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| Project/Programme title: | **Scaling up climate resilient flood risk management in Bosnia and Herzegovina***.* |
| Country(ies): | Bosnia and Herzegovina (B&H). |
| Accredited Entity: | United Nations Development Programme.  |
| Date of first submission: | *[YYYY/MM/DD]*  |
| Date of current submission  | *[YYYY/MM/DD]*  |
| Version number | *[V.000]* |
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| *Note to Accredited Entities on the use of the funding proposal template* |
| * Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
* Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
* The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
* The recommended font is Arial, size 11.
* Under the [GCF Information Disclosure Policy](https://www.greenclimate.fund/disclosure/policy), project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.
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Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

“FP-[Accredited Entity Short Name]-[Country/Region]-[YYYY/MM/DD]”

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| **PROJECT/PROGRAMME SUMMARY**  |
| **A.1. Project or programme** | Project | **A.2. Public or private sector** | Public |  |
| **A.3. Request for Proposals (RFP)** | *If the funding proposal is being submitted in response to a specific GCF* [*Request for Proposals*](https://www.greenclimate.fund/gcf101/funding-projects/project-funding)*, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+.* Not applicable  |  |
| **A.4. Result area(s)** | *Check the applicable* [*GCF result area(s)*](https://www.greenclimate.fund/how-we-work/funding-projects) *that the overall proposed project/programme targets. For each checked result area(s), indicate the estimated percentage of GCF budget devoted to it. The total of the percentages when summed should be 100%.*  |
| Mitigation: Reduced emissions from:[ ]  Energy access and power generation: [ ]  Low-emission transport: [ ]  Buildings, cities, industries and appliances: [ ]  Forestry and land use: Adaptation: Increased resilience of:[x]  Most vulnerable people, communities and regions: [ ]  Health and well-being, and food and water security:[x]  Infrastructure and built environment: [ ]  Ecosystem and ecosystem services: | GCF contribution: Enter number%Enter number%Enter number%Enter number%Enter number%Enter number%Enter number%Enter number% |
| **A.5. Expected mitigation impact**  | *Indicate t CO2eq over lifespan* | **A.6. Expected adaptation impact**  | 924,453 Direct beneficiaries  |
| 26% |
| **A.7. Total financing (GCF + co-finance)**  | 70.25 Million USD  | **A.9. Project size** | Small (Upto USD 50 million) |
| **A.8. Total GCF funding requested**  | 14.00 Million USD*For multi-country proposals, please fill out annex 17.* |
| **A.10. Financial instrument(s) requested for the GCF funding** | *Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8.*  |
| [x]  Grant 14.00 Million USD [ ]  Loan Enter number[ ]  Guarantee Enter number | [ ]  Equity Enter number[ ]  Results-based  payment Enter number |
| **A.11. Implementation period** | *6 years* | **A.12. Total lifespan** | *20 years.* |
| **A.13. Expected date of AE internal approval** | *This is the date that the Accredited Entity obtained/will obtain its own approval to implement the project/ programme, if available.* *Click or tap to enter a date.* | **A.14. ESS category**  | *Refer to the AE’s safeguard policy and* [*GCF ESS Standards*](https://www.greenclimate.fund/safeguards/environment-social) *to assess your FP category.*B  |
| **A.15. Has this FP been submitted as a CN before?** | Yes [ ]  No [x]  | **A.16. Has Readiness or PPF support been used to prepare this FP?** | Yes [ ]  No [x]  |
| **A.17. Is this FP included in the entity work programme?** | Yes [ ]  No [x]  | **A.18. Is this FP included in the country programme?** | Yes [x]  No [ ]  |
| **A.19. Complementarity and coherence**  | *Does the project/programme complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? If yes, please elaborate in section B.1.* Yes [x]  No [ ]  |
| **A.20. Executing Entity information** | *If not the Accredited Entity, please indicate the full legal name of the Executing Entity(ies) and provide its country of registration and ownership type. Note that there can be more than one Executing Entity. Also indicate if an Executing Entity is the National Designated Authority. Refer to the definition of Executing Entity in the Accreditation Master Agreement.*  |
| **A.21. Executive summary (max. 750 words, approximately 1.5 pages)** |
| *Provide an executive summary of the project/programme including:*1. *Climate change problem*
2. *Proposed interventions*
3. *Climate impacts/benefits*

