing	Dec 2031
Terminal Evaluation	Dec 2031

1.8 Theory of Change

Climate change is increasing wildfire risks across Bhutan through rising temperatures, changing rainfall patterns, longer dry periods and increasing fuel accumulation. Existing wildfire management systems remain largely focused on detection and suppression, while climate change is increasing the frequency, intensity and complexity of wildfire risks across forests, watersheds, communities, and critical infrastructure.

The project supports Bhutan's transition toward an integrated prevention-oriented wildfire adaptation through three mutually reinforcing pathways. Together, these pathways implement and test four interconnected innovation areas that collectively comprise the project's integrated innovation model: anticipatory climate intelligence and predictive wildfire-risk management, the No Fire – Credits to the Community incentive mechanism, climate-informed fire-smart landscape management, and adaptive governance and learning systems:

- Strengthening climate-risk intelligence, early warning and adaptive governance systems
- Implementing climate-informed ecosystem-based adaptation and fire-smart landscape management practices
- Strengthening community stewardship, climate-resilient livelihoods, and performance-based prevention incentives.

The pathways are mutually reinforcing: climate-risk intelligence guides field implementation; field experience improves climate-risk models and operational guidance; and community learning and innovation generate evidence that informs policy, institutionalization and future scaling. The central innovation hypothesis is that integrating these four innovation areas into a single prevention-oriented wildfire adaptation system will deliver greater adaptation effectiveness, cost-effectiveness and scalability than implementing the individual approaches in isolation.

The three pathways will be implemented in parallel through phased piloting, continuous monitoring and adaptive learning. While climate-risk intelligence developed under Component 1 informs implementation of Components 2 and 3, field implementation, monitoring results and community feedback from Components 2 and 3 continuously feed back to refine climate-risk models, operational guidance, governance arrangements and future intervention priorities. Within individual components and outputs, some activities are implemented sequentially (e.g. system development before operationalization and piloting before scaling), while the three components are implemented concurrently to enable iterative learning and adaptive management. Together, these interventions are expected to reduce wildfire vulnerability, strengthen ecosystem and watershed resilience, improve institutional preparedness, and increase community capacity to prevent and manage wildfire risks. As an Innovation Window project, the initiative will pilot, evaluate and iteratively refine the integrated innovation model and its four interconnected innovation areas, assessing both the contribution of each innovation area and the effectiveness of their integration as a prevention-oriented wildfire adaptation system, generating evidence, operational models and policy lessons to inform future replication, institutionalization and scale-up in Bhutan and other mountain ecosystems facing increasing climate-driven wildfire risks.

Table 3: Project Logic / Theory of Change

Component	Logic Statement	Causal Link to Outcomes	Key Assumptions
Component 1: Climate Intelligence,	IF existing wildfire detection systems are strengthened through locally calibrated Fire Weather	Leading to: improved climate-informed decision-making, stronger institutional coordination, enhanced early warning	Inter-agency coordination and data-sharing arrangements remain functional; institutions integrate

Early Warning and Adaptive Governance Systems	Index methodologies, predictive climate-risk modelling, integrated decision-support and adaptive governance mechanisms, THEN institutions and communities can transition from reactive wildfire response toward anticipatory, climate-informed prevention and risk management.	and preparedness, adaptive governance, & proactive wildfire-risk management systems (Outcome 1). Operational experience and monitoring results from Components 2 and 3 will be used to continuously refine climate-risk models, alert thresholds and decision-support systems.	climate-risk information into planning & operations; and climate intelligence systems remain operational, accessible and trusted by decision-makers, and continuously improved through monitoring and user feedback.
Component 2: Climate-Resilient Landscape Management, Prevention and Early Intervention Systems	IF climate-resilient fire-smart landscape management and strategic early-intervention measures are implemented and evaluated as adaptation infrastructure, THEN ecosystem resilience, landscape buffering capacity and localized wildfire prevention capacity will increase, reducing climate vulnerability & wildfire risks.	Leading to: reduced wildfire risks, strengthened ecosystem & watershed resilience, improved protection of critical assets, enhanced community prevention systems and more climate-resilient landscape management (Outcome 2). Evidence generated through field implementation informs refinement of climate-risk intelligence, operational guidance and future landscape management approaches.	Prevention measures remain effective under changing climate conditions; communities maintain participation in prevention activities; and interventions remain technically, socially and operationally feasible.
Component 3: Community Incentives, Innovative Financing and Scaling Pathways	IF community stewardship systems, the No Fire – Credits to the Community mechanism, adaptive learning systems and innovation scaling pathways are established and evaluated, THEN communities and institutions will have stronger incentives, capacities and ownership to sustain long-term wildfire prevention & climate-resilient landscape stewardship.	Leading to: sustained community participation in wildfire prevention, strengthened local adaptive capacity, scalable prevention-oriented adaptation systems, stronger innovation learning, evidence generation, sustainability and replication potential (Outcome 3). Innovation learning supports policy uptake, institutionalization and continuous improvement of the integration innovation model and its four innovation areas.	Communities perceive tangible benefits from participation; incentive and financing mechanisms remain viable; private-sector and institutional engagement remain active; and successful approaches are integrated into future policies, programmes and financing arrangements. Evidence generated by the pilots supports institutional uptake and future investment decisions.

Critical Risks and Mitigation Measures

The project has been designed to address key institutional, technical, ecological, governance and sustainability risks through;

- **Institutional and governance fragmentation (Medium):** Coordination gaps between agencies involved could delay decision-making and weaken implementation coherence. *Mitigation:* Establish a multi-agency wildfire governance mechanism, clarify institutional roles and responsibilities, and integrate coordination arrangements into existing SOPs and planning processes from project inception.
- **Climate uncertainty and ecological stress (Medium):** Accelerating warming, prolonged dry periods and changing fire-weather conditions may reduce the effectiveness of fire-smart landscape interventions over time. *Mitigation:* Apply adaptive management approaches, regularly review climate-risk information, and adjust interventions based on learnings.
- **Community disengagement and equity gaps (Medium):** Insufficient livelihood benefits, weak participation incentives, or inadequate inclusion of women and vulnerable groups could reduce long-term community engagement in wildfire prevention. *Mitigation:* Ensure gender-responsive design, transparent benefit-sharing arrangements, accessible grievance mechanisms and community incentives linked to prevention and livelihood outcomes.
- **Technical and operational challenges in remote terrain (Medium):** Difficult terrain, limited connectivity and accessibility constraints may affect monitoring, early warning dissemination and coordinated prevention, preparedness, early action and response. *Mitigation:* Use phased implementation, integrate low-cost and offline-capable technologies where appropriate, build on existing networks.
- **Adoption and sustainability of innovative approaches (Medium):** New approaches, including climate-risk intelligence systems, the No Fire – Credits to the Community mechanism, fire-smart landscape management approaches and adaptive governance arrangements, may require time to demonstrate effectiveness, gain user acceptance and generate sufficient evidence for institutionalization and scale-up. *Mitigation:* Early stakeholder engagement, phased piloting, continuous learning and evaluation, and alignment of successful approaches with

existing policies, programmes and financing mechanisms to support long-term uptake, institutionalization and scale-up.

- **Financial sustainability beyond the project period (Medium):** Recurrent costs associated with climate intelligence systems, coordinated prevention, early action, response mechanisms and community incentive programmes may exceed available financing after project completion. *Mitigation:* Gradually integrate operational costs into national budgets, develop co-financing and private-sector partnership opportunities, and strengthen community enterprise models and sustainability pathways during implementation.

Figure 2: Theory of Change Diagram

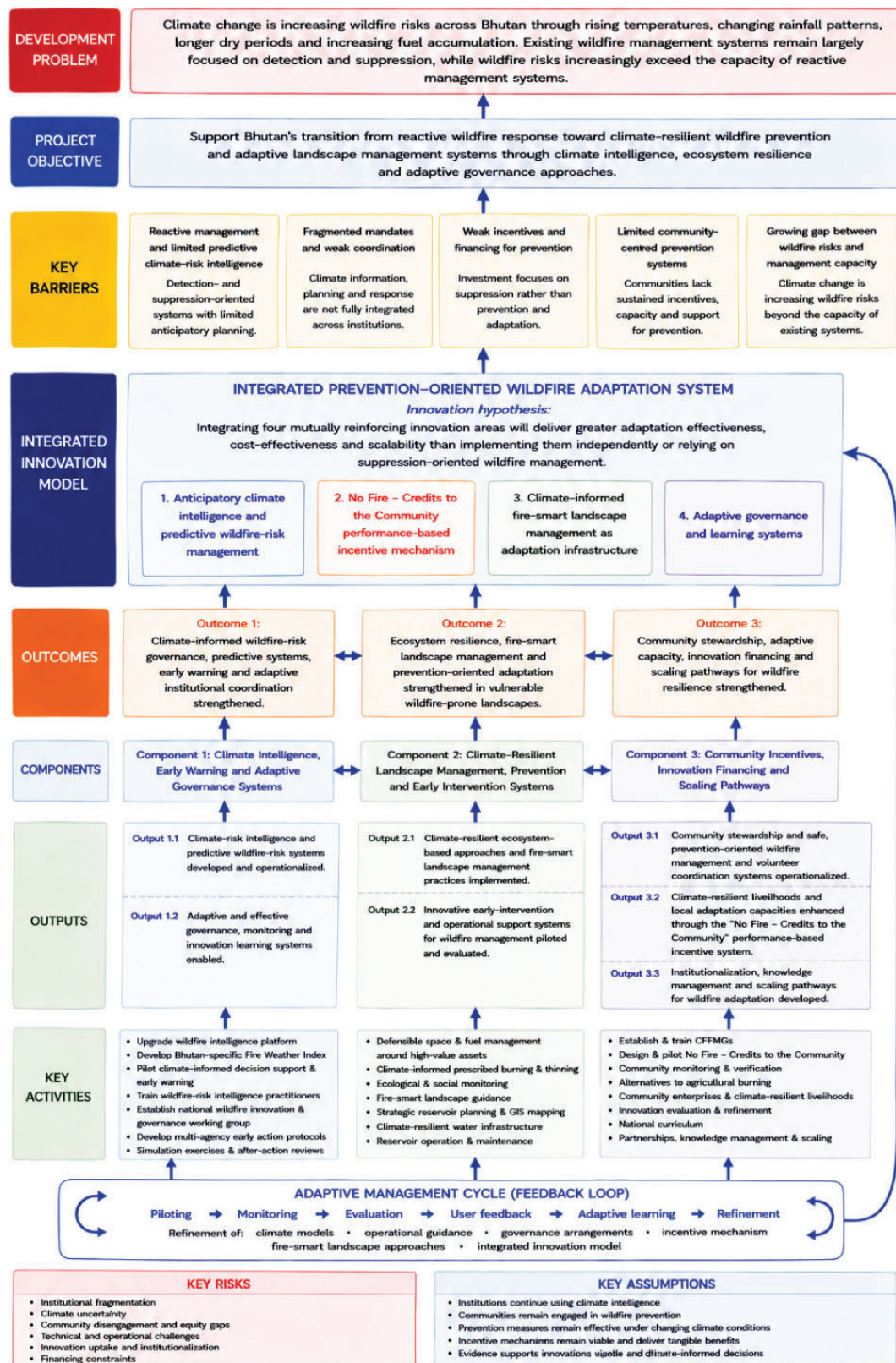


Figure 2: Theory of Change Diagram

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Project components

The project responds directly to priorities identified in Bhutan's National Adaptation Plan, particularly those relating to forests and biodiversity, climate services, disaster risk reduction, ecosystem resilience, community-based adaptation and institutional capacity strengthening.

The project contributes primarily to Adaptation Fund Outcomes 1, 5 and 8. It supports Outcome 1 through strengthened climate-risk information, wildfire-risk assessments, early warning systems and improved coverage of wildfire-risk reduction measures. It contributes to Outcome 5 through ecosystem-based adaptation and fire-smart landscape management interventions that strengthen the resilience of forests, watersheds and other natural-resource assets exposed to increasing wildfire risks. As an Innovation Window project, it contributes to Outcome 8 by piloting, testing and generating evidence on innovative wildfire adaptation practices, governance arrangements and financing mechanisms that can be institutionalized, replicated and scaled.

The project is structured around three mutually reinforcing components:

1. Climate Intelligence, Early Warning and Adaptive Governance Systems
2. Climate-Resilient Landscape Management, Prevention and Early Intervention Systems
3. Community Incentives, Innovation Financing and Scaling Pathways

Together, these interventions are expected to reduce wildfire vulnerability, strengthen ecosystem and watershed resilience, enhance institutional and community adaptive capacity, and generate practical evidence to inform future wildfire adaptation investments. While each component has a distinct implementation function, all three components are designed to operate together as one integrated prevention-oriented wildfire adaptation model. The project therefore evaluates both the effectiveness of individual innovation areas and the added value of integrating them into a coherent adaptation model.

Component 1: Climate Intelligence, Early Warning and Adaptive Governance Systems (USD 1,386,305)

Outcome 1: Climate-informed wildfire-risk governance, predictive systems, early warning and adaptive institutional coordination strengthened

Contribution to the integrated innovation model: Primarily advances Innovation Areas 1 and 4 by developing the climate intelligence and adaptive governance foundations on which the integrated prevention-oriented wildfire adaptation system depends.

This component provides the climate intelligence and adaptive governance foundation of the project's integrated prevention-oriented wildfire adaptation system. It primarily advances Innovation Areas 1 (Anticipatory Climate Intelligence and Predictive Wildfire Risk Management) and 4 (Adaptive Governance and Learning Architecture), while providing the climate-risk information, coordination mechanisms and learning processes that enable the other innovation areas to function effectively.

The innovation lies not only in generating better wildfire-risk information, but in strengthening the institutional architecture through which that information is translated into action. Rather than focusing solely on technology deployment, the component will test how climate intelligence can support anticipatory decision-making, adaptive governance and coordinated action across agencies, sectors and governance levels. UNDP's comparative advantage lies in supporting these institutional and governance dimensions, helping ensure that climate-risk information is consistently interpreted, shared and applied for prevention planning, preparedness, resource prioritization and adaptive management.

By linking climate intelligence with governance, operational planning and continuous learning, the component aims to reduce detection-to-response times, improve targeting of prevention measures and generate evidence on how anticipatory wildfire-risk management can strengthen long-term climate resilience in Bhutan's mountain landscapes.

Output 1.1: Climate-risk intelligence and predictive wildfire-risk systems developed and operationalized (USD 762,000)

Wildfire monitoring in Bhutan is currently led by the National Centre for Hydrology and Meteorology (NCHM) and the Department of Forests and Park Services (DoFPS), relying primarily on satellite-based fire detection, weather observations, field reporting and incident response. While these systems provide important near-real-time information on active fires, they do not currently provide localized predictive wildfire-risk forecasting, fuel-condition assessments or integrated decision-support to support anticipatory wildfire management.

Internationally, wildfire management is increasingly shifting from reactive fire detection and suppression towards anticipatory approaches that integrate climate services, fire-weather forecasting, fuel-condition assessments and geospatial decision-support to enable earlier risk-informed action. Guidance from the World Meteorological Organization on early warning systems and the FAO Integrated Fire Management Voluntary Guidelines recognizes these approaches as key elements of climate-resilient wildfire management (references included in subsection 1.6).

Building on these existing national systems and international good practice, this output operationalizes the project's Anticipatory Climate Intelligence and Predictive Wildfire Risk Management innovation area by developing Bhutan's first integrated, locally calibrated fire-weather and wildfire-risk methodology for Himalayan mountain ecosystems and integrating climate forecasts, fuel-load baselines, historical fire occurrence, satellite observations and socio-economic exposure into a unified wildfire intelligence platform. Rather than replacing existing monitoring systems, the project strengthens and extends them from fire detection towards anticipatory wildfire-risk management while generating evidence to inform future national scale-up and replication. This output responds directly to priorities identified in Bhutan's NAP (2023) for strengthened climate services, localized climate information and early warning for forests and biodiversity while generating evidence for future national scale-up. The project will evaluate the operational performance, usability and decision-support value of the integrated wildfire intelligence system to inform future institutional adoption.

Activity 1.1.1: Strengthen NCHM's satellite and weather-data-based Fire Detection and Monitoring System into an integrated wildfire intelligence platform

This activity builds on NCHM's existing satellite-based Fire Detection and Monitoring System by upgrading it into an integrated wildfire intelligence platform that fuses localized Fire Weather Index (FWI), fuel-load baselines, historical fire occurrence and socio-economic exposure. The platform will move from near-real-time detection towards predictive risk information, automated alerting and decision-support functions. It will enable anticipation of high-risk days, pre-position teams and assets, and provide context-appropriate prevention, preparedness and early action response options reducing the probability of climate-driven extreme fire weather causing catastrophic losses. Most importantly, the platform will establish objective, data-driven 'anticipatory action thresholds' that trigger pre-approved local preparedness protocols before physical ignitions occur.

Activity 1.1.2: Develop and validate Bhutan-specific fuel-load and Fire Weather Index (FWI) methodologies

Under climate change, generic fire danger indices may misrepresent risks in Bhutan's steep, elevation-stratified pine and mixed mountainous forests. This activity develops and validates Bhutan-specific fuel-load and FWI methodologies, combining field sampling, laboratory analysis and high-resolution weather inputs to generate locally calibrated tools at district and wildland-urban interface (WUI) scales. It supports ecosystem-based adaptation by helping managers understand fuel accumulation, drought stress and wind patterns, allowing earlier, safer interventions such as prescribed burning and thinning under Component 2.

Activity 1.1.3: Pilot climate-informed decision-support, alerting and early-action systems

Building on the upgraded intelligence platform, this activity pilots an integrated climate-informed decision-support and alerting system designed to operationalize anticipatory adaptation that visualizes dynamic wildfire risk, provides live incident information and supports prevention, preparedness and early action before fire conditions escalate. The activity will test operational procedures, alert dissemination mechanisms, coordination arrangements and selected enabling technologies, including drone-based monitoring and mobile early action and response support systems, to facilitate rapid risk communication, preparedness and early intervention in priority landscapes.

The system will be co-designed with planners, district disaster officers and DoFPS field teams to ensure that climate-risk information translates into practical decision options. Through iterative testing during fire seasons, user feedback and operational performance data will be used to refine alert protocols, decision-support functions and coordination mechanisms. This will generate evidence on the effectiveness of climate intelligence and early-action systems while strengthening adaptive governance through continuous learning and improvement.

Activity 1.1.4: Train national and district "risk intelligence practitioners"

Institutional transformation requires a cadre of practitioners who can interpret complex climate-risk analytics, support the transition from reactive firefighting towards prevention-oriented wildfire management, and champion iterative learning. This activity trains national and district-level "risk intelligence practitioners" in using and refining localized FWI tools, geospatial visualizations and early detection systems. These practitioners will anchor the shift from reactive to preventive, data-driven management, foster cross-agency dialogue around shared risk pictures, and help mainstream climate-risk intelligence into standard procedures, budgets and training curricula.

Activity	Stakeholders	Targets and Beneficiaries
1.1.1 Upgrade NCHM fire monitoring into predictive wildfire intelligence platform	Lead: MoENR (DoFPS) Other stakeholders: NCHM, GovTech, DLGDM	Target: One operational national wildfire intelligence platform integrating fire detection, climate, fuel-load and exposure information and supporting predictive wildfire-risk analysis and alerts. Beneficiaries: NCHM, DoFPS, DLGDM, RBP and local governments using climate-risk intelligence for planning and operations; approximately 170,373 people living within project landscapes benefiting from adaptation services, including improved wildfire-risk management.
1.1.2 Develop Bhutan-specific fuel-load and Fire	Lead: MoENR (DoFPS) Other stakeholders: NCHM, DoFPS, RUB	Target: Bhutan-specific fuel-load baselines and Fire Weather Index methodologies developed and validated for priority forest types and WUI areas; upgrade of 5 automatic weather stations installed to support localized fire-risk modelling. Beneficiaries: Forestry officers, planners,

Weather Index methodologies		disaster management personnel and incident commanders using localized wildfire-risk information to guide prevention and preparedness actions.
1.1.3 Pilot climate-informed decision-support, alerting and early-action systems	Lead: MoENR (DoFPS) Other stakeholders: DLGDM, Dzongkhag Disaster Management Committees, RBP, Desuung, local governments, CFFMGs	Target: One integrated climate-informed decision-support and alerting system piloted and operational across five pilot dzongkhags, supporting wildfire-risk planning, preparedness, resource allocation and early-action decision-making. Selected operational technologies, including drone-based monitoring and mobile early action and response support systems, tested and integrated into wildfire preparedness and early-action protocols. Beneficiaries: Approximately 100 incident commanders, planners and decision-makers across five pilot dzongkhags and concerned municipalities, as well as communities, settlements, cultural heritage sites and critical infrastructure within five pilot landscapes and two WUI areas benefiting from improved wildfire-risk information, preparedness and early-action systems.
1.1.4 Train wildfire-risk intelligence practitioners	Lead: MoENR (DoFPS) Other stakeholders: DECC, NCHM, training institutes	Target: National and district cadre of wildfire-risk intelligence practitioners established and operational, with capacity to apply localized FWI tools, geospatial analysis and predictive wildfire-risk information. Beneficiaries: Approximately 150–200 personnel including DoFPS officers, district focal points, Desuung, RBP and disaster-management personnel.

Output 1.2: Adaptive and effective governance, monitoring and innovation learning systems enabled (USD 624,305)

This output operationalizes the project's innovation area 4) Adaptive Governance and Learning Architecture by strengthening the governance, coordination, monitoring and learning systems needed to translate climate-risk intelligence into effective action. Beyond technology deployment, the output pilots and evaluates mechanisms for adaptive decision-making, inter-agency coordination, innovation learning and continuous improvement across institutions and fire seasons. It seeks to generate evidence on how adaptive governance arrangements can accelerate uptake of climate intelligence, support anticipatory wildfire-risk management and strengthen long-term institutional resilience.

Activity 1.2.1: Establish a national wildfire innovation and governance working group

This activity formalizes a national wildfire innovation and governance working group that brings together Department of Forests and Park Services (DoFPS), Department of Local Governance and Disaster Management (DLGDM), National Center for Hydrology and Meteorology (NCHM), GovTech Agency, local governments and civil society organizations (CSOs) with an explicit learning and innovation agenda. The group will serve as an institutional incubator to steer climate-risk-based wildfire policies, oversee piloting of innovative solutions, and systematically translate empirical evidence and lessons from the project into adjusted regulatory frameworks, incentive schemes, and budget allocations.

Activity 1.2.2: Develop and institutionalize multi-agency alert and early action response protocols

Building on the technology enhanced alert (Activity 1.1.3), this activity enables multi-agency alert early action and response protocols involving district administrations, Royal Bhutan Police (RBP), DoFPS field units, Desuung (National Volunteerism Organization) and local governments. The response protocols will define roles, thresholds for action, decision rights and communication channels for time-critical response, ensuring that under more extreme fire weather conditions, overlapping mandates do not delay action. Institutionalizing these protocols through SOPs, training and integration into the Disaster Management framework implementation guidelines will strengthen vertical and horizontal coordination and reduce governance bottlenecks during climate-driven fire emergencies.

Activity 1.2.3: Conduct regular simulation exercises and after-action reviews

To support continuous learning and adaptation, this activity institutionalizes regular simulation exercises that stress-test detection thresholds, verification procedures and coordination workflows. Simulations will be based on realistic climate and fire scenarios derived from NCHM's projections and historical fire data, helping agencies rehearse responses to near-future extremes before they occur. After-action reviews from real incidents will produce evidence on how new systems reduce detection-to-response times and losses, with findings feeding back into tool calibration, SOP revisions and capacity-building plans, thereby anchoring an adaptive management culture. These reviews will directly inform the scaling pathways of Component 3, ensuring that operational failures or successes are immediately translated into policy updates.

Activity	Stakeholders	Targets and Beneficiaries
1.2.1 Establish a national wildfire innovation and governance working group	Lead: MoENR (DoFPS) Other stakeholders: DLGDM, NCHM, GovTech, DECC, Local Governments, CSOs	Target: National wildfire innovation and governance working group formally established and operational; at least 5 knowledge products (frameworks, guidelines, policy notes, case studies or technical briefs) produced and disseminated. Beneficiaries: Working group members and wildfire management agencies across Bhutan; all wildfire-prone districts benefiting from improved coordination and learning.
1.2.2 Develop & institutionalize multi-agency alert	Lead: MoENR (DoFPS) Other stakeholders: DLGDM, RBP,	Target: Multi-agency wildfire alert and early action response protocol formally developed and operationalized; 5 Dzongkhag-level Forest Fire Management Plans developed and endorsed; 5 Rapid Early action and Response Teams established and operational; all teams equipped with

& response protocols	Desuung, Dzongkhags, Gewogs	basic firefighting and personal protective equipment. Beneficiaries: Rapid Response Teams, frontline responders, local governments and at-risk communities in wildfire-prone landscapes.
1.2.3 Conduct regular simulation exercises & after-action reviews	Lead: MoENR (DoFPS) Other stakeholders: NCHM, DLGDM, PMU, Local Governments	Target: At least 2 full-scale wildfire simulation exercises conducted in each pilot dzongkhag over the project period; after-action reviews completed for all simulation exercises & at least 5 significant wildfire incidents. Beneficiaries: DoFPS, DLGDM, RBP, Desuung, local governments and emergency-response personnel participating in simulation exercises and adaptive management processes.

Component 2: Climate-Resilient Landscape Management, Prevention and Early Intervention Systems (USD 1,335,011)
Outcome 2: Ecosystem resilience, fire-smart landscape management and prevention-oriented adaptation strengthened in vulnerable wildfire-prone landscapes

Contribution to the integrated innovation model: Primarily advances Innovation Area 3 by translating climate intelligence into climate-resilient landscape interventions and generating evidence on prevention-oriented adaptation in practice.

This component translates the integrated innovation model into practical landscape-level adaptation. It primarily advances Innovation Area 3 while applying climate intelligence generated under Component 1 and generating operational evidence that informs adaptive learning and refinement of the overall innovation model.

The component combines climate-informed fuel management, protection of critical assets and strategic water infrastructure to strengthen ecosystem resilience, reduce wildfire intensity and improve preparedness in high-risk landscapes. Climate-risk information generated under Component 1 will be used to guide where and how interventions are implemented, enabling adaptation investments to be targeted towards the most vulnerable forests, watersheds, communities and urban–wildland interface areas.

Beyond implementation, the component will generate evidence on the effectiveness of climate-informed fire-smart landscape management in reducing wildfire vulnerability, protecting ecosystem services and strengthening resilience under changing climate conditions. By testing these approaches across representative wildfire-risk contexts, the component aims to inform future wildfire-management policies, adaptation investments and replication across Bhutan's forested mountain landscapes.

Output 2.1: Climate-resilient ecosystem-based approaches and fire-smart landscape management practices implemented (USD 782,511)

This output contribute to the project's innovation area 3) Climate-Informed Fire-Smart Landscape Management as Adaptation Infrastructure. Bhutan already applies EbA and forest management measures to support ecosystem health, while prescribed burning has recently begun to be reintroduced on a limited basis following decades of prohibition. However, fire-smart landscape management has not yet been systematically implemented as a climate adaptation strategy guided by localized wildfire-risk intelligence. Building on the climate-risk intelligence developed under Output 1.1 and vulnerabilities identified in Bhutan's NAP, the output integrates ecosystem-based adaptation (EbA), prescribed burning, fuel management, scientific thinning and strategic fire-line placement to reduce wildfire intensity, strengthen ecosystem resilience, protect high-value assets and maintain critical ecosystem services under changing climate conditions. The innovation lies in treating these measures as climate adaptation infrastructure—planned, prioritized and evaluated according to future wildfire risk rather than conventional forest management objectives alone.

Activity 2.1.1: Co-design defensible space and fuel-management prescriptions around high-value assets

Working with local governments and communities, this activity co-designs and implements defensible-space/wildfire buffer zone and fuel-management solutions around settlements, lhakhangs, dzongs and hydropower-related assets in priority districts. These EbA innovation measures will include strategic clearance of flammable vegetation, fire-resistant landscaping and maintenance of safe setback distances, innovation to protect cultural and economic assets under more extreme future fire weather. The co-design process aims to build local ownership, integrate traditional knowledge and address cultural sensitivities, thereby supporting behavioural change towards prevention-oriented practices.

Activity 2.1.2: Pilot integrated fire-smart forest management treatments in high-risk WUI forests and watersheds

In selected WUI forests and critical watersheds, this activity implements integrated fire-smart treatments such as prescribed burning, evidence-based thinning and strategic fire-lines guided by localized fuel-load and FWI intelligence from Output 1.1. These treatments target to balance fire-risk reduction with conservation objectives, helping to sustain stand vigor, biodiversity and soil stability in a hotter, drier climate. These pilots will generate quantitative evidence on how climate-informed fuel management reduces fire intensity and post-fire erosion, supporting the integration of fire-smart practices into national forest policies and management plans. By treating these forest zones as living protective barriers, the project establishes a scalable model for nature-based defense infrastructure in mountain ecosystems.

Activity 2.1.3: Monitor ecological and social outcomes of fire-smart interventions

To avoid maladaptation and maintain public trust, this activity establishes monitoring of ecological and social outcomes of fire-smart interventions, including fuel reduction, biodiversity indicators and community acceptance. Data will be used to refine operational guidelines, adjust treatment prescriptions and ensure safeguards for vulnerable species and ecosystem services, aligning with Bhutan's NBSAP and forest policy. Social monitoring will assess perceptions of risk, equity of benefits and participation of women and vulnerable groups, informing future scale-up and safeguards design.

Activity 2.1.4: Package and disseminate guidance and site-specific models for fire-smart treatments

Building on field experience and monitoring results, this activity packages standard operating guidance and site-specific treatment models for use in forest management plans, watershed programmes and other adaptation investments. Guidance will emphasize the climate-adaptation rationale, practical decision rules using localized FWI, and integration with other EbA and REDD+ measures.

Activity summary	Stakeholders	Targets/beneficiaries
Activity 2.1.1: Co-design defensible space and fuel-management prescriptions around high-value assets	Lead: MoENR (DoFPS) Other stakeholders: dzongkhags, LGs, communities, heritage authorities	Target: Defensible-space and fuel-management prescriptions co-designed and implemented for at least 50 high-value assets, including settlements, cultural heritage sites, community infrastructure and hydropower-relevant assets across five dzongkhags. Beneficiaries: Communities, settlements, lhakhangs, dzongs, hydropower-related assets and surrounding populations exposed to wildfire risk.
Activity 2.1.2: Pilot integrated fire-smart forest management treatments in high-risk WUI forests and watersheds.	Lead: MoENR (DoFPS) Other stakeholders: CFMGs, NCHM, DOW	Target: At least 200 ha of high-risk forest and WUI landscapes treated through fuel-reduction measures; at least 200 ha of overcrowded forest stands thinned; at least 75 km of strategic fire lines established or maintained around key settlements, cultural heritage sites and critical assets. Beneficiaries: Forest-edge communities, watershed users, protected-area managers and critical infrastructure located within treated landscapes
Activity 2.1.3: Monitor ecological and social outcomes of fire-smart interventions	Lead: MoENR (DoFPS) Other stakeholders: RUB, CSOs, communities	Target: Monitoring plots established across at least 20 treatment sites covering major forest types and WUI conditions; one consolidated technical report on ecological, social and adaptation outcomes produced. Beneficiaries: Forest-dependent communities, biodiversity conservation programmes, protected-area managers and agencies responsible for ecosystem management.
Activity 2.1.4: Package and disseminate guidance and site-specific models for fire-smart treatments	Lead: MoENR (DoFPS) Other stakeholders: DECC, watershed programmes, planners	Target: One national guidance document on fire-smart landscape management and ecosystem-based adaptation produced; five site-specific treatment models developed; guidance integrated into at least five forest, watershed or landscape management plans. Beneficiaries: Forest managers, planners, watershed programmes and adaptation practitioners nationwide.

Output 2.2: Innovative early-intervention and operational support systems for wildfire management piloted and evaluated (USD 552,500)

This output pilots and evaluates climate-informed early-intervention systems that strengthen preparedness and enable rapid action before wildfires escalate into large-scale events. It addresses a critical operational constraint in Bhutan's mountainous landscapes: limited access to strategically located water sources and operational support infrastructure needed to respond effectively under increasingly severe fire-weather conditions. The innovation lies not in the infrastructure itself, but in the use of climate-risk information, wildfire-risk mapping and anticipatory planning to strategically position water-access and operational support systems where they can most effectively reduce wildfire risks, response times and climate-related losses. The output will generate evidence on how climate-informed preparedness infrastructure can strengthen prevention-oriented wildfire adaptation in mountain landscapes.

Activity 2.2.1: Conduct site identification, GIS mapping and field surveys for strategic reservoirs and lines

This activity combines GIS analysis, climate and fire-risk data and field surveys to identify strategic locations for reservoirs, ponds, check dams and water lines that can support suppression operations in high-risk landscapes. Site selection will consider projected climate-driven water scarcity, topography, access routes, fire corridors and protection of critical infrastructure, ensuring that investments function as climate-resilient assets that support both fire management and broader water-security objectives.

Activity 2.2.2: Prepare technical designs and capacity specifications for water infrastructure

Based on identified sites, this activity prepares climate-informed technical designs and capacity specifications for reservoirs, ponds, check dams and water lines, including fire hose outlets and integration with access roads and firelines. Designs will account for more frequent droughts, intense rainfall events and sediment loads projected under climate change, thereby reducing the risk of infrastructure failure or maladaptation.

Activity 2.2.3: Construct water reservoirs/ponds and integrate with fire lines and access roads

This activity constructs approximately 2015 water reservoirs or ponds with fire hose outlets at identified sites and ensures their integration with fire lines and access roads to enable rapid deployment of prevention, preparedness and wildfire-response teams. By providing reliable local water sources in strategic positions, the activity reduces reliance on long-distance water transport, shortens response times and enhances the feasibility of low-carbon, community-based suppression under more extreme fire weather conditions.

Activity 2.2.4: Conduct routine inspection, water-level monitoring and maintenance

To ensure long-term functionality, this activity establishes routines for inspection, water-level monitoring and annual maintenance of reservoirs and associated infrastructure, engaging local governments and communities where possible. Regular maintenance supports sustainability, prevents infrastructure from becoming stranded assets and embeds climate-informed wildfire preparedness and climate-resilient water management practices into local planning and operational systems.

Activity summary	Stakeholders	Targets/beneficiaries
Activity 2.2.1: Conduct site identification, GIS mapping and field surveys for strategic reservoirs and lines	Lead: MoENR (DoFPS) Other stakeholders: NCHM, DLGDM, LGs	Target: Strategic mapping and field assessments completed for at least 20 potential reservoir and water-storage sites and associated access routes across five dzongkhags. Beneficiaries: High-risk wildfire landscapes, local governments and wildfire management agencies.
Activity 2.2.2: Prepare technical designs and capacity specifications for water infrastructure	Lead: MoENR (DoFPS) Other stakeholders: engineers, MoENR, consultants	Target: Detailed technical designs and climate-resilient engineering specifications prepared and approved for at least 15 strategic reservoir and water-storage sites. Beneficiaries: Communities and wildfire-response systems in priority landscapes.
Activity 2.2.3: Construct water reservoirs/ponds and integrate with fire lines and access roads	Lead: MoENR (DoFPS) Other stakeholders: contractors, LGs, communities	Target: Fifteen strategically located reservoirs or ponds with fire-hose outlets constructed and integrated with fire lines and access routes; 100% geo-referenced and incorporated into the national wildfire intelligence platform. Beneficiaries: Fire crews, local governments, nearby communities and critical assets in high-risk landscapes.
Activity 2.2.4: Conduct routine inspection, water-level monitoring and maintenance	Lead: MoENR (DoFPS) Other stakeholders: LGs, CFMGs	Target: Quarterly inspection and maintenance protocols established; at least 90% of reservoirs operational and meeting agreed service standards by project completion. Beneficiaries: Fire-response agencies, local governments and communities relying on wildfire preparedness infrastructure.

Component 3: Community Incentives, Innovation Financing and Scaling Pathways (USD 1,449,191)

Outcome 3: Community stewardship, adaptive capacity, innovation financing and scaling pathways for wildfire resilience strengthened

Contribution to the integrated innovation model: Primarily advances Innovation Area 2 while generating the evidence, community ownership and scaling pathways needed for long-term institutionalization of the integrated innovation model.

This component strengthens the community stewardship, incentive mechanisms and scaling pathways that enable the integrated prevention-oriented wildfire adaptation system to become sustainable beyond the pilot phase. It primarily advances Innovation Area 2 (No Fire – Credits to the Community) while supporting learning, institutionalization and scaling of the integrated innovation model.

Communities play a critical role in preventing, detecting and responding to wildfires. The component therefore strengthens community-based wildfire adaptation through organized prevention systems, climate-resilient livelihood opportunities and a performance-based incentive mechanism that rewards verified wildfire-prevention and stewardship outcomes. By linking wildfire prevention with locally led adaptation, livelihood resilience and behavioural change, the component will generate evidence on how incentive-based approaches can support long-term adaptation outcomes.

The component also supports learning, institutionalization and scaling pathways to ensure that successful approaches are integrated into national systems and can be replicated across Bhutan's wildfire-prone landscapes. Through evaluation, knowledge management, partnerships and future financing pathways, it contributes to the broader Innovation Window objective of generating scalable and sustainable models for prevention-oriented climate adaptation.

Output 3.1: Community stewardship and safe, prevention-oriented wildfire management and volunteer coordination systems operationalized (USD 640,500)

The output builds organized, well-equipped and trained community structures that can prevent ignitions, support safe early suppression and act as partners in implementing Components 1 and 2. It aims to shift community roles from ad-hoc mobilization to structured stewardship, embedded in local governance and supported by clear incentives and capacity building.

Activity 3.1.1: ~~Strengthen and Establish and~~ equip Community-based Forest ~~Fire~~ Management Groups (CFFMGs)

This activity ~~strengthens establishes and equips existing~~ CFFMGs in fire-prone areas in five districts, building on Bhutan's ~~established experience with~~ community forest ~~management groups and watershed groups~~. ~~Participating CFMGs CFFMGs~~ will receive appropriate tools, basic personal protective gear and communication equipment, and will be linked to the national alert and operations systems under Component 1. They become the local institutional anchor for prevention campaigns, maintenance of firelines, and for piloting incentive mechanisms (Output 3.2.)

Activity 3.1.2: Train CFFMGs (including women and youth) in safe, prevention-oriented wildfire management

Training focuses on safe, prevention-oriented wildfire management practices, including controlled burning, fireline maintenance, early reporting, safe suppression support and post-fire restoration, with deliberate inclusion of women and youth. It contributes to adaptive capacity and social resilience by building skills and enabling communities to engage with advanced climate-risk information and alerts.

Activity summary	Stakeholders	Targets/beneficiaries
Activity 3.1.1: ~~Strengthen and equip~~ ~~CFMGs Establish &~~ ~~equip CFFMGs~~	Lead: MoENR (DoFPS) Other stakeholders: dzongkhags, gewogs, CSOs	Target: At least 12 Community-based Forest ~~Fire~~ Management Groups (CFFMGs) ~~established or~~ strengthened across project landscapes; all groups equipped with basic wildfire management equipment and protective gear; at least 30% women and youth participation. Beneficiaries: Community volunteers, local leaders and wildfire-prone communities across five dzongkhags.
Activity 3.1.2: Train ~~CFMGs CFFMGs~~ in safe, prevention-oriented wildfire management	Lead: MoENR (DoFPS) Other stakeholders: DLGDM, Desuung, training institutes	Target: At least 300 ~~CFMG CFFMG~~ members trained in safe and prevention-oriented wildfire management practices, including at least 30% women. Beneficiaries: Women, youth and community members participating in wildfire prevention, preparedness, early action and response activities.

Output 3.2: Climate-resilient livelihoods and local adaptation capacities enhanced through “No Fire – Credits to the Community” (USD 563,000)

This output pilots an innovative performance-based incentive mechanism that links verified wildfire-prevention outcomes with climate-resilient livelihood benefits for participating communities. The proposed “No Fire – Credits to the Community” mechanism seeks to reward prevention behaviours, strengthen community stewardship and demonstrate how adaptation outcomes can be linked to economic incentives. The project will explore and refine different implementation options during the PFG phase. Credits may take the form of in-kind support, capitalization of community enterprises, equipment or other locally appropriate incentives linked to verified prevention outcomes. By reducing ignitions, supporting climate-resilient livelihood activities and strengthening community ownership of wildfire prevention, the mechanism aims to create sustainable incentives for long-term resilience while generating evidence for potential replication and scale-up.

Activity 3.2.1: Conduct pre-consultation meetings with communities

This activity undertakes consultations with communities, CFFMGs and local authorities to explain the mechanism, identify local priorities, and co-design eligibility criteria, benefit-sharing arrangements and safeguards with particular attention on gender inclusion, vulnerable groups and grievance mechanisms.

Activity 3.2.2: Design and pilot the performance-based “No Fire – Credits to the Community” mechanism

Building on community consultations, this activity designs and pilots the No Fire Credits mechanism, including performance indicators, verification procedures, benefit-sharing arrangements and governance structures. It will link verified wildfire-prevention outcomes - such as fire-free seasons, maintained fire lines, and adoption of safe land-management practices (dynamically verified via the satellite intelligence platform developed in Activity 1.1.1) - to climate-resilient livelihood opportunities. The mechanism will test alternative approaches for community incentives, benefit distribution and governance, and incorporate safeguards to minimise unintended incentives, including transparent verification procedures, equitable benefit-sharing, grievance mechanisms and performance criteria that recognise differing wildfire-risk contexts and factors beyond community control. Consultations will also explore appropriate forms of community incentives, governance arrangements, eligibility criteria and verification approaches to ensure that the mechanism is locally acceptable, equitable and operationally feasible.

Activity 3.2.3: Develop community-verified monitoring tools and protocols

This activity develops practical tools and protocols for community-based monitoring and verification of prevention activities and results. Where feasible, these systems will be linked to national wildfire intelligence platform (Component 1). Community verification processes will promote transparency, accountability and participation of women and vulnerable groups. Monitoring and verification arrangements will combine community reporting with objective data from the wildfire intelligence platform to strengthen transparency and reduce opportunities for misreporting.

Activity 3.2.4: ~~Support participating communities to adopt~~ ~~identify CFFMGs and promote~~ alternatives to agricultural debris burning

This activity supports participating communities to pilot alternatives to open agricultural burning, including biochar production, briquetting and other climate-resilient biomass utilization approaches. These interventions aim to reduce ignition risks while generating local livelihood and environmental benefits.

Activity 3.2.5: Establish community-based enterprise groups and governance/ business plans

This activity supports participating communities to establish and strengthen community-based enterprises linked to wildfire prevention and climate-resilient livelihoods. Governance arrangements, business plans and market opportunities will be developed to strengthen sustainability and support future expansion of the mechanism. Where appropriate, performance-based incentives may be channelled through community-managed funds or enterprises to support agreed wildfire prevention and climate-resilient livelihood activities.