**Climate Change Problem**1. Approximately 26% of the population of Bosnia and Herzegovina (B&H) is highly vulnerable to climate change. In particular, the increasing intensity and variability of rainfall, have been causing more frequent and intensive floods on the territory of B&H resulting in significant impacts on people, their property and critical infrastructure. The most important economic sectors at risk include agriculture, water management and hydropower.
2. Flooding accounted for in 62% of damages from all natural disasters between 2006 and 2012 in most of the territory. In 2010 - the second largest flood on record - damages were US$ 200 million which is approximately 1% of GDP. Figures show that there have been 49 deaths from floods and flood related events since 1925. In May 2014, Bosnia and Herzegovina experienced its worst flooding in 150 years which affected 25% of its territory and resulted in 26 deaths and US$2.7 Billion worth of damages (15% of GDP). The most damaging floods have had devastating impacts on the most vulnerable groups including the rural poor, war returnees and displaced persons. For example, in several municipalities up to 100% of affected households have been identified as war returnees or displaced persons and are least equipped to cope with and recover from floods. This has led to a deepening of poverty in flood affected areas. The 2014 flood was the most extensive, affecting 5 major rivers, compared to previous floods which generally impacted only 1 major river. During the last three years 2017, 2018 and 2019, Bosnia and Herzegovina faced flooding in at least two major river basins each year.

**Proposed Interventions**1. The project objective is to address increasing vulnerability of B&H communities and livelihoods to intensified climate-induced flood-related disasters. The project will establish an integrated approach to flood risk management (FRM), strengthen institutional, technical and financial capacity to implement long-term FRM strategies, including a combination of structural and non-structural measures and ecosystem-based approaches. The project will strengthen use of climate information, flood forecasting, early warning and emergency response systems to enhance adaptive capacity and resilience of at-risk communities. It will scale-up successful FRM solutions and technologies tested through a UNDP/GEF project in Vrbas River Basin and will leverage considerable public and private investment into resilient FRM. The project Outputs are as follows:

**Output 1:** Climate-informed FFEWS and an increased generation and use of climate data reduce vulnerability to flood related disasters**Output 2:** Scaled-up ecosystem-based and non-structural climate resilient flood risk reduction**Output 3:** New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in VRB**Climate Impacts/benefits**1. Based on modelling of the socio-economic risk of flooding in each of the 6 most vulnerable sub-basins (Una-Sana, Vrbas, Bosna, and Ukrina in the Sava basin, and Neretva and Trebišnjica in the Adriatic Sea basin), which together comprise 75% of the total surface area of B&H, baseline and climate change (to 2100) scenarios, shows that 820,062 people and 280,204 households are currently affected by floods. Under climate change, the number of affected people and households will increase to 924,453 people and 314,630 households. The total damages to household assets is expected to increase from US$ 211 Million to US$ 237 Million, while flood affected agriculture areas and the agricultural damage costs are expected to increase - from 9,848ha and US$5.5 Million in damages to 12,323 ha and damages of US$ 7 million. Currently, 2,922 business sector assets (US$3,546 billion value) are at risk of flooding and would sustain US$306 Million in asset damages in an extreme flood event.
2. The project targets 924,453 direct beneficiaries, an estimated 26% of the total population and will prevent loss of life, property and critical infrastructure and economic assets and build resilience to flooding in the most vulnerable communities. It will achieve these results by: i) developing the capacity of relevant institutions to generate climate risk information for long-term strategic flood risk management; enhancing the capacity for flood early warning through the implementation of a national Flood Forecasting and Early Warning System, which will result in improved warning times and reduced losses; introducing innovations by empowering local communities to undertake local disaster risk reduction (DRR) and response measures community-based early warning systems (CBEWS), that complement the centralized national EWS system; ii) Enhancing the capacity to identify, plan and implement long-term flood risk management strategies at the basin and sub-basin scale by introducing combined structural and non-structural methods including EbA measures, the implementation of EbA strategies and measures which enhance the environmental and ecological protective functions of the river basins, and non-structural measures for managing flood risk at the catchment scale; iii) Long-term flood risk investment planning will also be enhanced, and policy and legislation strengthened to enable long-term sustainability of interventions, by engaging the private sector climate risk financing to meet the increasing costs of enhanced climate risks information and early warning services. In addition, private sector will be engaged in the role of flood alleviation and will incorporate the use of climate risk information and FRM activities into their regular operations.
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| **PROJECT/PROGRAMME INFORMATION** |
| **B.1. Climate context (max. 1000 words, approximately 2 pages)** |
| *Climate change problem: Describe the climate change problem the proposal is expected to address. Describe the mitigation needs (GHG emissions profile) and/or adaptation needs (climate hazards and associates risks based on impacts, exposure, and vulnerabilities) that the proposed interventions are expected to address. Also describe the most likely scenario (prevailing conditions or other alternative) that would remain or continue in the absence of the proposed interventions. Include baseline information. The methodologies used to derive such information, including the mitigation and adaptation needs, should be included in the feasibility study.* **Climate Change Problem***Geophysical and Developmental Context*1. B&H is a sovereign state with a decentralized political and administrative structure consisting of two Entities: The Federation of Bosnia and Herzegovina (FB&H) and the Republic of Srpska (RS) and Brčko District. Bosnia and Herzegovina (B&H) is a middle-income country (GDP 41.11) with an estimated 3.531 million inhabitants and total surface area of 51,209.2 km². The 1992-1995 war has had a devastating impact on its human, social and economic resources, leading to enormous challenges of the post-war reconstruction and economic and social recovery. This challenge has been further compounded by the transition towards market economy requiring structural reforms and improved governance. Agriculture employs 19.1% of the workforce, while industry employs 32.2% and services 48.7% (2017 est.).
2. There are two main river basin systems in B&H – Sava (Vrbas, Una-Sana, Ukrina, Bosna and Drina) and Adriatic Sea Basin (Neretva and Trebisnjica rivers) (Chapter 9 of the FS provides a detailed description of all major sub-basins). Sava river sub-basins are at highest risk of flooding, while Adriatic Sea sub-basins face a lower risk of flooding largely due to their karstic geology and heavily modified hydrology from HPP dams. The main flooding sources in B&H are fluvial, pluvial, torrents and groundwater. There are seven major rivers in Bosnia and Herzegovina. The Sava is the largest river of the country and forms its northern natural border with Croatia. It drains 76% of the country's territory into the Danube[[1]](#footnote-1) and then the Black Sea. The Una-Sana and Vrbas are right tributaries of Sava river. They are located in the north-western region of B&H. The Bosna river gave its name to the country, and is the longest river fully contained within it. It stretches through central Bosnia, from its source near Sarajevo to Sava in the north. The Drina flows through the eastern part of Bosnia, and for the most part it forms a natural border with Serbia. The Neretva is the major river of Herzegovina and the only major river that flows south, into the Adriatic Sea.