Activity 3.2.6: Document performance, equity outcomes and livelihood impacts and refine the mechanism

This activity documents operational performance, adaptation outcomes, equity considerations and livelihood impacts of the mechanism. Lessons learned will inform refinement of the model and recommendations for replication, institutionalization and integration into broader adaptation programmes. The evaluation will assess the effectiveness, equity, cost-effectiveness, operational feasibility and scalability of alternative mechanism designs.

Activity	Stakeholders	Targets and Beneficiaries
3.2.1 Conduct pre-consultation meetings with communities	Lead: MoENR (DoFPS) Other stakeholders: Dzongkhags, Gewogs, CFFMGs, CSOs	Target: At least 10 consultations conducted across project landscapes; community priorities, eligibility criteria and safeguard considerations documented. Beneficiaries: Project landscape communities, CFFMGs, women and vulnerable households participating in design of the mechanism.
3.2.2 Design & pilot the performance-based No Fire – Credits to the Community mechanism	Lead: MoENR (DoFPS) Other stakeholders: MoF, DECC, communities	Target: Operational No Fire Credits mechanism designed and piloted, including performance indicators, verification procedures, benefit-sharing arrangements, governance structures, grievance mechanisms established; mechanism piloted through at least 5 CFFMGs across 5 dzongkhags. Beneficiaries: Participating communities, CFFMGs and vulnerable households benefiting from improved wildfire prevention and climate-resilient livelihood opportunities.
3.2.3 Develop community-based monitoring, verification and learning systems	Lead: MoENR (DoFPS) Other stakeholders: GovTech, communities	Target: Monitoring and verification tools developed and tested; community verification committees established with representation of women and vulnerable groups; members of at least 5 CFFMGs trained. Beneficiaries: Participating communities, women and vulnerable groups engaged in monitoring and decision-making.
3.2.4 Support alternatives to agricultural debris burning	~~DoFPS, CFFM~~ Lead: MoENR (DoFPS) Other stakeholders: LGs, enterprise groups	Target: At least 5 CFFMGs supported to pilot alternatives to agricultural burning, including biochar, briquettes or similar approaches. Beneficiaries: Smallholder farmers, CFFMGs and participating households adopting lower-risk land-management practices.
3.2.5 Establish community-based enterprise groups and livelihood pathways	Lead: MoENR (DoFPS) Other stakeholders: private sector, communities	Target: At least 5 community-based enterprise groups established; governance and business plans developed; at least 150 community members (minimum 30% women) trained in enterprise development and climate-resilient livelihood activities. Beneficiaries: Participating CFFMG members, women, youth and community enterprise groups.
3.2.6 Evaluate performance, equity outcomes and livelihood impacts	Lead: MoENR (DoFPS) Other stakeholders: PMU, DECC, academic partners	Target: Comprehensive evaluation of adaptation, livelihood and equity outcomes completed; recommendations for scale-up and institutionalization developed. Beneficiaries: National policy-makers, participating communities, future financing partners and scale-up initiatives.

Output 3.3: Institutionalization, knowledge management and scaling pathways for wildfire adaptation developed (USD 245,691)

This output supports evaluation, refinement, institutionalization and scaling of the integrated prevention-oriented wildfire adaptation system and its four mutually reinforcing innovation areas by ensuring that lessons and successful approaches developed under the project are translated into long-term institutional change, policy uptake and future investment pathways. It focuses on institutionalizing knowledge, strengthening partnerships, documenting innovation and creating pathways for replication and scale-up within Bhutan and beyond. A structured learning and evaluation framework will be established to assess the effectiveness, scalability and institutional uptake of the project's four innovation areas and translate findings into guidance for replication and scale-up.

Activity 3.3.1: Develop and institutionalize a national wildfire adaptation curriculum

This activity develops a comprehensive curriculum covering climate-risk science, wildfire adaptation, ecosystem-based approaches, community stewardship, adaptive governance and innovative financing mechanisms. The curriculum will be institutionalized through national training institutions for long-term capacity development.

Activity 3.3.2: Facilitate strategic partnerships and co-investment pathways, including with the private sector

This activity supports engagement with state-owned enterprises, development partners and private-sector actors whose assets or operations are exposed to wildfire risk and for future co-financing, partnership and investment opportunities that can support scale-up of wildfire adaptation approaches beyond the project period.

Activity 3.3.3: Document innovation, adaptation outcomes and lessons learned

This activity systematically tracks innovations, adaptation outcomes, partnerships and lessons learned throughout project implementation. Results will support adaptive management, replication planning and reporting under the Adaptation Fund Innovation Window.

Activity 3.3.4: Facilitate regional knowledge exchange and exposure visits

This activity supports targeted exposure visits and peer-learning exchanges with countries and institutions that have experience in wildfire adaptation, ecosystem-based approaches and community-centred prevention systems.

Activity 3.3.5: Participate in regional and international knowledge-sharing platforms

This activity supports participation in international conferences, workshops and learning platforms to share Bhutan's experience, attract technical and financial partnerships, and contribute to global learning on wildfire adaptation.

Activity	Stakeholders	Targets and Beneficiaries
3.3.1 Develop and institutionalize a national wildfire adaptation curriculum	Lead: MoENR (DoFPS) Other stakeholders: training institutes, RUB, DECC	Target: National wildfire adaptation curriculum developed and validated; curriculum adopted by at least two national training institutions. Beneficiaries: Rangers, planners, students, CFFMG leaders and future wildfire management practitioners.
3.3.2 Facilitate strategic partnerships & co-financing pathways	Lead: MoENR (DoFPS) Other stakeholders: MoF, SOEs, private sector, development partners	Target: At least two partnership agreements or formal expressions of interest established to support replication, co-financing or scale-up of wildfire adaptation approaches. Beneficiaries: Communities, CFFMGs, public institutions and future scale-up initiatives.
3.3.3 Document innovation, adaptation outcomes & lessons learned	Lead: MoENR (DoFPS) Other stakeholders: PMU, DECC, UNDP, National Wildfire Innovation & Governance Working Group	Target: <u>The integrated prevention-oriented wildfire adaptation model and its four mutually reinforcing innovation areas tracked and evaluated; annual innovation-learning briefs produced documenting adaptation outcomes, effectiveness, efficiency/cost-effectiveness, partnerships, lessons learned and replication opportunities.</u> <u>At least five innovations tracked and evaluated; annual innovation-learning briefs produced documenting adaptation outcomes, partnerships, lessons learned & replication opportunities.</u> Beneficiaries: National planners, development partners, policy-makers and future wildfire adaptation programmes.
3.3.4 Facilitate regional knowledge exchange & exposure visits	Lead: MoENR (DoFPS) Other stakeholders: NCHM, DLGDM, MoENR, PMU	Target: At least one regional exposure visit conducted with participation from key agencies and communities (minimum 30% women participants). Beneficiaries: DoFPS, DLGDM, NCHM, CFFMGs and project partners.
3.3.5 Participate in regional & international knowledge-sharing platforms	Lead: MoENR (DoFPS) Other stakeholders: DECC, UNDP, partners	Target: Participation in at least three regional or international knowledge-sharing events; at least two presentations or knowledge products disseminating Bhutan's wildfire adaptation experience. Beneficiaries: Regional and global adaptation practitioners, development partners and future replication initiatives.

B. Innovation Rationale and Adaptation Innovation

The project's main innovation is the introduction and testing of an integrated, prevention-focused wildfire adaptation model for Bhutan. The project combines climate-risk information, fire-smart landscape management, adaptive governance, and community incentives into one coordinated system that strengthens wildfire prevention.

The No Fire - Credits to the community-mechanism is at the core of this approach, linking wildfire prevention to tangible community incentives and encouraging year-round stewardship. The other innovative interventions reinforce the preventive adaptation model such as the climate-risk intelligence targets prevention effort and verifies the outcomes on which credits are earned, the fire-smart landscape management and prescribed burning give communities the means to keep their areas fire-free. Adaptive governance and community-based forest management provides the institutions and local ownership to sustain prevention and administer the mechanism fairly.

The technological, ecological, financial and institutional innovations builds on internationally established approaches, however applying them together with a performance-based community incentive for wildfire prevention has not previously been tested. This represents a significant shift from existing efforts largely focused on fire detection, suppression, and post-fire response towards prevention activities, anticipatory climate information, ecosystem management, and community engagement. The proposed model brings these elements together into a coordinated system and makes wildfire prevention a continuous community incentivised priority.

The project hypothesizes that combining climate-risk intelligence, fire-smart landscape management, adaptive governance and community incentives into a single coordinated model, anchored on the No Fire - Credits to the community mechanism, will shift Bhutan from reactive fire detection and suppression toward sustained, community-incentivised prevention. This is expected to reduce wildfires and burned areas more effectively and durably than existing approaches, and to produce a model that can be institutionalised and scaled across similar landscapes in other countries. The integrated innovation model comprises four mutually reinforcing innovation areas, each contributing a distinct function while collectively forming one prevention-oriented wildfire adaptation system. The project will pilot, evaluate and refine both the individual innovation areas and the integrated model through the Adaptation Fund Innovation Window:

1. Anticipatory Climate Intelligence and Predictive Wildfire Risk Management

The project introduces Bhutan's first integrated climate-informed wildfire intelligence system, combining localized fire-weather forecasting, fuel-load assessments, wildfire-risk modelling and decision-support tools.

- *Innovation leap:* Existing systems rely primarily on public reporting and detection of active fires. The proposed approach enables authorities to anticipate periods of elevated wildfire risk, identify hotspots before ignition occurs and implement preventive actions based on climate-risk information.
- *Expected adaptation benefit:* Earlier and more targeted interventions reduce wildfire exposure, improve preparedness and support a transition from reactive response to proactive climate-risk management.

2. No Fire – Credits to the Community: Performance-Based Incentives for Wildfire Prevention

The project will pilot the No Fire – Credits to the Community mechanism, a performance-based incentive model that rewards verified wildfire-prevention and stewardship outcomes. The mechanism links sustained wildfire prevention to tangible community adaptation benefits, strengthening community stewardship while demonstrating how climate adaptation outcomes can be incentivized. Credits will be earned collectively by eligible Community-based Forest Fire-Management Groups (CFFMGs) based on verified wildfire-prevention performance and redeemed for agreed community adaptation investments, climate-resilient livelihood activities or community forestry initiatives, rather than individual cash payments. Verification will combine satellite monitoring, official wildfire records and ground validation, supported by transparent eligibility, benefit-sharing and grievance arrangements. Risk-adjusted performance criteria will ensure communities are rewarded for genuine prevention efforts and not penalized for fires beyond their reasonable control. The detailed design of the mechanism—including eligibility criteria, verification procedures, credit thresholds, benefit-sharing arrangements and safeguards against unintended incentives—will be finalized during project preparation and refined through implementation.

- *Innovation leap:* Current approaches primarily mobilize communities after fires occur and provide limited incentives for prevention. The proposed mechanism rewards risk reduction and stewardship before disasters occur and is the first performance-based wildfire-prevention mechanism designed for Bhutan's community-forest context.
- *Expected adaptation benefit:* Sustained incentives for prevention, stronger community ownership, behavioural change and enhanced adaptive capacity, while generating evidence on future applications of performance-based adaptation finance.

3. Climate-Informed Fire-Smart Landscape Management as Adaptation Infrastructure

The project reframes wildfire prevention measures as climate-adaptation infrastructure. Fire-smart interventions will be guided by climate-risk intelligence and targeted to the most vulnerable landscapes.

- *Innovation leap:* Conventional wildfire management often treats suppression and restoration as separate activities. The project integrates climate information, ecosystem-based adaptation and wildfire prevention into a unified landscape-management approach.
- *Expected adaptation benefit:* Reduced fuel loads, increased ecosystem resilience, improved watershed protection and enhanced protection of settlements, biodiversity and critical infrastructure.

4. Adaptive Governance and Learning Architecture

The project will establish a National Wildfire Innovation and Governance Working Group and associated learning mechanisms to support evidence-based decision-making, inter-agency coordination and adaptive management.

- *Innovation leap:* While coordination mechanisms exist for wildfire response, there is currently no dedicated platform for systematically testing, evaluating and institutionalizing innovation in wildfire adaptation.
- *Expected adaptation benefit:* Continuous learning and adaptive governance strengthen institutional resilience and increase the likelihood that successful innovations are sustained, replicated and scaled.

Table 4: Contributions of the Four Innovation Areas to the Integrated Prevention-Oriented Wildfire Adaptation Model

Innovation Area	Innovation status, Evidence Base and key assumptions	Component / Output	Key Learning / Evaluation Focus	Indicative Scale-up Pathway
Technical Innovation: 1. Anticipatory Climate Intelligence and Predictive Wildfire Risk Management Operational readiness: localized methodologies and institutional workflows will be developed and validated during implementation.	Established internationally; adapted for Bhutan. Builds on internationally established Fire Weather Index, remote sensing and predictive decision-support approaches, adapted to Bhutan's mountain wildfire context. Evidence base is strong internationally, while localized methodologies, operational performance and institutional uptake remain to be tested in Bhutan. Key assumption: localized climate intelligence improves prevention decisions compared with existing detection- and response-oriented systems.	C1/O1.1	Operational performance, usability, decision-support value and contribution to prevention outcomes.	Adoption by DoFPS, NCHM, DLGDM and GovTech; integration into national wildfire planning, climate services and early warning systems.
Financial and Community Innovation: 2. No Fire – Credits to the Community Readiness: conceptual mechanism to be co-designed, piloted and refined.	Novel in Bhutan; concept builds on international experience with performance-based incentives and payments for ecosystem services but has not been applied to wildfire prevention. The mechanism will be designed, piloted and refined during implementation. Key uncertainties include incentive design, verification arrangements, community acceptance and long-term financial sustainability.	C3/O3.2	Participation, prevention outcomes, behavioural change, governance arrangements, verification arrangements, community ownership, livelihood benefits and operational feasibility.	Replication through Community Forest Groups and potential future integration into ecosystem-service, REDD+, climate-finance and community-development mechanisms.
Ecosystem-based Adaptation Innovation: 3. Climate-Informed Fire-Smart Landscape Management as Adaptation Infrastructure Readiness: interventions are technically proven internationally but operational protocols will be adapted and tested in Bhutan.	Established approaches adapted and integrated for Bhutan. Ecosystem-based adaptation, prescribed burning and fuel management have established international evidence, but their combined application as climate-informed wildfire adaptation infrastructure in Bhutan will be tested. Key assumptions relate to operational feasibility, ecological effectiveness and community acceptance under Bhutan's mountain conditions.	C2/O2.1	Changes in fuel loads, ecosystem resilience, watershed protection and wildfire vulnerability.	Integration into national wildfire-management guidelines, forest-management plans and adaptation investments.
Governance and Institutional Innovation: 4. Adaptive Governance and Learning Architecture Readiness: governance platform builds on existing coordination arrangements and will be operationalized through the project.	Builds on existing governance arrangements but introduces a novel innovation-learning architecture. Evidence supports adaptive governance approaches internationally; the project will test whether structured learning accelerates institutional uptake and scaling in Bhutan.	C1/O1.2; C3/O3.3	Coordination effectiveness, institutional uptake, policy integration and sustainability of innovation pathways.	Institutionalization through national wildfire governance arrangements, policies, operational procedures, training systems and future investment frameworks.

Together, these four innovation areas constitute the project's core innovation: an integrated prevention-oriented wildfire adaptation model. As an Innovation Window project, the proposed innovations will be piloted, evaluated and iteratively refined during implementation to assess their effectiveness, feasibility, cost-effectiveness and scalability under Bhutan's mountain wildfire-risk conditions. By testing these approaches across diverse ecological settings, the project will generate evidence, operational models and policy lessons for Bhutan and other Himalayan mountain landscapes where practical experience with wildfire adaptation remains limited.

C. Scaling and Replication pathways

The project is designed to ensure that successful innovations become embedded within Bhutan's long-term wildfire adaptation system rather than remaining isolated pilot activities. Climate-risk intelligence systems, governance arrangements and innovation-learning processes will be developed within and jointly owned by key national institutions, including DoFPS, NCHM, DLGDM and GovTech, and aligned with the National Adaptation Plan (2023), National Strategy for Wildfire Prevention and Management (2024), Nationally Determined Contribution 3.0 (2025) and related sectoral frameworks.

The pilot landscapes represent Bhutan's principal wildfire-risk contexts, enabling testing and refinement of innovations across diverse ecological and socio-economic settings. Standardized approaches, guidance and lessons generated through implementation will support replication through Bhutan's network of more than 800 Community Forest Groups and future integration into national planning, training, financing and operational systems. The resulting evidence base may also inform wildfire adaptation efforts in other mountainous and forest-dependent countries facing increasing climate-driven wildfire risks.

D. Economic, Social and Environmental benefits

The project will generate climate adaptation benefits together with economic, social and environmental co-benefits by reducing climate-driven wildfire risks and strengthening the resilience of ecosystems, watersheds, institutions and communities. Through integrated investments in climate intelligence, fire-smart landscape management, adaptive governance and community stewardship, the project will help safeguard forest ecosystems, critical watershed functions, biodiversity, climate-sensitive livelihoods and infrastructure while enhancing adaptive capacity and long-term resilience to climate change.

Benefits will accrue directly through targeted climate adaptation services and interventions within the project landscapes, including climate-risk information, early warning, fire-smart landscape management, community stewardship, preparedness and protection of critical assets, and indirectly through strengthened national wildfire governance, institutional capacity, knowledge generation and future replication. The project's primary adaptation benefits are reduced wildfire-related climate vulnerability through improved preparedness, climate-risk information, ecosystem resilience and adaptive capacity. Additional economic, social and environmental co-benefits include strengthened livelihoods, biodiversity conservation, watershed protection, protection of ecosystem services supporting hydropower and tourism, enhanced local governance, increased participation of women and vulnerable groups, and evidence to support future replication and scale-up.

-Quantified estimates represent the expected geographic coverage of adaptation services and landscapes benefiting from reduced wildfire risk rather than areas receiving direct physical interventions. Approximately 400 ha will receive direct fire-smart landscape management interventions in strategically selected high-risk locations, while the wider approximately 143,000 ha project landscape will benefit from the combined effects of climate intelligence, early warning, preparedness, adaptive governance and strategically targeted landscape interventions that reduce wildfire spread and strengthen resilience beyond the directly treated areas. Benefit estimates and methodologies will be further validated during the Project Formulation Grant (PFG) phase through baseline assessments, wildfire-risk analysis and stakeholder consultations.

Table 5: Economic, Social and Environmental Adaptation Benefits

Category	Quantified Estimate / Indicative Benefit	Methodology and Data Source
ECONOMIC BENEFITS		
Primary adaptation benefit: Reduced wildfire exposure and wildfire-related losses	Approximately 143,000 ha of forests, watersheds and fire-prone landscapes are expected to benefit from landscape-wide climate intelligence, early warning, preparedness, adaptive governance and strategically targeted fire-smart landscape management. Approximately 400 ha will receive direct physical interventions (e.g. fuel management, prescribed burning and associated measures) in high-risk locations to reduce wildfire spread and strengthen resilience across the wider landscape.	Wildfire-risk mapping, burned-area analysis, landscape connectivity analysis, climate-risk modelling and project intervention targets. Methodology and baseline to be validated during the PFG phase.
Co-benefit: Livelihood resilience and protection of climate-sensitive economic activities	Approximately 12,000 forest-dependent households expected to benefit from reduced wildfire risk, improved ecosystem resilience and protection of forest-based livelihood assets..	Community Forest data, NWFP group records, NSB statistics and project beneficiary analysis.
Co-benefit: Protection of hydropower watersheds, tourism assets and cultural heritage	Reduced wildfire risks across watersheds, tourism landscapes, cultural heritage sites and critical infrastructure within the project landscapes. The project contributes to safeguarding ecosystem services that support these sectors, rather than directly measuring avoided economic losses.	Wildfire-risk mapping, watershed analysis and baseline assessments to be refined during the PFG phase.
Knowledge co-benefit: Innovation and learning benefits	Evidence generated on the effectiveness, operational feasibility, cost-effectiveness and scalability of the integrated prevention-oriented wildfire adaptation model and its four innovation areas.	Project monitoring, innovation-learning framework and evaluation activities.
SOCIAL BENEFITS		
Primary adaptation benefit: Strengthened community resilience and adaptive capacity	Approximately 3,372 direct beneficiaries receiving targeted project support, <u>including approximately 2,400 members of 12 participating CFMGs benefiting from strengthened wildfire prevention, preparedness, training and community stewardship, and 972 government personnel and responders receiving targeted capacity development and operational support.</u> ~~A-and~~ approximately 320,389 indirect beneficiaries benefiting from broader landscape-scale adaptation services.-	Beneficiary methodology aligned with Adaptation Fund guidance; to be validated during the PFG phase.

Primary adaptation benefit: Improved community safety and wildfire preparedness	Residents of the 11 target gewogs and two urban–wildland interface areas benefiting from improved wildfire-risk information, preparedness and early warning coverage.	Wildfire-risk mapping, project coverage estimates and monitoring data.
Co-benefit: Inclusive participation and local stewardship	Minimum 30–40% participation targets for women across Community-based Forest Fire -Management Groups (CFFMGs), volunteer groups, governance structures and training activities.	Gender Action Plan targets and participation monitoring.
Primary adaptation benefit: Improved access to climate information and adaptation services	Approximately 972 personnel trained across CFFMGs, Early action and rapid Response Teams, local governments and national institutions.	Training records, institutional monitoring and system usage statistics.
ENVIRONMENTAL BENEFITS		
Primary adaptation benefit: Ecosystem resilience and watershed protection	Approximately 143,000 ha of forests, watersheds and fire-prone landscapes expected to benefit from reduced wildfire risk through climate-informed prevention, preparedness and ecosystem-based adaptation. Approximately 400 ha will receive direct fire-smart landscape management interventions strategically targeted to generate wider landscape-scale adaptation benefits.	Landscape assessments, wildfire-risk analysis and project indicators.
Primary adaptaion benefit: Reduced wildfire vulnerability in high-risk ecosystems	At least 400 ha of priority fire-smart landscape management, ecosystem restoration and fuel-management interventions implemented in wildfire-prone areas.	Project intervention targets and monitoring framework.
Co-benefit: Biodiversity conservation and habitat protection	Reduced wildfire risks across landscapes connected to protected areas and other biodiversity-rich ecosystems within the project landscapes.	Biodiversity assessments, protected-area data and wildfire-risk mapping.
Co-benefit: Protection of forest ecosystems functions and associated carbon stocks	Reduced forest degradation and strengthened ecosystem functioning across priority biodiversity-rich landscapes, including protected areas adjacent to the project landscapes.	Forest inventory data, ecosystem assessments and national carbon stock estimates.

The project is expected to directly benefit approximately 3,372 people and indirectly benefit approximately 320,389 people. Direct beneficiaries comprise individuals receiving targeted project support, including Community-based Forest **Fire**-Management Groups (CFFMGs) and personnel receiving training and operational support. Approximately 40 CFFMGs exist within the project landscapes; the project will directly support 12 CFFMGs, of which at least five will pilot the No Fire – Credits to the Community mechanism. Indirect beneficiaries comprise populations benefiting from reduced wildfire risk, strengthened ecosystem resilience, watershed protection, climate information services and improved wildfire governance. Beneficiary estimates are preliminary and will be validated and refined during the Project Formulation Grant (PFG) phase in accordance with the Adaptation Fund Core Indicator Methodology, including verification of assumptions, avoidance of double counting, and disaggregation of beneficiaries by youth and vulnerable groups, where applicable.

Table 6: Project Beneficiaries

Beneficiary Group	Direct / Indirect	Total	Women	Men	Gender Target	Methodology / Data Source
Members of 12 Community-based Forest Fire -Management Groups (CFFMGs) benefiting from project-supported wildfire prevention, preparedness, training and pilot implementation of the No Fire – Credits to the Community mechanism	Direct	2,400	1,080	1,320	Minimum 40% women	Estimated membership of participating CFFMGs (DoFPS records); to be confirmed during PFG
Government personnel and responders receiving targeted capacity development, training and operational support (DoFPS, Dzongkhags/Thromdes, NCHM, DLGDM, RBP, DeSuung, RRTs and other participating institutions)	Direct	972	287	685	Minimum 30% women (institution-specific targets apply)	Project training targets
Residents of the 11 target gewogs and two urban–wildland interface (UWI) areas benefiting from reduced wildfire risk, climate information services and landscape-scale adaptation	Indirect	170,373	81,454 (47.8%)	88,919 (52.2%)	Population composition	NSB population projections
Residents of the wider five project dzongkhags benefiting from strengthened watershed protection,	Indirect	150,016	76,478 (51.0%)	73,538 (49.0%)	Population composition	NSB population projections

ecosystem resilience, wildfire intelligence systems and governance						
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Initial Gender and Social Inclusion analysis

Climate change and increasing wildfire risks affect women, men and vulnerable groups differently depending on their dependence on forest resources, access to information and services, participation in decision-making processes and adaptive capacity.³ While a detailed Gender Assessment and Gender Action Plan (GAP) will be undertaken during the full proposal phase, existing evidence highlights several important considerations for wildfire adaptation in Bhutan.

Women continue to bear a disproportionate share of unpaid household and care responsibilities, particularly in rural areas where dependence on forests and natural resources remains high. Women are often responsible for collecting water, fuelwood and other forest products and therefore depend heavily on healthy forest and watershed ecosystems for household wellbeing, energy security and livelihood resilience.²² At the same time, women remain underrepresented in technical sectors, natural resource management institutions and climate-related decision-making processes.³ Women may also face structural barriers to participation in Community Forest **Management** Groups and wildfire governance, including lower representation in leadership and technical roles, unequal access to training, equipment, financial resources and decision-making processes. The project will further assess women's access to and control over benefits from community incentive mechanisms, livelihood opportunities and any enterprise development supported through the project, as well as potential occupational health and safety considerations associated with wildfire prevention activities. Particular attention will also be given to women's access to and control over community incentives, enterprise assets and income generated through project-supported activities.

Increasing wildfire risk may disproportionately affect women, vulnerable households and remote communities through impacts on water resources, fuelwood availability, grazing areas and non-timber forest products.⁶ Geographic isolation, age, disability, income levels and limited access to alternative livelihood opportunities may further increase vulnerability and reduce adaptive capacity. Women and vulnerable groups may also face barriers to participation in wildfire-prevention activities, community forest management, emergency response systems and adaptation planning due to time constraints, household responsibilities, mobility limitations, limited representation in leadership positions and unequal access to technical information and training opportunities.²³ Ensuring equitable participation and benefit-sharing will therefore be critical to achieving effective and inclusive adaptation outcomes.

The project will address these challenges through gender-responsive consultation processes, targeted outreach and capacity development, equitable benefit-sharing arrangements, measures to strengthen women's leadership, representation and decision-making within Community-based Forest **Fire**-Management Groups (CFFMGs), governance structures and local adaptation planning, and measures to ensure equitable access to climate information, training opportunities and community incentive mechanisms.²³ Separate participation and, where appropriate, leadership targets for women and youth will be established during the Project Formulation Grant (PFG) phase, together with indicators for vulnerable groups. Particular attention will be given to strengthening women's participation and leadership within Community-based Forest **Fire**-Management Groups, wildfire stewardship activities, climate information services and the No Fire – Credits to the Community mechanism. A comprehensive Gender Assessment and costed Gender Action Plan (GAP) will be prepared during the PFG phase. This will include sex-disaggregated baselines and indicators, disaggregation for youth and vulnerable groups where appropriate, assessment of women's access to and control over community incentives, enterprise assets, livelihood opportunities and income, and clearly defined implementation responsibilities in line with the Adaptation Fund Gender Policy and UNDP Gender Policy.

Avoiding and mitigating negative impact

In compliance with the Adaptation Fund Environmental and Social Policy (ESP), Adaptation Fund Gender Policy (GP), UNDP Social and Environmental Standards (SES) and UNDP Gender Policy, environmental and social risk management has been integrated into project design. The project is expected to be classified as **Moderate Risk (Category B)**, subject to confirmation during the full project development phase. Potential risks relate primarily to prescribed burning, fuel management, wildfire-response activities, community participation and biodiversity-sensitive landscapes and are expected to be site-specific, manageable and mitigated through established safeguards, operational procedures, biodiversity protection measures and inclusive stakeholder engagement processes. As an Innovation Window project, interventions will be tested, monitored and refined throughout implementation to enable adaptive management and course correction where required.

The framework for compliance, including the application of the UNDP Social and Environmental Standards (SES) and the approach to further assessment and management of risks identified during preliminary screening, is outlined in Section II.N and Annex 1 (Abridged SESP). Detailed safeguard instruments, including the Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), Gender Action Plan (GAP) and Grievance Redress Mechanism (GRM), will be prepared during the full project development phase.

²² UNDP. (2020). Gender and Climate Change in Bhutan. <https://www.undp.org/bhutan>

²³ Participatory Forest Management and Gender Inclusiveness within Community Forest Management Groups of Bhutan. (2024).

E. Cost-effectiveness

Existing wildfire management systems remain heavily oriented towards suppression and recovery after fires have started, resulting in growing expenditures on emergency response while the underlying drivers of climate vulnerability remain largely unaddressed. A prevention-oriented adaptation approach is therefore expected to be more cost-effective than continued reliance on reactive wildfire management. By investing in climate intelligence, adaptive governance, fire-smart landscape management and community stewardship systems, the project seeks to reduce wildfire risks before losses occur while strengthening the resilience of forests, watersheds, livelihoods and critical infrastructure.

The project combines complementary technological, ecological, institutional and community-based measures that reinforce one another, improving adaptation efficiency compared with implementing individual interventions in isolation. It also protects ecosystem services supporting hydropower generation, water security, biodiversity conservation and climate-sensitive livelihoods, generating multiple adaptation benefits through a single integrated investment.

Wildfire risks are increasing across Bhutan's forests, watersheds and fire-prone landscapes, creating growing economic, environmental and social costs. Between 2021 and 2026, approximately 152 wildfire events burned more than 22,400 ha across the project landscapes. The five project dzongkhags contain approximately 143,000 ha of forests, watersheds and fire-prone landscapes that support biodiversity. The proposed approach is based on an avoided-loss model in which investments in prevention reduce the likelihood, extent and severity of wildfire before losses occur. Rather than relying on increasingly costly suppression and post-fire recovery, the project reduces future climate-related damages by strengthening climate intelligence, ecosystem resilience, community stewardship and adaptive governance. Conservation, hydropower generation, tourism, ecosystem services and climate-sensitive livelihoods. Beyond direct forest losses, wildfire impacts include degradation of watersheds, erosion and sedimentation, biodiversity loss, damage to infrastructure and reduced resilience of forest-dependent communities. Increasing wildfire risks also threaten the long-term effectiveness of existing investments in ecosystem resilience, watershed management and climate adaptation financed through national programmes and initiatives supported by the Adaptation Fund, Green Climate Fund, Global Environment Facility and other partners. Wildfire prevention also helps protect hydropower watersheds and associated ecosystem services that underpin a significant share of Bhutan's national economy. Without additional adaptation investment, increasing temperatures, longer fire seasons and fuel accumulation are expected to increase the frequency, duration and severity of wildfires, resulting in higher suppression and recovery costs, continued degradation of forests and watersheds, and reduced effectiveness of existing adaptation investments.

The proposed approach is based on an avoided-loss model that seeks to reduce the likelihood, scale and severity of wildfire events before losses occur. Climate-informed planning also reduces the risk of maladaptation by ensuring that prevention resources and investments are directed to locations and periods of highest climate-related wildfire risk. Investments in climate intelligence, adaptive governance, fire-smart landscape management and community stewardship strengthen preparedness, improve targeting of prevention resources and reduce future wildfire impacts. Fire-smart landscape management reduces fuel loads and strengthens ecosystem resilience, generating cumulative benefits over successive fire seasons, while the No Fire – Credits to the Community mechanism creates incentives for sustained prevention activities and reduced dependence on costly emergency response measures. Unlike suppression-focused approaches that primarily respond after ignition, these investments generate multiple adaptation benefits simultaneously, including wildfire-risk reduction, watershed protection, biodiversity conservation, livelihood resilience and strengthened institutional capacity. This increases adaptation efficiency by delivering multiple resilience outcomes through a single integrated investment framework.

The proposed intervention package was selected based on a synergistic approach rather than reliance on any single technology or intervention. Wildfire intelligence and early warning will be strengthened through a complementary mix of satellite-based risk mapping, localized weather observations, community monitoring and targeted drone verification. The selected approach reflects an assessment of alternatives, recognizing that no single method can provide comprehensive and cost-effective wildfire detection. By combining technologies according to their comparative advantages, the project improves risk identification, enables targeted prevention and maximizes adaptation benefits per unit of investment.

For fuel management, fire preparedness and response, the project adopts a targeted and integrated approach based on an assessment of alternative options. Rather than applying costly landscape-wide fuel treatment, the project combines prescribed burning in suitable chir-pine landscapes with mechanical fuel reduction around settlements, infrastructure and priority areas identified through wildfire-risk mapping. A hybrid response model was selected over professional-only or community-only approaches, combining the broad local coverage and ownership of Community-based Forest Fire Management Groups with the technical capacity of trained Rapid Response Teams and DoFPS to manage larger and more complex fires. The No Fire – Credits to the Community mechanism further strengthens community incentives for sustained prevention and landscape stewardship. Similarly, strategically located reservoirs and water storage facilities were selected over mobile water transport or reliance on natural water sources, as they provide more reliable dry-season firefighting capacity in rugged terrain while generating additional local water benefits. Together, these complementary interventions provide greater adaptation benefits and long-term cost-effectiveness than isolated investments in individual technologies or response measures.

Preliminary indicative estimates suggest avoided losses of approximately USD 7,802 per hectare per year, corresponding to an indicative benefit-cost ratio of approximately 113:1 under an assumed 30% prevention effectiveness. These estimates are preliminary and will be validated through a full quantitative cost-effectiveness analysis during preparation of the fully developed proposal, including detailed unit costs, avoided-loss assumptions and sensitivity testing of the selected technology mix and implementation scale. Cost-effectiveness is further strengthened through institutionalization and scaling. Climate-risk intelligence systems, governance mechanisms, operational guidance, training materials and community incentive models are designed as national public goods that can be applied beyond the initial pilot landscapes. By embedding successful approaches within existing institutions, policies and operational systems, the project reduces future replication costs while supporting long-term sustainability. As an Innovation Window project, it will also generate evidence on the effectiveness, cost-effectiveness and scalability of climate intelligence systems, fire-smart landscape management, community incentive mechanisms and adaptive governance approaches for Bhutan and other mountainous and forest-dependent countries facing increasing wildfire risks under climate change.

Table 7: Cost-Effectiveness of the Proposed Prevention-Oriented Wildfire Adaptation

Wildfire Adaptation Challenge	Prevention-Oriented Adaptation (Project)	Conventional / Reactive Approach	Rationale for Selected Approach
Limited climate-risk intelligence & adaptive governance	Bhutan-specific Fire Weather Index methodologies, predictive wildfire-risk systems, climate intelligence, early warning and adaptive governance mechanisms.	Reliance on post-ignition detection, fragmented data systems and reactive decision-making.	Earlier action improves targeting of resources, reduces maladaptation risks and strengthens climate-informed planning and preparedness. Integrating remote sensing, localized weather stations and predictive decision-support provides greater operational value than relying on any single monitoring approach alone.
Increasing ecosystem vulnerability & wildfire exposure	Fire-smart landscape management, fuel reduction, ecosystem restoration, strategic water infrastructure and community prevention systems.	Predominantly suppression-focused response after ignition, followed by costly rehabilitation and recovery measures.	Prevents losses before they occur while strengthening watershed resilience, biodiversity conservation and long-term ecosystem health. Targeting fuel treatments, prescribed burning and strategic water infrastructure in high-risk areas is expected to provide greater adaptation benefits than untargeted landscape-wide interventions.
Escalating wildfire suppression & recovery costs	Prevention-oriented adaptation through climate intelligence, fuel management, risk-informed planning and community stewardship.	Repeated mobilization of personnel, equipment and emergency response resources following wildfire outbreaks.	Prevention reduces future suppression, recovery and ecosystem restoration costs while generating cumulative resilience benefits over successive fire seasons. Combining complementary prevention measures is expected to be more cost-effective than investing in individual technologies or suppression capacity alone.
Limited incentives for community-based prevention	Community stewardship systems and the No Fire – Credits to the Community mechanism linked to verified prevention outcomes.	Communities mobilized primarily for emergency response with limited incentives for long-term prevention and landscape stewardship.	Creates sustained incentives for prevention, strengthens local ownership and reduces dependence on costly emergency interventions. Performance-based incentives are expected to generate stronger long-term engagement than response-only community mobilization.
Limited institutional sustainability and scaling	Integration of wildfire adaptation into national systems, operational procedures, curricula, governance mechanisms and future financing pathways.	Project-based interventions with limited institutional uptake and sustainability beyond external funding.	Reduces future replication costs, supports long-term sustainability and enables scaling across additional districts and wildfire-prone landscapes.

Limited protection of existing adaptation investments	Wildfire-risk reduction integrated with watershed protection, ecosystem resilience and climate adaptation investments.	Existing adaptation investments remain vulnerable to increasing wildfire risks and ecosystem degradation.	Protects the long-term effectiveness of AF, GCF, GEF, Bhutan for Life, ECRUL, ACREWAS and other adaptation investments, increasing overall adaptation returns.
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F. National and sub-national policy alignment

The Project is closely aligned with Bhutan's climate adaptation, wildfire management, disaster risk reduction, biodiversity conservation and sustainable development priorities. By operationalizing prevention-oriented wildfire adaptation through climate intelligence, ecosystem-based adaptation, adaptive governance and community-centred incentive mechanisms, the Project contributes to national objectives related to climate resilience, forest conservation, watershed protection, disaster preparedness and sustainable rural development.

The Project supports implementation of key national frameworks, including the National Adaptation Plan (NAP, 2023), Nationally Determined Contribution (NDC 3.0, 2025), Climate Change Policy (2020), National REDD+ Strategy and Action Plan, National Biodiversity Strategy and Action Plan (NBSAP, 2025), National Strategy for Wildfire Prevention and Management (2024), Disaster Management Act (2013), 13th Five-Year Plan (2024–2029) and National Gender Equality Policy (2020). Through its focus on anticipatory action, ecosystem resilience, community stewardship and adaptive governance, the Project helps address a growing climate adaptation challenge that threatens Bhutan's forests, watersheds, biodiversity, communities, critical infrastructure and carbon-negative status.

Table 8: Alignment with key national policy frameworks

Framework / priority area	Relevant priorities	Project contribution
Constitution of the Kingdom of Bhutan (2008) – Article 5	Constitutional requirement to maintain at least 60% forest cover and conserve biodiversity.	All components contribute to safeguarding forest ecosystems and reducing climate-driven wildfire risks that threaten Bhutan's constitutional forest conservation mandate.
National Adaptation Plan (NAP, 2023)	Identifies forest fires as a major climate risk and calls for enhanced forest fire prevention, climate services, watershed protection and community-based conservation.	Component 1 strengthens climate-risk intelligence and fire-weather services; Component 2 implements ecosystem-based wildfire adaptation; Component 3 supports community-based prevention and climate-resilient livelihoods.
Nationally Determined Contribution (NDC 3.0 2025)	Highlights risks posed by climate-induced wildfires to forest carbon stocks and Bhutan's carbon-negative status.	Climate-informed prevention, fuel management and resilient landscape approaches reduce wildfire risks and help maintain forest carbon sinks.
Climate Change Policy (2020)	Promotes climate-informed planning, resilience-building and integrated climate action.	Climate intelligence systems, adaptive governance mechanisms and climate-risk-informed decision-making support implementation of policy objectives.
Technology Needs Assessment (TNA) and Technology Action Plan (TAP) for Adaptation (2013)	Identifies climate information, real-time weather stations, weather forecasting and community-based early warning systems as priority adaptation technologies for strengthening resilience to climate-related hazards. Highlights the need to strengthen technical capacity, climate information services and institutional coordination.	Component 1 strengthens localized fire-weather monitoring, predictive wildfire-risk modelling, integrated decision-support systems and multi-agency early warning and early-action mechanisms. The project also addresses barriers identified in the TNA/TAP by strengthening climate information services, institutional coordination and technical capacity, while applying these priority adaptation technologies to Bhutan's emerging climate-driven wildfire risks.
National REDD+ Strategy and Action Plan (2020)	Addresses forest degradation and promotes sustainable forest management.	Reduces wildfire-related forest degradation while strengthening ecosystem resilience and long-term carbon storage.

National Biodiversity Strategy and Action Plan (NBSAP 2025)	Protect biodiversity, ecosystem integrity and ecological connectivity.	Fire-smart landscape management helps protect protected areas, biological corridors and climate-sensitive ecosystems.
National Strategy for Wildfire Prevention and Management (2024)	Strengthen prevention, preparedness, coordination and community participation in wildfire management.	Supports climate-informed prevention, wildfire governance, community stewardship and operational planning at national and local levels.
Disaster Management Act (2013) and National Disaster Management Framework	Promote coordinated disaster risk reduction, preparedness and response systems.	Multi-agency coordination mechanisms, wildfire preparedness systems, simulation exercises and adaptive management processes strengthen wildfire risk governance.
13th Five-Year Plan (2024–2029)	Emphasizes climate-resilient development, disaster preparedness, environmental sustainability and data-driven governance.	Protects climate-sensitive landscapes and infrastructure while strengthening climate intelligence, digital decision-support systems and community resilience.
National Gender Equality Policy (2020)	Promote women's participation, equitable benefit-sharing and inclusion of vulnerable groups.	Supports gender-responsive wildfire adaptation through community participation, inclusive incentive mechanisms and targeted engagement of women and vulnerable groups.

Sub-national and institutional alignment

The Project is closely aligned with district and local priorities across the five pilot dzongkhags, where increasing wildfire risks threaten forests, watersheds, livelihoods, biodiversity, critical infrastructure and cultural assets. The proposed interventions respond directly to priorities identified through stakeholder consultations and existing wildfire-management processes, including fuel management in high-risk landscapes, protection of water sources and watersheds, community-based wildfire prevention, climate-risk information systems and strengthened preparedness capacity.

The Project supports implementation of the National Strategy for Wildfire Prevention and Management (2024) and National Forest Fire Management Action Plan (2025–2030), including development and operationalization of Dzongkhag Forest Fire Management Plans and stronger community participation in wildfire prevention. The Department of Forests and Park Services (DoFPS) will lead wildfire prevention, landscape management and community stewardship activities; the Department of Local Governance and Disaster Management (DLGDM) will support preparedness and multi-agency coordination; and the National Center for Hydrology and Meteorology (NCHM) will provide climate, weather and wildfire-risk information. Dzongkhag and Gewog administrations will support local planning and implementation, while Community Forest Fire Management Groups will play a central role in prevention, monitoring and stewardship activities.

By embedding project interventions within existing governance, planning and community-management structures, the Project strengthens local ownership and creates a pathway for long-term sustainability, institutionalization and replication.