*Climate Change in BiH*1. Increased intensity and variability of rainfall due to climate change have been causing more frequent and intensive floods on the territory of B&H. The Third National Communication of B&H (TNC) shows that extreme precipitation would intensify under warmer climate conditions. Meteorological observations over the period of 1961–2014 demonstrated continuous rise of the mean annual temperature across the B&H territory in the range of 0.4-1.0°C. The temperature is expected to increase further until the end of the 21st century. Over the period from 1981 to 2014 a slight increase in the amount of annual rainfall was observed, but with significant seasonal and spatial changes. Years with floods have become very common (2004, 2006, 2009, 2010, 2014, 2017, 2018, 2019). Scenario A1B, A2 and RCP8.5, downscaled for B&H, anticipate further increase in variability of rainfall regime.
2. Meteorological observations over the period of 1961–2014 demonstrated continuous rise of the mean annual temperature across the B&H territory in the range of 0.4-1.0°C[[2]](#footnote-2). The temperature increase during the growing season (April–September) have been reaching 1.2°C. Increases in air temperature have been more pronounced over the last fourteen years. The temperature is expected to increase further till the end of the 21st century.
3. Over the period from 1981 to 2014 a slight increase in the amount of annual rainfall was observed, but with significant seasonal changes. Pluviometric regime has been greatly disrupted. Scenario RCP8.5 anticipates a positive anomaly of annual precipitation, in relation to the reference period 1971–2000. Rainfall extremes are also increasing and there are changes in the seasonality of rainfall with decreased precipitation during the spring and summer months (20%), and increased precipitation in the autumn months.

 1. The historical records show that the number of days with rainfall above 10.0mm has increased. These observations represent a change to the rainfall regime which, when combined with temperature increases, will result in less moisture in the soil (potentially increasing the frequency and magnitude of drought), and an increased likelihood of floods as the frequency of intense rain events increases. All of these impacts have been observed in the project target area – the Vrbas Basin – but the most damaging has been flooding.
2. All B&H’s National Communications to UNFCCC (INC, SNC, TNC) have identified that climate change is affecting Bosnia and Herzegovina and will accelerate during the remainder of the twenty-first century. According to the Localized Climate Models developed for B&H through the SNC, the mean seasonal temperature changes for the period 2001-2030 are expected to range from +0.8°C to +1.0°C above the previous average temperatures, and further significant temperature increases are expected during the period 2031-2060, of between 1° C to 2° C in coastal areas, and 2° C to 3° C inland. The Third National Communication of B&H (TNC) shows that extreme precipitation would intensify under warmer climate conditions. Even in case that annual anomalies are negative in relation to the reference climate period, changes of indices of extreme precipitation indicate that there might be an increase in the daily accumulations in the days with precipitation greater than 20 mm or greater than the 95th percentile. In some cases, even the increase of the total precipitation during the day with extreme precipitation can result in a positive anomaly on the significant part of the territory, with a change of up to several dozen percentages for some seasons compared to the reference period. This situation is consistent with the fact that warmer air can carry a greater amount of water vapor, which, under favorable synoptic situations, primarily through convective processes, can be a source of abundant precipitation.

**Climate Change Impacts***Historical flooding in BiH*1. In the last two decades, Bosnia and Herzegovina was hit by several extreme floods (2004, 2010, 2014, 2017, 2018 and 2019). Significant floods were recorded in April 2004 and they affected 48 municipalities (out of a total of 142) in the basins of Una, Vrbas, Bosnia and Drina. About 20,000 hectares of agricultural land and 300,000 people were endangered by floods, of which several hundred families were evacuated. At the beginning of December 2010, significant flooding occurred in Drina River basin and in Eastern Herzegovina, with an area of over 240,000 hectares of predominantly agricultural land flooded, houses, roads and bridges destroyed or damaged.
2. In mid-May 2014, extreme floods occurred, affecting BiH and the wider region, after multi-day precipitation (the largest precipitation ever recorded since the beginning of the organized measurement, i.e. in the last 120 years), which coincided with snow melting, and which contributed to the extreme increase of water levels in an exceptionally short period, especially on rivers Bosna, Sava, and Drina to a lesser extent, as well as their tributaries. During the period 17-18 May 2014, dams were breached on several sites along the Sava River and its main tributaries, causing floods and significant damage to property in the areas of Middle Posavina, Odžačka Posavina and Semberija. Additional damages to the basin were caused due to numerous landslides, some of which have completely transformed the environment. Flooding, erosion, flash floods and landslides marked 2014. After the floods in May, already in July, August and September 2014, precipitation caused new flooding problems in areas already devastated by previous floods.
3. In the Adriatic basin in BiH, where multifunctional water management systems comprising of a series of HPP dams has significantly altered the hydrological regime, flooding is less severe, although annual prolonged groundwater flooding occurs. In December 1999, there was a great flood wave of the Neretva River, which caused enormous damage in Mostar, but also in the entire lower course of Neretva. In 2004, when large river overflows were recorded in the Sava River basin in BiH, in the Neretva River basin, particularly high water levels were recorded, with sporadic overflows.
4. The events of the last decades show that in Bosnia and Herzegovina the floods have been escalating, caused by strong regional precipitation, which can even exceed the recorded catastrophic floods. The danger from flooding is also increased due to mild winters with scarce snow, but heavy precipitation which is persistent for hours, or when there is abundant snow with extreme temperature oscillations. An analysis of the numbers of significant flood events and fatalities from 1925 to the present, shows that of the 40 deaths recorded since 1925, 28 occurred since 2010 and 21 in the 95 years before 2010. The 2014 event on its own, accounts for 26 deaths.