G. National Technical standards

The Project is expected to comply with all relevant Bhutanese legal requirements, environmental safeguards, technical standards and institutional procedures. In accordance with AF ESP Principle 1 (Compliance with the Law), the Project will be implemented in partnership with the Royal Government of Bhutan and relevant national institutions, utilizing existing national safeguard systems and institutional arrangements where appropriate. Detailed technical designs, safeguard screening requirements, environmental assessments, permits and institutional approvals will be further assessed and confirmed during the full proposal stage as part of the broader environmental and social safeguards process. Where relevant, additional technical standards, requirements, safeguard procedures or institutional approvals may be identified and refined during the PFG stage to ensure alignment with Adaptation Fund Environmental and Social Policy requirements and UNDP Social and Environmental Standards (SES).

Table 9: National technical standards and compliance requirements

Technical Standard / Regulation	Scope / Relevance	Related Components	Compliance Approach	Responsible Authority
Environmental Assessment Act (2000) & Environmental Assessment Regulations	Environmental screening, assessment and permitting requirements for ecosystem restoration, fuel management & infrastructure-related activities.	All components, particularly Outputs 2.1 & 2.2.	Environmental and social screening requirements, permitting needs and safeguard measures will be assessed & confirmed during the PFG	DECC

Forest and Nature Conservation Act (2023) and Forest & Nature Conservation Rules	Regulates forest management, prescribed burning, fuel management, fireline construction, ecosystem restoration, protected areas & community forestry activities.	All components.	Project activities will be implemented in accordance with applicable forest management, restoration and permitting requirements.	DoFPS
Disaster Management Act (2013) and National Disaster Management Framework	Provides the legal framework for disaster prevention, preparedness, response & recovery, including multi-agency coordination arrangements.	Component 1, particularly Outputs 1.1 and 1.2.	Climate-risk intelligence systems, coordination protocols and response mechanisms will be aligned with national disaster management arrangements.	DLGDM
Community Forest Management Rules (2016)	Regulates governance, benefit-sharing & management of Community Forests.	Components 2 & 3, particularly CFMGs & the No Fire – Credits to the Community mechanism.	Community-based prevention and stewardship systems will be embedded within existing community forest governance & management structures.	DoFPS
National REDD+ Benefit-Sharing Framework and Safeguards	Relevant to forest carbon governance, benefit-sharing arrangements & safeguards for forest-based incentive mechanisms.	Component 3, particularly Output 3.2.	Alignment of the No Fire – Credits to the Community mechanism with REDD+ safeguard principles & benefit-sharing arrangements will be assessed during PFG phase.	DoFPS
Biodiversity Act (2003)	Protection of biodiversity & management of impacts on biological resources and ecosystems.	Components 2 & 3.	Biodiversity considerations will be incorporated into the ESMF, site selection criteria & implementation procedures.	DoFPS
National Water Act (2011) & Water Regulations	Governs water-resource management, allocation, use and protection.	Component 2, particularly strategic water reservoirs & ponds.	Water-related interventions will be screened for compliance during the PFG & integrated into project design.	DoW
Labour and Employment Act (2007) & OHS Regulations	Worker and community health & safety requirements.	Field-based activities under Components 2 & 3.	Contractors, implementing partners and community groups will apply occupational health and safety procedures and operational standards.	Relevant implementing agencies
UAV / Drone Regulations (Department of Civil Aviation)	Regulates deployment of drones for monitoring, surveillance, fire detection and emergency response.	Component 1, particularly wildfire monitoring & surveillance activities.	Any drone operations will comply with registration, permitting and operational requirements prior to deployment.	Department of Civil Aviation

H. Other relevant projects/programme/funding

Several climate adaptation, ecosystem resilience, biodiversity conservation and wildfire-related initiatives are being implemented in Bhutan. These provide important lessons on community-based adaptation, institutional coordination, climate information services, ecosystem management and innovative financing. The proposed project has been designed to build on these experiences, address remaining gaps in prevention-oriented wildfire adaptation, and create synergies with ongoing investments while avoiding duplication. Key lessons learned, remaining gaps and complementarities are summarized below.

Table 10: Lessons, gaps, synergies and complementarities with relevant projects in Bhutan

Project / Programme	Main Focus	Key Lessons Learned	Remaining Gap Addressed by Proposed Project	Synergies and Complementarity
AF: Adaptation to Climate-Induced Water Stresses through Integrated Landscape	Watershed resilience, water security, climate-smart agriculture & governance in	Community ownership, local stewardship and inter-agency coordination are critical for sustaining adaptation outcomes.	Wildfire risk remains largely unaddressed despite increasing threats to forests, watersheds & adaptation investments.	Shared landscape in Paro. Proposed project protects watershed & ecosystem investments through wildfire prevention & fire-smart landscape management.

Management (2022–2028)	Dagana, Paro and Tsirang.			
InAF-Bhutan: Innovative Adaptation Financing for Smallholder Farmers	Climate-risk financing & index-based insurance for farmers.	Incentive mechanisms require transparent verification systems, trust & clear benefit-sharing arrangements.	No existing mechanism rewards wildfire prevention and landscape stewardship.	The design of the No Fire – Credits to the Community mechanism draws on the innovative adaptation financing principles of the InAF-Bhutan project, <u>which commenced implementation on 4 March 2026 and is expected to run until 4 September 2031. Emerging implementation lessons on community engagement, verification, benefit-sharing and performance-based adaptation financing will be reviewed during the PFG phase (2027–2028) and incorporated into the detailed design, where relevant. An update on relevant lessons and their application will be provided at the fully developed proposal stage, that recently started implementation. Emerging lessons on community engagement, verification and benefit-sharing will be reviewed during the full formulation phase and incorporated into the detailed design, where relevant.</u>
GEF/LDCF: Enhancing Climate Resilience of Urban Landscapes & Communities (ECRUL)	Urban resilience, watershed restoration, NbS & climate information systems in Thimphu-Paro.	Urban-rural resilience requires integrated planning across governance scales.	Wildfire risk at the forest–urban interface remains insufficiently addressed.	Strong synergy in Thimphu and Paro through coordinated watershed restoration, risk information systems and landscape management.
GCF: National Adaptation Plan (NAP) Readiness Project	National adaptation planning & climate-risk assessments.	Climate-risk assessments provide the foundation for targeted adaptation investments & institutional mainstreaming	NAP identifies wildfire risk but does not finance implementation.	Provides the policy framework into which project outputs on wildfire adaptation, governance and climate intelligence will be embedded.
Bhutan for Life (2018–2032)	Long-term financing for protected areas, biodiversity conservation & climate resilience.	Long-term financing mechanisms are essential for sustaining ecosystem resilience & conservation outcomes.	Limited focus on wildfire prevention & fire-risk management in surrounding landscapes.	Project reduces wildfire risks to protected areas and biological corridors supported by BFL.
SERVIR / FIRMS-Bhutan Fire Monitoring System	Satellite-based fire detection & monitoring.	Near-real-time fire detection improves situational awareness but does not provide predictive risk management.	Limited wildfire forecasting, fuel-load assessment & anticipatory decision support.	Project builds on existing systems through Bhutan-specific FWI, predictive analytics & AI-enabled decision support.

AFoCO: Restoring Fire-Damaged Ecosystems & Enhancing WUI Resilience (2026–2030)	WUI risk reduction, ecosystem restoration & fire management in Thimphu & Paro.	Restoration and WUI management complements to prevention and preparedness systems.	Limited focus on climate-risk intelligence, adaptive governance & prevention-oriented adaptation systems.	Strong complementarity through integration of wildfire-risk intelligence, early warning & governance systems.
DoFPS Wildfire Management Programmes	Wildfire prevention, preparedness & suppression.	Existing systems remain heavily focused on suppression & emergency response.	Limited investment in anticipatory adaptation, climate intelligence & community incentives.	Project strengthens & complements existing systems with prevention-oriented adaptation, adaptive governance & community stewardship.

I. Learning and Knowledge Management

The project embeds learning and knowledge management across all three components to ensure that implementation experience continuously informs adaptive management, institutional decision-making and future scaling. Rather than treating learning as a standalone communication activity, the project integrates evidence generation, reflection and knowledge-sharing into its core adaptation approach. Knowledge products will be developed progressively throughout implementation. The initial phase of the project will focus on generating evidence through piloting and field implementation. Operational guidance, technical briefs and annual lessons learned will be produced and disseminated throughout implementation to support adaptive management, while synthesis reports, policy recommendations and replication materials will be prepared during the later stages of the project to support institutionalization and scale-up. The detailed knowledge management plan, including milestones, institutional responsibilities and dissemination arrangements, will be finalized during the Project Formulation Grant (PFG) phase.

- **Learning, iteration and evidence generation** A project-wide learning agenda, anchored within the National Wildfire Innovation and Governance Working Group and led by MoENR (DoFPS), with technical support from UNDP, will systematically capture lessons from implementation. After-action reviews following wildfire seasons, monitoring of ecosystem and social outcomes, and evaluation of the No Fire – Credits to the Community mechanism will generate evidence on what works, under what conditions and why. Learning activities will be undertaken throughout implementation, with annual synthesis of findings informing work planning, adaptive management and knowledge products. Findings will feed directly into annual work planning, resource allocation and adaptive management decisions.
- **Adaptive learning and iterative implementation** Regular simulation exercises, field monitoring and after-action reviews will be used to test and refine early warning systems, operational procedures, community incentive mechanisms and landscape management approaches. Lessons from pilot landscapes will inform adjustments to implementation approaches and support evidence-based expansion into additional landscapes and districts. Evidence generated through Components 2 and 3 will be used to refine climate-risk models, operational guidance, governance arrangements and the No Fire – Credits to the Community mechanism under Component 1, while improved climate intelligence and governance systems will in turn inform subsequent field implementation, creating continuous feedback across all three components.
- **Knowledge-sharing across districts and institutions** Structured knowledge exchange will be facilitated through cross-district workshops, peer-learning visits and meetings of the National Wildfire Innovation and Governance Working Group. District Forest Officers, local governments and Community-based Forest-Fire Management Groups (CFFMGs) will exchange experiences on prevention systems, community stewardship approaches and fire-smart landscape management practices. NCHM, DoFPS and DLGDM will also share climate-risk information, operational lessons and planning tools to strengthen inter-agency learning.
- **Institutional learning and knowledge products** Standard operating guidance, operational documentation of the No Fire – Credits to the Community mechanism, technical briefs, case studies and policy notes will translate implementation experience into practical tools for future application. The national wildfire adaptation curriculum developed under Component 3 will further institutionalize project knowledge within training and education systems. MoENR (DoFPS) will lead preparation of operational guidance, technical documentation and policy recommendations, while UNDP will support knowledge management, quality assurance, dissemination and regional knowledge exchange. Knowledge products will be developed progressively during implementation, with operational guidance produced following pilot testing, annual technical briefs and lessons learned, and synthesis products prepared toward project completion to support institutionalization and scale-up.
- **Replication and regional learning** Lessons generated through the project will be documented and shared through national, regional and international knowledge platforms. Knowledge products, operational guidance, lessons learned and evidence generated through the project will be shared nationally and, where appropriate, through regional and international adaptation and wildfire-management networks to contribute to emerging knowledge on wildfire adaptation in mountain ecosystems. Participation in regional exchanges and exposure visits will position Bhutan's experience within broader mountain adaptation and wildfire resilience networks, supporting learning and potential replication in comparable wildfire-prone mountain landscapes. Knowledge products and lessons learned will be disseminated throughout implementation through national learning events and regional knowledge-sharing platforms, with final guidance and synthesis reports supporting replication and scale-up following evaluation of the pilot innovations.

J. Stakeholder consultations and engagement

Project concept development was informed by consultations and awareness activities conducted at national, dzongkhag and community levels involving government agencies, technical institutions, local governments, community representatives and other stakeholders engaged in wildfire management, disaster-risk reduction, natural resource management and climate adaptation. Consultations confirmed increasing concern regarding wildfire frequency and severity, limitations of existing suppression-focused approaches, and the need for stronger prevention systems, climate-risk information, inter-agency coordination and community engagement.

Stakeholder feedback directly influenced project design, including the emphasis on climate intelligence and early warning systems, adaptive governance arrangements, community-based wildfire prevention, fire-smart landscape management and the proposed No Fire – Credits to the Community mechanism. Consultations also highlighted the importance of inclusive participation, locally appropriate awareness approaches, equitable benefit-sharing arrangements and strengthening the role of local governments and communities in wildfire prevention and preparedness.

The project landscapes, pilot areas and intervention sites have been identified at concept note stage, including the participating Community Forest Management Groups (CFMGs). Consultations undertaken to date have informed the overall project design and intervention approach. As the final pilot sites, intervention locations and participating Community-based Forest Fire Management Groups will be identified during the Project Formulation Grant (PFG) phase, consultations have not yet been conducted with the final target communities. The consultations undertaken to date have therefore informed the overall project design rather than site-specific implementation arrangements. During the PFG phase, participatory consultations will be undertaken with the selected communities to co-design local implementation approaches, clarify community roles and responsibilities, refine benefit-sharing arrangements, identify locally appropriate wildfire-prevention measures, and strengthen environmental and social safeguards, including gender-responsive and inclusive participation mechanisms. During the Project Formulation Grant (PFG) phase, participatory consultations will be undertaken with the identified target communities to refine site-specific implementation arrangements, including detailed treatment areas and technical designs, community roles and responsibilities, benefit-sharing arrangements, locally appropriate wildfire-prevention measures, and environmental and social safeguards, including gender-responsive and inclusive participation mechanisms. The PFG phase will therefore refine the detailed design and implementation modalities within the identified intervention sites. Accordingly, no Unidentified SubProjects (USPs) are currently envisaged under the project, as the project activities and intervention sites are identified at concept note stage; the PFG phase will undertake the detailed site-specific technical and environmental and social assessments required for full project formulation.

Women, Community Forest Management Groups), Water User Groups, local leaders, forest-dependent households and other community representatives participated in consultation and awareness activities. Additional consultations, including targeted engagement with women, vulnerable groups and communities within the identified intervention sites in the project landscapes, will be undertaken during the full project preparation phase to further refine project design, implementation arrangements, safeguard measures and gender-responsive approaches.

Table 11: Summary of stakeholder consultations

Stakeholder Consulted	Date / Timeframe	Attendees ²⁴ (F/M)	Focus and Issues Discussed	Outcome and Incorporation of Interests
DoFPS, MoENR	Since Feb 2025	Technical officials	Causes of wildfires, landscape management, prevention strategies and response mechanisms.	Guided design of wildfire prevention, adaptive landscape management and community-based prevention components.
NCHM	Feb–Mar 2025	Technical officials	Weather patterns, fire-weather conditions, forecasting and early warning needs.	Strengthened inclusion of wildfire forecasting, climate-risk intelligence and early warning systems under Component 1.
National-level consultations chaired by the Home Minister (DoFPS, NCHM, BPC, NRDC, ERA,	2025	Institutional representatives	Increasing wildfire risks, coordination gaps, institutional roles and prevention priorities.	Informed adaptive governance arrangements, multi-agency coordination mechanisms and prevention-oriented project design.

²⁴ Note: Detailed participant numbers and sex-disaggregated attendance data were not systematically recorded during pre-concept and concept-stage consultations. Consultations included government agencies, local authorities, community representatives and both women and men from affected communities. Gender-disaggregated participation data will be collected and reported during the full project preparation phase.

Desuung, MoESD, DoCDD, RBP, local governments & others)				
Dzongkhag-level awareness programmes (Bumthang, Trongsa, Wangduephodrang, Haa, Paro & Thimphu)	Dec 2025–Jan 2026	Local leaders and government officials	Local leadership roles, monitoring of agricultural burning, wildfire preparedness and coordination.	Strengthened local government roles in wildfire prevention, monitoring, awareness and early reporting systems.
Gewog-level consultations & awareness (Paro, Thimphu & Lhuentse Dzongkhags)	Dec 2025–Jan 2026	Community members, local leaders (Gups, Mangmis, Tshogpas), CFFMGs, Water User Groups & businesses	Safe use of fire, agricultural burning, community surveillance, early reporting & local prevention.	Informed the overall design of community stewardship systems; CFFMGs awareness activities & local prevention approaches; Site-specific community roles, benefit-sharing arrangements and safeguard measures will be co-designed with selected target communities during the PFG phase.
Bhutan Power Corporation (BPC)	Feb–Mar 2025	Technical officials	Wildfire risks associated with power lines, electrical infrastructure & transmission corridors.	Informed inclusion of infrastructure risk-reduction measures and coordination with utility operators.
Desuung, MoESD, DoCDD, DoST & RBP	Feb–Mar 2025	Institutional representatives	Public awareness, school education, emergency response, transport corridor risks & cultural practices.	Strengthened project focus on awareness campaigns, volunteer engagement, education & behavioural change.
National Task Force for Formulation of the Proposal	4 June 2026	Government & technical stakeholder (5 Male / 5 Female)	Review of project concept, innovation approach, implementation arrangements & sector priorities.	Confirmed project scope, innovation focus & alignment with national priorities.

Future consultations and process

Stakeholder engagement will continue throughout the full project preparation phase to validate project design, strengthen technical and safeguard assessments, refine implementation arrangements and ensure meaningful participation of affected stakeholders. Consultations will be undertaken across all project landscapes with local governments, Community Forest Management Groups (CFMGs), ~~Community-based Forest Fire Management Groups (CFFMGs)~~, women's groups, youth representatives, vulnerable households and other stakeholders directly affected by increasing wildfire risks. Technical consultations will be conducted with the Department of Forests and Park Services (DoFPS), Department of Local Governance and Disaster Management (DLGDM), National Centre for Hydrology and Meteorology (NCHM), GovTech Agency, Royal Bhutan Police (RBP), Desuung, research institutions and technical experts to further develop wildfire-risk intelligence systems, adaptive governance arrangements, fire-smart landscape management approaches, monitoring frameworks and sustainability pathways.

The full project preparation phase will also include preparation of a Gender Assessment, Gender Action Plan (GAP), Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), Grievance Redress Mechanism (GRM) and other assessments required under the Adaptation Fund Environmental and Social Policy (ESP) and UNDP Social and Environmental Standards (SES). Findings will be incorporated into the full proposal, implementation arrangements and results framework. National validation workshops and targeted consultations with regional and international partners will support technical refinement, innovation learning, knowledge exchange and scaling pathways.

Table 12: Indicative list of stakeholders to be consulted at full proposal stage

Category	Specific Entity / Group	Role and Involvement
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Project Implementing Entity	United Nations Development Programme (UNDP)	Project oversight, technical guidance, safeguards, quality assurance and coordination.
Project Executing Entity	Ministry of Energy and Natural Resources (MoENR) (Department of Forests and Park Services (DoFPS)	Project execution, technical leadership, stakeholder coordination and implementation oversight.
	United Nations Development Programme (UNDP)	Country Office execution support to the NIM arrangement, as agreed between UNDP and the Government.
National Government Agencies	Department of Local Governance and Disaster Management (DLGDM)	Disaster-risk management, emergency coordination and governance arrangements.
	National Centre for Hydrology and Meteorology (NCHM)	Climate information services, wildfire forecasting and climate-risk intelligence.
	GovTech Agency	Digital systems, interoperability and data management.
	Ministry of Finance	Financing, sustainability and scaling pathways.
	Department of Water	Water-resource management and strategic water infrastructure.
	Department of Environment and Climate Change (DECC)	Environmental safeguards, climate policy and regulatory compliance.
Emergency Response and Security Agencies	Royal Bhutan Police (RBP)	Wildfire response, enforcement and emergency coordination.
	Royal Bhutan Army (RBA)	Emergency response support and operational coordination.
	Desuung	Volunteer mobilisation, awareness and community response systems.
Local Government	Dzongkhag Administrations (Mongar, Trashigang, Thimphu, Paro and Haa)	Local planning, implementation support, monitoring and coordination.
	Gewog Administrations and Thromdes	Community engagement, local governance and implementation support.
Community and Local Stakeholders	Community Forest Management Groups (CFMGs), <u>including operational Community-based Forest Fire Management Groups (CFFMGs)</u>	Community stewardship, local knowledge and implementation support, <u>wildfire prevention, monitoring, awareness and local coordination.</u>
	Forest-dependent households	Beneficiaries, local knowledge and adaptation planning.
	Women's groups and women community leaders	Gender-responsive adaptation design, benefit-sharing and governance participation.
	Youth groups and volunteers	Awareness, monitoring and community engagement.
	Water User Groups and community organisations	Watershed management, resilience-building and community participation.
Private Sector and Financing Partners	Bhutan Power Corporation (BPC)	Infrastructure risk reduction and wildfire prevention around transmission corridors.
	Hydropower operators and state-owned enterprises	Asset protection, resilience partnerships and sustainability pathways.
	Telecommunications companies	Connectivity and communication systems.

	Tourism sector representatives	Protection of tourism assets and wildfire-risk awareness.
Research and Technical Partners	College of Natural Resources (CNR)	Research, training, monitoring and curriculum development.
	Ugyen Wangchuck Institute for Conservation and Environmental Research (UWICER)	Capacity development, training and knowledge management.
	National and international wildfire, climate and adaptation specialists	Technical design, monitoring and innovation support.
Civil Society and Development Partners	Bhutan for Life (BFL)	Protected area management and ecosystem resilience.
	Civil society organisations (CSOs), non-governmental organisations (NGOs) and community-based organisations	Community engagement, awareness, inclusion and local implementation support.
	Adaptation Fund (AF), Green Climate Fund (GCF), Global Environment Facility (GEF) and bilateral programme partners	Knowledge sharing, complementarity and scaling opportunities.
Regional and International Knowledge Partners	United Nations Office for Disaster Risk Reduction (UNDRR) and United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)	Disaster-risk reduction, adaptive governance, climate-risk information systems, policy dialogue and South-South learning.
	REDD+ programme, forest carbon and ecosystem-resilience initiatives	Forest governance, safeguard systems, benefit-sharing approaches and sustainability pathways for community incentive mechanisms.
	International Centre for Integrated Mountain Development (ICIMOD), regional wildfire-management networks, research institutions and partners from wildfire-prone countries	Technical advice, wildfire monitoring, post-fire assessment, recovery tracking, training, innovation learning and replication of good practices.

K. Innovation perspectives

The project adopts a multi-perspective approach to innovation by combining community knowledge, scientific expertise, institutional experience and stakeholder partnerships in the design, testing, evaluation and scaling of the integrated prevention-oriented wildfire adaptation model. Innovation lies not only in the individual technological, ecological, financial and governance innovations, but in their integration into one coherent prevention-oriented adaptation system that is jointly developed, tested and refined through implementation. The four mutually reinforcing innovation areas: 1) anticipatory climate intelligence and predictive wildfire-risk management; 2) the No Fire – Credits to the Community mechanism; 3) climate-informed fire-smart landscape management; and 4) adaptive governance and learning systems. Innovation is therefore viewed not as a technology product, but as a collaborative process through which multiple actors contribute to the development, refinement and institutionalization of wildfire adaptation solutions.

- **Community knowledge and vulnerable groups** Rural communities possess extensive knowledge of local fire behaviour, fuel conditions, ignition sources, landscape management practices and wildfire prevention measures. Through Community-based Forest ~~Fire~~-Management Groups (CFFMGs), ~~Community Forest Groups~~, village consultations and participatory planning processes, local knowledge will inform the design and implementation of fire-smart landscape management, community prevention systems and the No Fire – Credits to the Community mechanism. Women, youth and vulnerable groups will be actively engaged in identifying locally appropriate adaptation measures, incentive structures and governance arrangements that strengthen the integrated prevention-oriented wildfire adaptation model..
- **Research and technical partnerships** Research institutions, technical experts and climate specialists will support development of localized fuel-load baselines, Bhutan-specific Fire Weather Index methodologies, predictive wildfire-risk systems and monitoring frameworks. These partnerships will help ensure that the integrated innovation model and its four innovation areas are scientifically robust, operationally relevant and adapted to Bhutan's ecological and institutional context. Technical partners will also contribute to evaluation of innovation performance and generation of evidence to support future replication and scale-up.
- **Government-community coordination** National agencies, local governments and communities will jointly shape implementation approaches, including wildfire-risk planning, climate intelligence systems, early warning mechanisms, response protocols and prevention activities. The National Wildfire Innovation and Governance Working Group will provide a

platform for coordination, problem-solving and institutional uptake of the integrated prevention-oriented wildfire adaptation model and its successful innovation areas..

- **Integration of scientific and local knowledge** Climate projections, fire-risk modelling and geospatial analysis will be combined with community observations of fuel accumulation, ignition sources, landscape conditions and local risk patterns. This integration will strengthen wildfire-risk assessments, improve targeting of prevention measures, increase the relevance of early warning systems and support locally appropriate adaptation planning.
- **Participatory learning and co-design** Pilot activities will be implemented through iterative consultation, field testing, monitoring and stakeholder feedback processes. Cross-district exchanges, learning events, community consultations and collaborative planning processes will help refine the integrated innovation model and its four innovation areas across different ecological and socio-economic contexts. Lessons generated through implementation will be systematically captured through the project's adaptive governance and learning architecture to support continuous refinement, institutionalization, replication and scale-up of the integrated prevention-oriented wildfire adaptation model..

L. Adaptation reasoning

The proposed project addresses a critical adaptation gap by implementing an integrated package of prevention-oriented wildfire adaptation measures that reduce climate vulnerability before wildfire disasters occur. The project combines climate-risk intelligence and early warning, fire-smart landscape management, strategic water infrastructure, community stewardship, performance-based incentives and adaptive governance to strengthen the resilience of forests, watersheds, communities and critical infrastructure to increasing wildfire risks under climate change. Taken together, these adaptation activities constitute the full cost of adaptation required to achieve the project's adaptation objective within the targeted project landscapes, address Bhutan's climate-driven wildfire risks, by filling critical gaps in climate intelligence, ecosystem resilience, community stewardship and adaptive governance that are not addressed through existing programmes and institutional mandates. —While significant investments have been made in ecosystem restoration, watershed management, climate-resilient infrastructure and community resilience, increasing wildfire risks threaten the long-term effectiveness of these investments. The project therefore focuses on prevention-oriented wildfire adaptation, strengthening climate intelligence, adaptive governance, ecosystem resilience and community stewardship systems that are currently underdeveloped within existing programmes and institutional mandates.

Baseline Scenario / Cost of Inaction ("without project")

Existing wildfire management systems have limited capacity to anticipate, prevent and manage these risks before major fires occur. Wildfire-related responsibilities are distributed across DoFPS, NCHM, DLGDM, RBP, local governments and other agencies, but coordination remains focused primarily on operational response rather than anticipatory risk management. While the Inter-Agency Forest Fire Coordinating Group provides an important coordination mechanism, Bhutan currently lacks integrated climate-risk intelligence systems, predictive wildfire-risk tools, adaptive governance mechanisms and structured prevention planning processes capable of supporting climate-informed decision-making. Similarly, financing for wildfire management remains concentrated on emergency response, equipment, awareness activities and volunteer mobilization. There are no dedicated financing mechanisms for large-scale fuel management, ecosystem-based adaptation, community prevention incentives or climate-informed wildfire adaptation at the scale required to address future climate risks. The cost of inaction extends to threats on watersheds, biodiversity, hydropower assets, climate-sensitive livelihoods and existing adaptation investments. Major programmes including Bhutan for Life, ECRUL, ACREWAS, NAP implementation and other AF, GCF, GEF and bilateral initiatives depend on healthy forest ecosystems and resilient watersheds that are increasingly vulnerable to climate-driven wildfire. Without targeted investment in prevention-oriented wildfire adaptation, these broader adaptation benefits may be progressively undermined. Without these adaptation investments, climate-driven wildfire risks are expected to continue increasing, resulting in greater ecosystem degradation, higher wildfire losses, reduced watershed resilience and declining effectiveness of existing adaptation investments.

Full Cost of Adaptation and AF Additionality ("with project")

AF financing is required because the proposed project represents a prevention-oriented and systemic adaptation investment that existing budgets, programmes and institutional mandates cannot finance, design or implement at the required scale. AF resources will finance an integrated package of prevention-oriented adaptation activities—including predictive climate intelligence, fire-smart landscape management, strategic water infrastructure, community stewardship, the No Fire – Credits to the Community mechanism and adaptive governance systems—that together achieve the project's adaptation objective by reducing climate vulnerability before wildfire disasters occur. Existing programmes do not finance these adaptation functions at the scale required.. The AF-financed activities are designed as a self-contained package sufficient to achieve the stated project adaptation objective and are not dependent on additional financing or co-financing from other funding sources. Existing and planned investments by government, development partners and other climate funds are complementary and may strengthen broader resilience and future scaling but are not required for implementation of the proposed activities or achievement of the project's adaptation objective.

Existing wildfire investments focus primarily on detection, suppression, emergency response and post-fire recovery. While these functions remain important, they do not address the underlying climate drivers of increasing wildfire risk, including longer fire seasons, changing fire-weather conditions, ecosystem degradation and increasing exposure of communities, watersheds and critical infrastructure. The proposed project therefore provides adaptation additionality by establishing anticipatory systems that

reduce wildfire risks before they translate into economic, social and environmental losses. In addition, the project strengthens the resilience of existing adaptation investments in watersheds, ecosystems and climate-resilient infrastructure by reducing climate-driven wildfire risks. Significant resources are already being invested in watershed restoration, ecosystem-based adaptation, climate-resilient infrastructure and community resilience through AF, GCF, GEF, Bhutan for Life and other programmes. These investments are complementary to, but are not required to finance or implement, the proposed project activities. Rather, they ~~However, these investments~~ remain increasingly vulnerable to climate-driven wildfires. By addressing this systemic risk, the project generates adaptation benefits that extend well beyond the immediate project landscapes.

Finally, the project introduces innovative approaches that are currently absent from Bhutan's adaptation portfolio, including Bhutan-specific climate intelligence systems, adaptive governance mechanisms, community-based prevention incentives and the No Fire – Credits to the Community mechanism. AF financing provides the risk-tolerant innovation capital required to implement, pilot, evaluate, institutionalize and scale these adaptation measures within national systems and future financing arrangements, while generating evidence to support future replication and scale-up.

Table 13: AF-Financed Adaptation Activities, Additionality and Financing Gaps

Component / Output	AF Financed Adaptation Activities	Financing Gap / Limitation of Current Systems
Component 1: Climate Intelligence and Adaptive Governance	Establishes Bhutan-specific Fire Weather Index methodologies, predictive wildfire-risk systems, adaptive governance mechanisms and anticipatory decision-support tools that enable climate-informed prevention and risk management and directly strengthen climate adaptation through earlier risk identification, preparedness and anticipatory action..	Existing systems focus primarily on fire detection, suppression and emergency response, with limited investment in predictive climate-risk intelligence, anticipatory planning and adaptive governance.
Component 2: Fire-Smart Landscapes & Ecosystem Resilience	Introduces prevention-oriented ecosystem-based adaptation, fuel management, strategic water infrastructure and climate-resilient landscape management approaches that reduce wildfire risks before disasters occur, thereby strengthening ecosystem resilience, protecting watersheds and reducing climate vulnerability..	Current financing prioritizes suppression and post-fire response rather than proactive landscape resilience, ecosystem restoration and wildfire prevention.
Component 3: Community Stewardship & No Fire Credits	Establishes community stewardship systems, performance-based incentive mechanisms and prevention-oriented adaptation financing pathways linked to verified wildfire prevention outcomes, strengthening community adaptive capacity, climate-resilient livelihoods and long-term wildfire prevention.	No existing financing mechanism rewards communities for wildfire prevention, climate adaptation or long-term landscape stewardship.
Cross-cutting: Scaling, Institutionalization and Sustainability	Embeds wildfire adaptation into national planning systems, operational procedures, training programmes, community institutions and future financing mechanisms to support long-term resilience and replication, ensuring that successful adaptation measures are sustained and scaled beyond the project period.-	No pathways for sustained institutionalization, national scaling or long-term financing of wildfire adaptation systems.

M. Sustainability

The project has been designed to sustain adaptation benefits beyond the project period through institutional ownership, integration into national systems, community stewardship mechanisms and long-term financing pathways.

- **Institutional sustainability:** The National Wildfire Innovation and Governance Working Group, climate intelligence systems and wildfire-management approaches will be embedded within existing mandates of DoFPS, NCHM, DLGDM and local governments. Wildfire adaptation approaches will be integrated into planning processes, operational procedures and national training systems.
- **Technical sustainability:** Climate-risk intelligence systems will be operated through existing national institutions. Training programmes and wildfire curricula developed through UWICER and CNR will strengthen long-term technical capacity and support continued use of project tools and methodologies.
- **Financial sustainability:** The project will test sustainable financing approaches through the No Fire Credits mechanism, integration of wildfire adaptation into public planning and budgeting processes, and partnerships with state-owned enterprises and other stakeholders whose assets depend on resilient forest and watershed systems.

- **Community sustainability:** Community Forest Fire Management Groups and community stewardship mechanisms will strengthen local ownership and provide a platform for continued prevention, monitoring and awareness activities beyond the project period.
- **Environmental sustainability:** Fire-smart landscape management, ecosystem restoration and watershed protection measures are designed to generate long-term resilience benefits by reducing fuel accumulation, strengthening ecosystem functions and lowering future wildfire vulnerability.

N. Environmental and Social impacts and risks

UNDP commits to implementing the proposed project in compliance with the Adaptation Fund's Environmental and Social Policy (ESP) through its Environmental and Social Management System (ESMS) and application of UNDP's Social and Environmental Standards (SES), recognized as meeting the requirements of the Adaptation Fund ESP. The preliminary SESP screening conducted during Concept Note development will be further updated and refined during the PFG phase. As several site-specific activities—including prescribed burning, fuel management, fire lines, strategic reservoirs and related infrastructure—will only be finalized during project preparation, safeguard requirements will be refined following site selection and activity-specific screening. While the project is expected to generate primarily positive environmental and social impacts a number of potential but manageable risks and safeguard considerations have been identified. The principles and standards outlined in the table below are expected to be relevant to the proposed concept. Potential adverse environmental and social risks are expected to be limited in scale, site-specific, largely reversible, and manageable through appropriate mitigation measures, stakeholder engagement and application of good international practice during project implementation. **The overall project risk category is expected to be Moderate under UNDP SES and Category B under the Adaptation Fund ESP, subject to confirmation during the full proposal phase.** The table below presents the relevant UNDP SES principles and standards potentially triggered by the proposed concept, as identified during the preliminary screening process. For reference, the table also indicates the corresponding Adaptation Fund ESP principles considered relevant.

Table 14: Environmental and Social Principles and Standards Triggered

UNDP SES Principles (P)/Standards (S)	AF ESP Principles
P1: Human Rights / Leave No One Behind	P2: Access & Equity P3: Marginalized & Vulnerable Groups P4: Human Rights
P2: Gender Equality & Women's Empowerment	P5: Gender Equality & Women's Empowerment
P3: Sustainability & Resilience	P11: Climate Change
P4: Accountability	P2: Access & Equity P4: Human Rights
S1: Biodiversity Conservation & Sustainable Natural Resource Management	P9: Protection of Natural Habitats P10: Conservation of Biological Diversity
S2: Climate Change & Disaster Risks	P11: Climate Change
S3: Community Health & Safety	P13: Public Health
S5: Displacement & Resettlement	P8: Involuntary Resettlement
S7: Labour & Working Conditions	P6: Core Labour Rights

Environmental and Social Assessment and Risk Management

As a moderate-risk project, further environmental and social assessment work will be undertaken during the full project preparation phase to confirm project categorization, assess potential risks and impacts, and develop appropriate safeguard instruments and management measures. This is expected to include preparation of an Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), Gender Action Plan (GAP), Grievance Redress Mechanism (GRM) and any additional safeguard measures required under the Adaptation Fund Environmental and Social Policy (ESP) and UNDP Social and Environmental Standards (SES). The ESMF will establish screening criteria, exclusion criteria, activity-level assessment requirements, stakeholder consultation and disclosure procedures, grievance arrangements, and the preparation of site-specific Environmental and Social Management Plans (ESMPs) or other safeguard instruments where required before implementation of site-specific activities. Environmental and social assessments will consider direct, indirect, cumulative and induced risks, including those related to biodiversity, prescribed burning, water infrastructure, community health and safety, access restrictions and Indigenous Peoples, where relevant. The project will be implemented in partnership with the Royal Government of Bhutan and will, where appropriate, align with existing national safeguard systems, environmental regulations and institutional procedures. Relevant national technical standards, legislation and institutional responsibilities are referenced in Section G.

Table 15: Environmental and social principles and risks

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law		Magnitude: Low. Fuel management, prescribed burning, drone operations and water infrastructure activities will need to comply with relevant Bhutanese legislation, permitting requirements and protected-area regulations. Mitigation: Legal and regulatory compliance review during the PFG phase; all required approvals and permits obtained prior to implementation.
Access and Equity		Magnitude: Medium. Remote communities, households with limited connectivity and non-members of community forestry groups may face barriers to accessing project benefits, climate information and incentive

		mechanisms. Mitigation: Stakeholder mapping, equitable benefit-sharing criteria, targeted outreach and accessible grievance mechanisms.
Marginalized and Vulnerable Groups		Magnitude: Low. Women, elderly persons, persons with disabilities, remote communities and economically vulnerable households may face participation barriers. Mitigation: Inclusive consultation processes, targeted engagement measures, social assessment and monitoring of benefit distribution.
Human Rights	✓	Magnitude: Negligible. No adverse human-rights impacts are anticipated. Project activities are expected to strengthen access to climate adaptation benefits and participation in decision-making.
Gender Equality and Women's Empowerment		Magnitude: Low. Existing gender gaps in natural resource governance may limit women's participation and access to project benefits. Mitigation: Gender Assessment and Gender Action Plan (GAP), gender-responsive implementation measures, sex-disaggregated monitoring and targeted support for women's participation and leadership.
Core Labour Rights & Working Conditions		Magnitude: Medium. Field activities, restoration works, fuel management and construction of small-scale infrastructure may create occupational health and safety risks. Mitigation: Labour Management Procedures, occupational health and safety protocols, training, contractor requirements and supervision.
Indigenous Peoples		Magnitude: Low. Indigenous Peoples (including Brokpa communities where present) may be present within parts of the project landscapes. Mitigation: Potential risks and opportunities will be assessed during the PFG phase through stakeholder mapping and site-specific screening. Where required, culturally appropriate consultations, FPIC-compatible processes and additional safeguard measures will be incorporated into project design and implementation.
Involuntary Resettlement		Magnitude: Low. No physical resettlement or land acquisition is anticipated. However, localized restrictions on access to customary forest resources associated with prescribed burning, fuel management or other wildfire-prevention activities will be assessed during the PFG phase. Mitigation: The project will exclude activities involving physical resettlement and apply participatory planning, livelihood assessments and grievance mechanisms where temporary access restrictions may occur.
Protection of Natural Habitats		Magnitude: Medium. Ecosystem restoration, fireline construction, prescribed burning and water infrastructure may create localized impacts on habitats if not appropriately designed. Mitigation: Biodiversity-sensitive site selection, environmental screening and incorporation of mitigation measures within the ESMF.
Conservation of Biological Diversity		Magnitude: Medium. Activities in biodiversity-rich landscapes may affect sensitive species or habitats if not properly managed. Mitigation: Biodiversity screening during the PFG phase, avoidance of critical habitats and biodiversity management measures integrated into project design and implementation.
Climate Change		Magnitude: Low. Risk of maladaptation if interventions are not sufficiently climate-informed or adaptive to future conditions. Mitigation: Climate-risk screening, use of multiple climate scenarios and adaptive management approaches throughout implementation.
Pollution Prevention & Resource Efficiency		Magnitude: Low-Medium. Prescribed burning, construction activities and equipment installation may generate temporary emissions, waste or localized environmental impacts. Mitigation: Good environmental management practices, waste management procedures and operational protocols integrated into the ESMF.
Public Health & Safety		Magnitude: Medium. Community participation in wildfire prevention activities and prescribed burning may create safety risks if not adequately managed. Mitigation: Safety protocols, training, emergency response procedures and community awareness measures.
Physical & Cultural Heritage		Magnitude: Low. Ground-disturbing activities may affect previously unidentified cultural or religious sites. Mitigation: Screening procedures, stakeholder consultations and chance-find procedures incorporated into implementation arrangements.
Land & Soil Conservation		Magnitude: Low. Firebreak establishment, fuel management and restoration activities may cause localized soil disturbance or erosion. Mitigation: Erosion-control measures, slope-sensitive design and restoration of disturbed areas using appropriate native vegetation.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Governance arrangements

The project will be implemented under the National Implementation Modality (NIM), with the Ministry of Energy and Natural Resources (MoENR), through the Department of Forests and Park Services (DoFPS), serving as the Executing Entity (EE) responsible for overall project implementation and coordination. MoENR (DoFPS) will lead technical implementation, stakeholder coordination, overall procurement planning and management, day-to-day project management and delivery of project outputs in collaboration with the participating government agencies and partners.

UNDP will serve as the Adaptation Fund Implementing Entity (IE) and will undertake its implementing entity and quality-assurance functions in accordance with Adaptation Fund and UNDP requirements. ,including fiduciary oversight, safeguards oversight, monitoring, reporting and quality assurance. UNDP will not directly execute project activities.

At the request of the Government, UNDP may provide specific Direct Project Services to support the NIM arrangement, including procurement of consultants and contractual services. The scope and associated costs of any such services will be determined during full project formulation and will adhere to the limits applied by the AF, based on the detailed project budget and procurement plan, all required written requests, endorsement and rationales provided, and will be transparently reflected in the fully developed proposal in accordance with applicable Adaptation Fund requirements.

UNDP will serve as the Adaptation Fund Implementing Entity (IE) and, in addition, will provide direct project support services to the NIM arrangement, including fiduciary oversight, quality assurance, technical backstopping, safeguards, monitoring and reporting, upon request from the Government in accordance with the Adaptation Fund and UNDP requirements. Technical implementation by MoENR through DoFPS will be undertaken in close collaboration with key national partners, including NCHM, DLGDM, RBP, GovTech, local governments, Community-based Forest Fire Management Groups (CFMGs) and other participating institutions, according to their respective mandates. Detailed implementation arrangements, institutional responsibilities, governance and coordination mechanisms will be finalized during the full project formulation phase.

F. Project alignment with the Adaptation Fund Results Framework

<u>Project Outcomes</u>	<u>Project Outcome Indicator(s)</u>	<u>Fund Outcome</u>	<u>Fund Outcome Indicator</u>	<u>Grant Amount (USD)</u>
<u>Outcome 1: Climate-informed wildfire-risk governance, predictive systems, early warning and adaptive institutional coordination strengthened.</u>	<u>1.1 At least 3,372 direct beneficiaries supported to strengthen their climate resilience, comprising approximately 2,400 members of 12 participating CFMGs and 972 government personnel and responders, disaggregated by sex and vulnerable group where applicable.</u> <u>1.2 Approximately 170,373 residents of the 11 target gewogs and two UWI areas benefiting indirectly from reduced wildfire risk, climate information services and landscape-scale adaptation, disaggregated by sex.</u> <u>1.3 Approximately 150,016 residents of the wider five project dzongkhags benefiting indirectly from</u>	<u>Outcome 1: Reduced exposure to climate-related hazards and threats</u> <u>Outcome 8: Innovation for effective, long-term adaptation to climate change accelerated, encouraged, and enabled to scale up.</u>	<u>Core Indicator 1: Number of beneficiaries [# of people, disaggregated by direct and indirect beneficiaries, by sex, by vulnerable groups, and by sector].</u> <u>Indicator 8A: Innovations successfully reaching scale up that demonstrate local innovation participation and/or local innovation benefit [# of innovations].</u>	<u>1,386,305</u>

	strengthened watershed protection, ecosystem resilience, wildfire intelligence systems and governance, disaggregated by sex; potential overlap with other indirect beneficiary groups to be assessed and beneficiary estimates validated during PFG.			
<u>Outcome 2: Ecosystem resilience, fire-smart landscape management and prevention-oriented adaptation strengthened in vulnerable wildfire-prone landscapes.</u>	2.1 At least 400 ha of high-risk forest and WUI landscapes brought under climate-resilient fire-smart landscape management by project completion. 2.2 Measurable improvement in wildfire resilience/ecological condition demonstrated in monitored intervention sites, with evidence generated on the effectiveness and scalability of innovative fire-smart landscape management and early-intervention approaches (with baseline and target values to be established during the PFG phase).	<u>Outcome 5:</u> Increased ecosystem resilience in response to climate change and variability-induced stress <u>Outcome 8:</u> Innovation for effective, long-term adaptation to climate change accelerated, encouraged, and enabled to scale up.	<u>Indicator 5 (Core indicator 4):</u> Ecosystems and natural resources brought under protection, restoration, or improved management in response to climate variability and change [# of hectares of terrestrial areas]. <u>Indicator 8A:</u> Innovations successfully reaching scale up that demonstrate local innovation participation and/or local innovation benefit [# of innovations].	<u>1,335,011</u>
<u>Outcome 3: Community stewardship, adaptive capacity, innovation financing and scaling pathways for wildfire resilience strengthened.</u>	3.1 At least 12 CFMGs demonstrate strengthened capacity for prevention-oriented wildfire management, including at least 300 CFMG members trained, minimum 30% women. 3.2 One integrated prevention-oriented wildfire adaptation model, comprising four mutually reinforcing innovation areas, piloted and evaluated, with evidence generated on effectiveness, efficiency/cost-effectiveness, equity, operational feasibility and scalability. 3.3 Integrated innovation model demonstrates a viable pathway for institutionalization, replication and/or scale-up, including piloting of the No Fire – Credits to the Community mechanism through at least 5 CFMGs.	<u>Outcome 8:</u> Innovation for effective, long-term adaptation to climate change accelerated, encouraged, and enabled to scale up.	<u>Indicator 8A:</u> Innovations successfully reaching scale up that demonstrate local innovation participation and/or local innovation benefit [# of innovations].	<u>1,449,191</u>
<u>Total outcome-level grant amount</u>				<u>4,170,507</u>
<u>Project Output(s)</u>	<u>Project Output Indicator(s)</u>	<u>Fund Output</u>	<u>Fund Output Indicator</u>	<u>Grant Amount (USD)</u>
<u>Output 1.1: Climate-risk intelligence and predictive wildfire-risk systems developed and operationalized.</u>	1.1.1 One operational national wildfire intelligence platform integrating fire detection, climate, fuel-load and exposure information. 1.1.2 Bhutan-specific fuel-load baselines and FWI methodologies developed and validated for priority forest types and WUI areas.	<u>Output 8.1:</u> Innovations identified and piloted that collectively enhance local innovation capacity and contribute to development of local/national/regional	<u>Indicator 8.1B:</u> Innovations piloted that demonstrate local innovation participation and/or local innovation benefit [# of innovations].	<u>762,000</u>

	1.1.3 One integrated climate-informed decision-support and alerting system piloted and operational across five project dzongkhags.	adaptation innovation ecosystems.		
<u>Output 1.2: Adaptive and effective governance, monitoring and innovation learning systems enabled.</u>	1.2.1 National wildfire innovation and governance working group established and operational. 1.2.2 Multi-agency wildfire alert and early-action response protocol operationalized, including five Dzongkhag-level Forest Fire Management Plans and five Rapid Early Action and Response Teams.	<u>Output 1.2: Targeted population groups covered by warning and advisory services for climate-related hazards and threats.</u>	<u>Indicator 1.2A (Core indicator 2): Early warning systems established or improved [# of systems].</u> <u>Indicator 1.2B: People covered by new or improved early warning systems [# of people, disaggregated by sex and by hazard].</u>	<u>624,305</u>
<u>Output 2.1: Climate-resilient ecosystem-based approaches and fire-smart landscape management practices implemented.</u>	2.1.1 Fire-smart landscape management implemented in high-risk forest and WUI landscapes, including at least 200 ha treated through fuel-reduction measures, at least 200 ha of overcrowded forest stands thinned, and at least 75 km of strategic fire lines established or maintained. 2.1.2 Ecological and social outcomes monitored across at least 20 treatment sites.	<u>Output 5.1: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability.</u>	<u>Indicator 5.1: Ecosystems and natural resources targeted by activities to improve protection, restoration, and/or management [# of resources].</u>	<u>782,511</u>
<u>Output 2.2: Innovative early-intervention and operational support systems for wildfire management piloted and evaluated.</u>	2.2.1 One climate-informed early-intervention and operational support system piloted and evaluated across five project dzongkhags, including at least 15 strategically located reservoirs or ponds positioned using climate-risk information, wildfire-risk mapping and anticipatory planning, integrated with fire lines and access routes, with at least 90% operational and meeting agreed service standards by project completion.	<u>Output 8.1: Innovations identified and piloted that collectively enhance local innovation capacity and contribute to development of local/national/regional adaptation innovation ecosystems.</u>	<u>Indicator 8.1B: Innovations piloted that demonstrate local innovation participation and/or local innovation benefit [# of innovations].</u>	<u>552,500</u>
<u>Output 3.1: Community stewardship and safe, prevention-oriented wildfire management and volunteer coordination systems operationalized.</u>	3.1.1 A structured community stewardship and volunteer coordination model for prevention-oriented wildfire management piloted through at least 12 existing CFMGs, linking participating groups with wildfire prevention, preparedness, early-action and national alert and operations systems. 3.1.2 At least 300 CFMG members trained to operationalize the community stewardship model through safe and prevention-oriented wildfire management, including at least 30% women.	<u>Output 8.1: Innovations identified and piloted that collectively enhance local innovation capacity and contribute to development of local/national/regional adaptation innovation ecosystems.</u>	<u>Indicator 8.1B: Innovations piloted that demonstrate local innovation participation and/or local innovation benefit [# of innovations].</u>	<u>640,500</u>
<u>Output 3.2: Climate-resilient</u>	3.2.1 One innovative performance-based No Fire – Credits to the	<u>Output 8.1: Innovations identified</u>	<u>Indicator 8.1B: Innovations piloted that demonstrate local</u>	<u>563,000</u>

<u>livelihoods and local adaptation capacities enhanced through No Fire – Credits to the Community.</u>	Community mechanism designed and piloted through at least 5 CFMGs across five dzongkhags, linking verified wildfire-prevention outcomes with climate-resilient livelihood benefits. 3.2.2 At least 5 community-based enterprise groups established and at least 150 community members, minimum 30% women, trained in enterprise development and climate-resilient livelihood activities. 3.2.3 Performance, equity, livelihood and adaptation outcomes of the No Fire – Credits mechanism evaluated to inform refinement, replication and scale-up.	and piloted that collectively enhance local innovation capacity and contribute to the development of local, national and regional adaptation innovation ecosystems.	innovation participation and/or local innovation benefit [# of innovations].	
<u>Output 3.3: Institutionalization, knowledge management and scaling pathways for wildfire adaptation developed.</u>	3.3.1 Integrated prevention-oriented wildfire adaptation model and its four mutually reinforcing innovation areas tracked and evaluated, including effectiveness, efficiency/cost-effectiveness, adaptation outcomes and replication opportunities. 3.3.2 Annual innovation-learning briefs produced. 3.3.3 At least two partnership agreements or formal expressions of interest established to support replication, co-financing or scale-up.	<u>Output 8.2:</u> Innovations identified and piloted which build the adaptation innovation evidence base and institutional capacity.	<u>Indicator 8.2:</u> Innovation-focused knowledge products disseminated and/or learning events facilitated that support and enable innovation capacity at a local, national, and/or regional level [# of knowledge products and/or learning events].	<u>245,691</u>
<u>Total output-level grant amount</u>				<u>4,170,507</u>

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

A. Record of endorsement on behalf of the government²⁵

(Enter Name, Position, Ministry)  Tshering Dorji Director General Department of Macro-Fiscal and Development Finance, Ministry of Finance.	Date: (Month, day, year) June 23, 2026
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B. Implementing Entity certification

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 (<i>Bhutan's National Adaptation Plan (2023), Nationally Determined Contribution 3.0 (2025), 13th Five-Year Plan (2024–2029), National Strategy for Wildfire Prevention and Management and other relevant national development, climate change and biodiversity frameworks</i>) 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 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.	
Implementing Entity Coordinator ~~Robin Merlier~~ ~~Nancy Bennet~~ Director, ~~a.i.~~ , Quality and Impact Hub and Executive Coordinator, ~~a.i.~~ , Vertical Funds Bureau for Policy and Programme Support (BPPS) United Nations Development Programme	
Date:	Tel. and email: nancy.bennet@undp.org
Project Contact Person: Azza Aishath, Regional Technical Specialist	
Tel. And Email: aishath.azza@undp.org	

²⁵. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.



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Ministry of Finance
Royal Government of Bhutan
Department of Macro-Fiscal and Development Finance

MoF/D MDF/DCDMD/AF_LIG/UNDP/2025-2026/2976

June 23, 2026

To:

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

Subject: Endorsement for Climate-Resilient Wildfire Prevention and Adaptive Landscape Management in Bhutan

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

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by United Nations Development Programme and executed by Ministry of Energy and Natural Resources.

Thanking you.

Yours Sincerely,

(Tshering Dorji)

Director General/Designated Authority of Bhutan to the Adaptation Fund

Copy to:

1. Director, Department of Forests and Park Services, Ministry of Energy and Natural Resources for kind information.
2. Resident Representative, United Nations Development Programme (UNDP), Thimphu for kind information and support.



Revised PFG Submission Form¹ (additions in red)

Project Formulation Grant (PFG)

Submission Date:

Adaptation Fund Project ID:

Country: Bhutan

Title of Project/Programme: Climate-Resilient Wildfire Prevention and Adaptive Landscape Management in Bhutan

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

Implementing Entity: United Nations Development Programme (UNDP)

Executing Entity/ies: United Nations Development Programme (UNDP)

A. Project Preparation Timeframe

Start date of PFG	November 2026
Completion date of PFG	October 2027

B. Proposed Project Preparation Activities (\$)

List of Proposed Project Preparation Activities	Output of the PFG Activities	US\$ Amount	Budget note²
Consultancies and contracts to develop program and/or project options.	Full Project Proposal with SESP assessment development Wildfire Risk and Landscape Assessment, <u>including</u>	\$80,000	1) Consulting firm will engage five specialists across 157 working days: - International Team Leader/AF Innovation Window Specialist - National SESP Expert; - International Economist/ESV Expert; - National Expert based in Bhutan;

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

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

	<u>establishment of baselines and measurable outcome targets for key adaptation benefits.</u> Ecosystem Services Valuation and Economic Analysis		- International Wildfire and Landscape Management Expert. <u>The consultancy will support preparation of the full proposal, including the establishment of baselines and measurable outcome targets for key adaptation benefits. This will include stakeholder consultations, field visits, collection and analysis of relevant baseline data and development of appropriate methodologies, indicators and targets for measuring changes in wildfire risk and resilience, ecosystem and landscape resilience, community preparedness and other key adaptation outcomes.</u> Total: USD 80,000
Travel costs for experts, when required, for consultations and discussions with interested parties and stakeholders, and local participation as needed in project design.	Field site assessments — Thimphu, Paro, Haa, Mongar, Trashigang dzongkhags Community consultations — 11 priority gewogs	\$23,248	2) Travel Field site assessments and community consultations across eleven gewogs for taskforce member, relevant sectors and other officials (including DSA and fuel) Total: USD 23,248
Local consultations, and/or workshops to discuss the specific project and program ideas (including translation into local languages, preparation of background papers, etc).	National Inception Workshop National Validation Workshop Dzongkhag-level stakeholder workshops (5 dzongkhags) Community co-design sessions (11 gewogs) No Fire Credits mechanism design workshop Gender-responsive consultation sessions Quarterly technical review meetings	\$35,001	3) Supplies Supplies for workshop and consultations Total: USD 2,500 4) Audio Visual & Print Prod Cost Printing and production of workshop materials, community engagement toolkits, consultation summaries, participatory mapping materials and workshop documentation Total: USD 1,000 5) Training, Workshops and Conferences: - 1 National Inception Workshop \$2,000 - 1 National Validation Workshop \$4,320

			- 5 Dzongkhag workshops (Mongar, Trashigang, Thimphu, Paro, Haa): \$6,475 - 11 Community consultations / gewog level: \$7,425 - 5 Sector-specific consultations: \$4,500 - 1 No Fire Credits design workshop: \$1,320 - 3 Gender consultation sessions: \$2,550 - 3 Quarterly technical review meetings: \$1,530 - Miscellaneous meeting costs = \$1,381 Total: USD 31,501
	Subtotal	\$138,249	
	Implementing Entity's Management Fee (8.5%) %	\$ 11,751	
	Total Project Formulation Grant	\$150,000	

The following section provides justification for the need for each proposed project formulation activity and the amount of funding requested, in accordance with AF PFG guidelines.

1. Consultancies and Contracts — Consulting Firm

The preparation of a Full Project Proposal for the Adaptation Fund Innovation Window is a technically complex, multi-disciplinary undertaking that requires specialist expertise not available within UNDP Bhutan's existing staffing. The AF Innovation Window has specific and exacting requirements for innovation evidence, scalability assessment, Theory of Change development, results-based management, Social and Environmental Screening (SESP/ESMF), ecosystem services valuation and economic analysis that cannot be met without dedicated technical capacity. The Wildfire Risk and Landscape Assessment requires international expertise in Fire Weather Index (FWI) methodology, remote sensing analysis and fire-smart landscape management specific to Himalayan mountain ecosystems. The No Fire – Credits to the Community mechanism requires specialist economic and financial design expertise in performance-based payment and results-based financing. A national expert is essential to bridge the international team with DoFPS, NCHM, DLGDM and community stakeholders, conduct consultations in Dzongkha, and ensure national context, institutional arrangements and co-financing commitments are accurately reflected in the proposal.

The consulting firm will be engaged to deliver the Full Project Proposal and all mandatory annexes. The USD 80,000 budget reflects 157 days of specialist expertise across five profiles: an International Team

Leader/AF Innovation Window Specialist to lead proposal drafting and ensure compliance with AF Innovation Window requirements; a National SESP Expert to complete the full UNDP SESP, ESMF and safeguard instruments; an International Economist/ESV Expert to update the ecosystem services valuation, benefit-cost ratio analysis and design the No Fire Credits financial framework; a National Expert (Bhutan) to lead stakeholder consultations, compile baseline analysis and coordinate with government counterparts; and an International Wildfire and Landscape Management Expert to conduct the wildfire risk assessment and design Component 2 interventions.

2. Local Consultations and Workshops

Meaningful stakeholder consultation is a mandatory requirement under both the Adaptation Fund Environmental and Social Policy and UNDP Social and Environmental Standards. The project's target landscapes span five dzongkhags and eleven priority gewogs across eastern and western Bhutan, encompassing diverse wildfire-risk contexts, community forest institutions, ethnic minority communities (including Brokpa in Trashigang) and gender-differentiated vulnerabilities. Effective participatory project design requires in-person consultation at multiple levels — national, district and community — to validate the project concept, co-design interventions, gather gender-disaggregated data, identify local adaptation priorities, assess stakeholder capacities, develop the Stakeholder Engagement Plan, and ensure Free Prior and Informed Consent (FPIC) processes are completed as required. The No Fire – Credits to the Community mechanism specifically requires extensive pre-design community consultation to co-develop eligibility criteria, benefit-sharing arrangements, verification protocols and governance structures with participating Community Forest Groups. Sector-specific consultations with forestry, disaster risk reduction, climate, gender and youth stakeholders are needed to ensure cross-sectoral coherence of the Full Project Proposal.

3. Travel, Field Site Assessments and Community Consultations

The project's target landscapes span five dzongkhags across eastern and western Bhutan, including remote mountain areas in Mongar, Trashigang, Haa and the urban-wildland interface areas of Thimphu and Paro. Field travel is essential for the consulting firm's site assessments, the government task force's participation in consultations across all eleven gewogs, and UNDP programme officer oversight of formulation activities. Bhutan's mountainous terrain and geographic distribution of the project landscapes make in-person field visits unavoidable for the wildfire risk and landscape assessment, community consultations, participatory mapping, FPIC consultations and validation of baseline data. Government task force members and sector officials must travel to all eleven gewogs to represent national agencies in community consultations and ensure government ownership of the formulation process.

4. Supplies for workshops

Stationery, materials and supplies for workshops and consultations

5. printing and audio-visual production costs

Workshop materials, community engagement toolkits and consultation summaries in English and Dzongkha

C. Implementing Entity

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

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
<u>Robin</u> ~~Merlier~~ ~~Nancy~~ ~~Bennet~~		August 2026	Aishath Azza		Aishath.azza @undp.org

Annex 1: UNDP Offline SESP Tool (Abridged version for Adaptation Fund)

Social and Environmental Risk Management Instruments

Assessment or management measures required to address the identified S&E risks and impacts		
Further assessment or management measures	Check if applicable	Comments: indicate scope of measures (e.g. outputs/activities to be addressed) as well as timing (e.g. completed, planned in design, or planned in implementation prior to initiation of certain activities)
ESMF	✓	ESMF may be prepared during PFG stage if/where the nature, location and scale of activities is insufficiently detailed for ESMF
Targeted assessment(s)	✓	To be confirmed during PFG but ESMF/ESMP may specify further targeted assessments to be carried out during implementation
ESIA	X	To be confirmed during PFG stage but activities unlikely to require ESIA.
SESA	X	N/A. Not required for project of this nature (no upstream policy, project, plan development)
ESMP	✓	ESMP may be prepared during PFG stage if/where nature, location and scale of activities are sufficiently detailed. The ESMF will include screening criteria, exclusion criteria, consultation and disclosure requirements, grievance procedures and preparation requirements for site-specific ESMPs or other safeguard instruments where required.
Targeted management plans	✓	GAP to be developed during PFG stage
Other instruments	✓	Stakeholder Engagement Plan (SEP) including Grievance Redress Mechanism (GRM) to be developed during PFG stage

Additional Measures to Integrate the Programming Principles to Strengthen Social and Environmental Sustainability

Measures to further mainstream the UNDP Programming Principles into the project

Mainstreaming the human rights-based approach			
Participatory project formulation process engaging a wide range of stakeholders, emphasizing consultation & co-design with local communities, women and youth, as well as relevant government agencies, academia and civil society. The project design will be socially-inclusive & seek to strengthen accessibility of project benefits & services to marginalised & vulnerable groups. It includes activities aimed to enhance the capacity of government agencies, realise human rights; implement human rights-related standards in national law (particularly for vulnerable and climate-affected communities).			
Improving gender equality and women's empowerment			
Comprehensive Gender Analysis to be conducted during PFG with formulation of a Gender Action Plan (GAP) with participation targets & budget. The GAP will include project-specific gender baseline and indicators to track intra-household impacts. Further, the GAP will integrate mandatory procedures and measures for the Prevention of Sexual Exploitation and Abuse (PSEA) and Gender-Based Violence (GBV), in strict adherence to the UNDP Gender Policy and PSEA requirements			
Mainstreaming sustainability and resilience			
The project's interventions as a whole aim to reduce vulnerabilities and strengthens resilience of communities to anticipated impacts of climate change and associated disaster risks in line with Bhutan's national climate adaptation commitments and policies. The design of project components and activities will consider relevant climate projections and hazard modeling, environment-development linkages and promote prevention-oriented wildfire adaptation and climate-resilient landscape management as key strategic adaptation responses.			
Strengthening accountability to stakeholders			
Stakeholder mapping & analysis will be conducted during PFG & a Stakeholder Engagement Plan (SEP) prepared supporting meaningful participation and inclusion of all stakeholders, in particular marginalized individuals and groups in project implementation and monitoring. The SEP shall also include means for local communities and affected populations to raise concerns and/or grievances including a Grievance Redress Mechanism (GRM). Project stakeholders shall also have access to UNDP's Accountability Mechanism.			
UNDP SES Principles & Standards	S&E Risk Events	Causes	Impacts
			Risk Significance (Impact/Likelihood)
			Treatment Measures

Human Rights Principle	(P1.2) Exclusion of vulnerable groups from wildfire-risk information, decision-making and benefits; uneven access to prevention services and climate-resilient livelihoods.	Limited capacity of national and local institutions (DoFPS, NCHM, DLGDM, dzongkhags, CFEMGs) on rights-based climate-risk governance; reliance on digital tools that may not reach remote or low-literacy groups	Affected stakeholders may be excluded from decision-making or benefits or rights to access basic services/resources may be affected; Unequal access to early warning,	I: 2 L: 2	During PFG, conduct capacity <u>ལོ་རྒྱུ</u> needs assessment of key institutions and local structures on inclusive, rights <u>ལོ་རྒྱུ</u> based wildfire and climate <u>ལོ་རྒྱུ</u> risk governance during PFG; Integrate human <u>ལོ་རྒྱུ</u> rights and SES content into trainings for government, dzongkhags and CFEMGs; ensure inclusive criteria for information access and benefit targeting; Include indicators on participation and benefit <u>ལོ་རྒྱུ</u> sharing for vulnerable groups
Gender Equality & Women's Empowerment Principle	Risk of discrimination against women (P2.10); Risk of perpetuating or worsening gender inequalities in wildfire resilience decision <u>ལོ་རྒྱུ</u> making	Existing gender division of labour in forest-edge communities; design of CFEMGs, No Fire Credits, training & ICT tools without gender analysis	Women may have less access to climate <u>ལོ་རྒྱུ</u> risk information, training, safety equipment, incentives	I: 2 L: 2	Undertake a project-specific gender assessment, prepare a Gender Action Plan at PFG and set targets for women's participation
Accountability Principle	Risks of potential exclusion of affected stakeholders (P3.13) Risks of stakeholder grievances (P3.14); Exclusion of key stakeholders from planning & benefits;	Complex, multi-agency governance; technology-heavy design that might privilege central actors;	Could affect project results & sustainability, impact livelihoods; Reduced local ownership & cooperation	I: 3 L: 3	Stakeholder mapping & analysis to be conducted during project preparation and Stakeholder Engagement Plan (SEP) prepared outlining participatory & socially inclusive approaches for comprehensive stakeholder engagement during implementation; Include a GRM for the project; Enable access UNDP's Accountability Mechanism;
Sustainability and Resilience Principle	Generic sustainability and resilience risks associated with activities with unknown design parameters (P4.16); Technological failure	Context-inappropriate technologies or infrastructure that are hard to maintain in mountainous terrain; focusing on hardware rather than systems transformation; insufficient attention to long-term O&M & institutional capacity	Under <u>ལོ་རྒྱུ</u> performing systems, stranded assets, or over <u>ལོ་རྒྱུ</u> reliance on technologies that cannot be sustained; missed opportunity for systemic resilience gains	I: 3 L: 3	Activities to be developed in greater detail during PFG. The ESMF will establish screening procedures, exclusion criteria and requirements for any additional activity-specific environmental and social assessments before implementation of site-specific investments.
1. Biodiversity Cons. & Sust. Nat. Resource Mgmt.	Risks to habitats and/or ecosystems and their services (S1.1); Risks to critical habitats (S1.2); (S1.8); Localized impacts on habitats, biodiversity and ecosystem services from fuel management, prescribed burning, firebreaks & infrastructure	Wildfire-prevention and climate-resilient landscape management activities; Siting of EbA/fire-smart measures (thinning, burning, access tracks, water points) without full ecological assessment	Biodiversity loss, ecosystem degradation and loss of ecosystem service values; Local degradation or fragmentation of habitats; impacts on slope stability, soil and biodiversity	I: 3 L: 2	Biodiversity risks will be assessed through the ESA and addressed through the ESMF/ESMP, including screening of critical habitats, protected areas, sensitive ecosystems and species where relevant. Any need for additional targeted biodiversity studies can be determined during the PFG phase. Further assessment requirements and mitigation measures to be refined during PFG/full proposal stage;
2. Climate Change and Disaster Risks	Hazard/disaster-related risks (S2.1); Risks due to sensitivity to climate change or disasters (S2.2); Maladaptation risks (S2.3); Climate- or disaster-sensitivity of project investments	Infrastructure and management practices that do not fully account for projected shifts in fire regimes; drought <u>and</u> extreme events;	Reduced effectiveness of investments under future climate;	I: 2 L: 3	Project design and adaptive management systems to consider relevant climate projections and future wildfire-risk scenarios; Integrate climate-risk screening into design of all major investments (water infrastructure, digital platforms, EbA, WUI measures); Include explicit "no maladaptation" criteria in ESMF/ESMP
3. Community Health, Safety and Security	Risks associated with wildfire-prevention activities, field	Wildfire-prevention field activities, remote terrain operations,	Potential localized safety risks, accidents, injuries or	I: 4 L: 2	Stakeholder engagement, community awareness and OHS procedures for wildfire-prevention & field activities; Develop

	operations, remote terrain and localized technology deployment (S3.1);	localized infrastructure or monitoring systems may create localized safety risks without adequate OHS	community concerns associated with field activities and technology deployment		and implement comprehensive OHS procedures and training for all field operations (DoFPS staff, contractors, volunteers), including PPE, first aid, safe technology use and burn protocols; Coordinate with IFFCG and disaster authorities on incident management and community safety protocols
4. Cultural Heritage	Risks to cultural heritage sites, sacred landscapes or culturally significant forest areas (S4.1); Disturbance to cultural heritage sites, sacred forests or culturally important landscapes.	Activities implemented in or near culturally sensitive landscapes; near dzongs, lhakhangs, chortens, sacred sites & pilgrimage routes	Potential physical or perceived damage to cultural heritage and spiritual landscapes; may raise community sentiments	I: 2 L: 2	ESA during PFG to identify any potential cultural heritage sensitivities, including sacred forest areas or culturally significant landscapes; Include cultural heritage screening in ESA; with NLCS, monastic bodies and communities; Incorporate chance-find procedures into ESMP/ESMF.
5. Displacement and Resettlement	Economic displacement risks (S5.2); Localized economic displacement or restriction of access to customary resources.	Wildfire-prevention activities may create localized restrictions on access to lands/resources customarily used by communities;	Economic losses or livelihood impacts; inconvenience or loss of access to land/resources	I: 1 L: 2	Siting of restoration activities to avoid physical or economic displacement and unnecessary restrictions on access to customary forest resources. Livelihood and tenure assessments will be undertaken for proposed intervention sites during PFG. Where temporary access restrictions cannot be avoided, these will be identified through consultation, appropriate mitigation measures agreed with affected communities, and reflected in the ESMP/ESMF. No activities involving physical resettlement or land acquisition will be supported.
6. Indigenous Peoples	Potential impact on indigenous communities (S6.1); Brokpa communities in Trashigang and project landscapes	Brokpa community present in Trashigang; benefit-sharing design prior to full community identification at intervention sites; benefit-sharing design prior to full community identification at intervention sites	Unequal access to benefits; exclusion of the communities	I:1, L:2	Target community identification and stakeholder mapping during the Full Proposal stage to determine whether Indigenous Peoples (including Brokpa communities) are present within project intervention areas and whether project activities may affect them. Where required, culturally appropriate consultation, FPIC-compatible processes and any necessary Indigenous Peoples safeguard measures will be applied in accordance with UNDP SES and the Adaptation Fund ESP.
7. Labour and Working Conditions	Occupational health and safety (OHS) risks (S7.6); OHS risks for workers and community members engaged as labour or volunteers.	Low/moderate OHS risks associated with wildfire-prevention, adaptation activities; Employment of workers & volunteer schemes without adequate OHS	Minor injuries or impacts on health of workers; potential non-compliance with national labour standards and UNDP SES	I: 2 L: 3	ESA to assess potential labour/OHS impacts/risks of proposed activities; ESMP/ESMF to outline standard protocols based on existing laws/guidelines for specific activities; ESA to identify labour and OHS risks aligned with Bhutan labour law and UNDP standards.
8. Pollution Prevention and Resource Efficiency	Minor pollution or waste-management risks associated with localized field activities, (S8.1);	Use of small-scale equipment, monitoring systems, localized field operations or vehicles & pumps	Localized and temporary environmental impacts if not properly managed;	I: 2 L: 2	ESMP/ESMF to include standard waste-management and resource-efficiency measures.

A. Stakeholder consultations and engagement

Project concept development was informed by consultations and awareness activities conducted at national, dzongkhag and community levels involving government agencies, technical institutions, local governments, community representatives and other stakeholders engaged in wildfire management, disaster-risk reduction, natural resource management and climate adaptation. Consultations confirmed increasing concern regarding wildfire frequency and severity, limitations of existing suppression-focused approaches, and the need for stronger prevention systems, climate-risk information, inter-agency coordination and community engagement.

Stakeholder feedback directly influenced project design, including the emphasis on climate intelligence and early warning systems, adaptive governance arrangements, community-based wildfire prevention, fire-smart landscape management and the proposed No Fire – Credits to the Community mechanism. Consultations also highlighted the importance of inclusive participation, locally appropriate awareness approaches, equitable benefit-sharing arrangements and strengthening the role of local governments and communities in wildfire prevention and preparedness.

As the final pilot sites, intervention locations and participating Community-based Forest Fire Management Groups will be identified during the Project Formulation Grant (PFG) phase, consultations have not yet been conducted with the final target communities. The consultations undertaken to date have therefore informed the overall project design rather than site-specific implementation arrangements. During the PFG phase, participatory consultations will be undertaken with the selected communities to co-design local implementation approaches, clarify community roles and responsibilities, refine benefit-sharing arrangements, identify locally appropriate wildfire-prevention measures, and strengthen environmental and social safeguards, including gender-responsive and inclusive participation mechanisms.

Women, Community Forest Management Groups), Water User Groups, local leaders, forest-dependent households and other community representatives participated in consultation and awareness activities. Additional consultations, including targeted engagement with women, vulnerable groups and communities in the project landscapes, will be undertaken during the full project preparation phase to further refine project design, implementation arrangements, safeguard measures and gender-responsive approaches.

Table 11: Summary of stakeholder consultations

Stakeholder Consulted	Date / Timeframe	Attendees ¹ (F/M)	Focus and Issues Discussed	Outcome and Incorporation of Interests
DoFPS, MoENR	Since Feb 2025	Technical officials	Causes of wildfires, landscape management, prevention strategies and response mechanisms.	Guided design of wildfire prevention, adaptive landscape management and community-based prevention components.
NCHM	Feb–Mar 2025	Technical officials	Weather patterns, fire-weather conditions, forecasting and early warning needs.	Strengthened inclusion of wildfire forecasting, climate-risk intelligence and early warning systems under Component 1.
National-level consultations chaired by the Home Minister (DoFPS, NCHM, BPC, NRDC, ERA, Desuung, MoESD, DoCDD, RBP, local	2025	Institutional representatives	Increasing wildfire risks, coordination gaps, institutional roles and prevention priorities.	Informed adaptive governance arrangements, multi-agency coordination mechanisms and prevention-oriented project design.

¹ Note: Detailed participant numbers and sex-disaggregated attendance data were not systematically recorded during pre-concept and concept-stage consultations. Consultations included government agencies, local authorities, community representatives and both women and men from affected communities. Gender-disaggregated participation data will be collected and reported during the full project preparation phase.

governments & others)				
Dzongkhag-level awareness programmes (Bumthang, Trongsa, Wangduephodrang, Haa, Paro & Thimphu)	Dec 2025–Jan 2026	Local leaders and government officials	Local leadership roles, monitoring of agricultural burning, wildfire preparedness and coordination.	Strengthened local government roles in wildfire prevention, monitoring, awareness and early reporting systems.
Gewog-level consultations & awareness (Paro, Thimphu & Lhuentse Dzongkhags)	Dec 2025–Jan 2026	Community members, local leaders (Gups, Mangmis, Tshogpas), CFFMGs, Water User Groups & businesses	Safe use of fire, agricultural burning, community surveillance, early reporting & local prevention.	Informed <u>the overall design of</u> community stewardship systems; CFFMGs awareness activities & local prevention approaches; <u>Site-specific community roles, benefit-sharing arrangements and safeguard measures will be co-designed with selected target communities during the PFG phase.</u> ~~Women & forest-dependent households~~
Bhutan Power Corporation(BPC)	Feb–Mar 2025	Technical officials	Wildfire risks associated with power lines, electrical infrastructure & transmission corridors.	Informed inclusion of infrastructure risk-reduction measures and coordination with utility operators.
Desuung, MoESD, DoCDD, DoST & RBP	Feb–Mar 2025	Institutional representatives	Public awareness, school education, emergency response, transport corridor risks & cultural practices.	Strengthened project focus on awareness campaigns, volunteer engagement, education & behavioural change.
National Task Force for Formulation of the Proposal	4 June 2026	Government & technical stakeholder (5 Male / 5 Female)	Review of project concept, innovation approach, implementation arrangements & sector priorities.	Confirmed project scope, innovation focus & alignment with national priorities.

Future consultations and process

Stakeholder engagement will continue throughout the full project preparation phase to validate project design, strengthen technical and safeguard assessments, refine implementation arrangements and ensure meaningful participation of affected stakeholders. Consultations will be undertaken across all project landscapes with local governments, Community Forest Management Groups (CFMGs), Community-based Forest Fire Management Groups (CFFMGs), women's groups, youth representatives, vulnerable households and other stakeholders directly affected by increasing wildfire risks. Technical consultations will be conducted with the Department of Forests and Park Services (DoFPS), Department of Local Governance and Disaster Management (DLGDM), National Centre for Hydrology and Meteorology (NCHM), GovTech Agency, Royal Bhutan Police (RBP), Desuung, research institutions and technical experts to further develop wildfire-risk intelligence systems, adaptive governance arrangements, fire-smart landscape management approaches, monitoring frameworks and sustainability pathways.

The full project preparation phase will also include preparation of a Gender Assessment, Gender Action Plan (GAP), Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), Grievance Redress Mechanism (GRM) and other assessments required under the Adaptation Fund

Environmental and Social Policy (ESP) and UNDP Social and Environmental Standards (SES). Findings will be incorporated into the full proposal, implementation arrangements and results framework. National validation workshops and targeted consultations with regional and international partners will support technical refinement, innovation learning, knowledge exchange and scaling pathways

Table 12: Indicative list of stakeholders to be consulted at full proposal stage

Category	Specific Entity / Group	Role and Involvement
Project Implementing Entity	United Nations Development Programme (UNDP)	Project oversight, technical guidance, safeguards, quality assurance and coordination.
Project Executing Entity	<u>Ministry of Energy and Natural Resources (MoENR)</u> (Department of Forests and Park Services (DoFPS); ~~Ministry of Energy and Natural Resources (MoENR)~~)	Project execution, technical leadership, stakeholder coordination and implementation oversight.
	<u>United Nations Development Programme (UNDP)</u>	<u>Country Office execution support to the NIM arrangement, as agreed between UNDP and the Government.</u>
National Government Agencies	Department of Local Governance and Disaster Management (DLGDM)	Disaster-risk management, emergency coordination and governance arrangements.
	National Centre for Hydrology and Meteorology (NCHM)	Climate information services, wildfire forecasting and climate-risk intelligence.
	GovTech Agency	Digital systems, interoperability and data management.
	Ministry of Finance	Financing, sustainability and scaling pathways.
	Department of Water	Water-resource management and strategic water infrastructure.
	Department of Environment and Climate Change (DECC)	Environmental safeguards, climate policy and regulatory compliance.
Emergency Response and Security Agencies	Royal Bhutan Police (RBP)	Wildfire response, enforcement and emergency coordination.
	Royal Bhutan Army (RBA)	Emergency response support and operational coordination.
	Desuung	Volunteer mobilisation, awareness and community response systems.
Local Government	Dzongkhag Administrations (Mongar, Trashigang, Thimphu, Paro and Haa)	Local planning, implementation support, monitoring and coordination.
	Gewog Administrations and Thromdes	Community engagement, local governance and implementation support.
Community and Local Stakeholders	Community Forest Management Groups (CFMGs)	Community stewardship, local knowledge and implementation support.
	Community-based Forest Fire Management Groups (CFFMGs)	Wildfire prevention, monitoring, awareness and local coordination.

	Forest-dependent households	Beneficiaries, local knowledge and adaptation planning.
	Women's groups and women community leaders	Gender-responsive adaptation design, benefit-sharing and governance participation.
	Youth groups and volunteers	Awareness, monitoring and community engagement.
	Water User Groups and community organisations	Watershed management, resilience-building and community participation.
Private Sector and Financing Partners	Bhutan Power Corporation (BPC)	Infrastructure risk reduction and wildfire prevention around transmission corridors.
	Hydropower operators and state-owned enterprises	Asset protection, resilience partnerships and sustainability pathways.
	Telecommunications companies	Connectivity and communication systems.
	Tourism sector representatives	Protection of tourism assets and wildfire-risk awareness.
Research and Technical Partners	College of Natural Resources (CNR)	Research, training, monitoring and curriculum development.
	Ugyen Wangchuck Institute for Conservation and Environmental Research (UWICER)	Capacity development, training and knowledge management.
	National and international wildfire, climate and adaptation specialists	Technical design, monitoring and innovation support.
Civil Society and Development Partners	Bhutan for Life (BFL)	Protected area management and ecosystem resilience.
	Civil society organisations (CSOs), non-governmental organisations (NGOs) and community-based organisations	Community engagement, awareness, inclusion and local implementation support.
	Adaptation Fund (AF), Green Climate Fund (GCF), Global Environment Facility (GEF) and bilateral programme partners	Knowledge sharing, complementarity and scaling opportunities.
Regional and International Knowledge Partners	United Nations Office for Disaster Risk Reduction (UNDRR) and United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)	Disaster-risk reduction, adaptive governance, climate-risk information systems, policy dialogue and South-South learning.
	REDD+ programme, forest carbon and ecosystem-resilience initiatives	Forest governance, safeguard systems, benefit-sharing approaches and sustainability pathways for community incentive mechanisms.
	International Centre for Integrated Mountain Development (ICIMOD), regional wildfire-management networks, research institutions and partners from wildfire-prone countries	Technical advice, wildfire monitoring, post-fire assessment, recovery tracking, training, innovation learning and replication of good practices.

Initial Gender and Social Inclusion analysis

Climate change and increasing wildfire risks affect women, men and vulnerable groups differently depending on their dependence on forest resources, access to information and services, participation in decision-making processes and adaptive capacity. **Error! Bookmark not defined.** While a detailed Gender Assessment and Gender Action Plan (GAP) will be undertaken during the full proposal phase, existing evidence highlights several important considerations for wildfire adaptation in Bhutan.

Women continue to bear a disproportionate share of unpaid household and care responsibilities, particularly in rural areas where dependence on forests and natural resources remains high. Women are often responsible for collecting water, fuelwood and other forest products and therefore depend heavily on healthy forest and watershed ecosystems for household wellbeing, energy security and livelihood resilience.¹ At the same time, women remain underrepresented in technical sectors, natural resource management institutions and climate-related decision-making processes. **Error! Bookmark not defined.** Women may also face structural barriers to participation in Community Forest Groups and wildfire governance, including lower representation in leadership and technical roles, unequal access to training, equipment, financial resources and decision-making processes. The project will further assess women's access to and control over benefits from community incentive mechanisms, livelihood opportunities and any enterprise development supported through the project, as well as potential occupational health and safety considerations associated with wildfire prevention activities. Particular attention will also be given to women's access to and control over community incentives, enterprise assets and income generated through project-supported activities.

Increasing wildfire risk may disproportionately affect women, vulnerable households and remote communities through impacts on water resources, fuelwood availability, grazing areas and non-timber forest products. **Error! Bookmark not defined.** Geographic isolation, age, disability, income levels and limited access to alternative livelihood opportunities may further increase vulnerability and reduce adaptive capacity. Women and vulnerable groups may also face barriers to participation in wildfire-prevention activities, community forest management, emergency response systems and adaptation planning due to time constraints, household responsibilities, mobility limitations, limited representation in leadership positions and unequal access to technical information and training opportunities.² Ensuring equitable participation and benefit-sharing will therefore be critical to achieving effective and inclusive adaptation outcomes.

The project will address these challenges through gender-responsive consultation processes, targeted outreach and capacity development, equitable benefit-sharing arrangements, measures to strengthen women's leadership, representation and decision-making within Community-based Forest Fire Management Groups (CFFMGs), governance structures and local adaptation planning – representation targets within community and governance structures, and measures to ensure equitable access to climate information, training opportunities and community incentive mechanisms.² Separate participation and, where appropriate, leadership targets for women and youth will be established during the Project Formulation Grant (PFG) phase, together with indicators for vulnerable groups. Particular attention will be given to strengthening women's participation and leadership within promoting the participation of women, youth and vulnerable groups in Community-based Forest Fire Management Groups, wildfire stewardship activities, climate information services and the No Fire – Credits to the Community mechanism. A comprehensive Gender Assessment and costed Gender Action Plan (GAP) will be prepared during the PFG phase. This will include sex-disaggregated baselines and indicators, disaggregation for youth and vulnerable groups where appropriate, assessment of women's access to and control over community incentives, enterprise assets, livelihood opportunities and income, and clearly defined implementation responsibilities in line with the Adaptation Fund Gender Policy and UNDP Gender Equality Strategy, to further assess differentiated vulnerabilities and identify targeted actions in line with the Adaptation Fund Gender Policy and UNDP Gender Policy.

Avoiding and mitigating negative impact

In compliance with the Adaptation Fund Environmental and Social Policy (ESP), Adaptation Fund Gender Policy (GP), UNDP Social and Environmental Standards (SES) and UNDP Gender Policy, environmental and social risk management has been integrated into project design. The project is expected to be classified as **Moderate Risk (Category B)**, subject to confirmation during the full project development phase. Potential risks relate primarily to prescribed burning, fuel management, wildfire-response activities, community participation and

¹ UNDP. (2020). Gender and Climate Change in Bhutan. <https://www.undp.org/bhutan>

² Participatory Forest Management and Gender Inclusiveness within Community Forest Management Groups of Bhutan. (2024).

biodiversity-sensitive landscapes and are expected to be site-specific, manageable and mitigated through established safeguards, operational procedures, biodiversity protection measures and inclusive stakeholder engagement processes. As an Innovation Window project, interventions will be tested, monitored and refined throughout implementation to enable adaptive management and course correction where required.

The framework for compliance, including the application of the UNDP Social and Environmental Standards (SES) and the approach to further assessment and management of risks identified during preliminary screening, is outlined in Section II.N and Annex 1 (Abridged SESP). Detailed safeguard instruments, including the Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), Gender Action Plan (GAP) and Grievance Redress Mechanism (GRM), will be prepared during the full project development phase.