*Flood risk under baseline and climate change conditions*1. Of the two main river basin systems in B&H – Sava (Vrbas, Una-Sana, Ukrina, Bosna and Drina rivers) and Adriatic Sea Basin (Neretva and Trebišnjica rivers) - Sava river basin is at highest risk of flooding, while Adriatic Sea Basin faces a lower risk of flooding due to its karstic geology and heavily modified hydrology from hydropower dams. The main flooding sources in B&H are fluvial, pluvial, torrents and groundwater. Based on modelling of the socio-economic risk of flooding in BiH[[3]](#footnote-3), the river basins with high flood risk are the Una (in B&H 9,130 km2), Vrbas (6,386 km2), Bosna (10,457 km2), Ukrina (1,515 km2), Neretva and Trebišnjica (10,110 km2), which comprises 75% of the total surface area of B&H. In these basins, under current or baseline conditions, the total number of people affected is 820,062 and 280,204 households, which is 23.2% of the total B&H population and 24.2% of total households in B&H. Under current conditions the expected damages to household assets is US$ 211 million USD. Under climate change conditions, the total number of people affected is 924,453 and 314,630 households, which is 26.2% of total B&H population or 27.2% of total households in B&H. The total expected damages to household assets is US$237 million USD. The most significant share in total exposure under climate change of about 50% or US$117.5 million USD, is within the Bosna river basin, followed by the Vrbas river basin with the share of 24% and the Una river basin with 16% of total anticipated damages. Current flood risk to agriculture is expected to increase from 9,848 ha and US$5.5. Million USD in damages to 12,323 ha and damages of US$7 million USD under climate change, most of which is expected to occur in the Bosna river basin, with 56% of total damage. 524 public sector buildings/facilities are exposed to flood risk covering sectors including health, education, judiciary, administration and social welfare, police and defence, cultural and historical facilities, with estimated damages of US$244 million USD, not considering economic losses from loss of business continuity, loss of income generation, loss of production etc. A total of 2,922 business sector assets of US$3.546 billion USD in total value are currently at risk of flooding and would sustain US$306 Million USD in asset damages in an extreme flood event, 60% of which would be in the Bosna River basin.

 1. More frequent and intensive floods on the territory of B&H, which result in significant impact on people, their property and critical infrastructure assets, with the most important economic sectors such as agriculture, water management, hydropower at risk. In addition to climatic drivers, land use change such as deforestation is affecting watershed functions - drainage control, erosion processes and landslide susceptibility - that may increase exposure and aggravate consequences of flooding in vulnerable watersheds.

**Social and Economic vulnerability** 1. Climate change and climate-induced floods have a significant impact on the most important economic sectors such as agriculture, water management, hydropower, and limit country’s already low adaptive capacity. As outlined above, changes in annual rainfall distribution and increasing rainfall extremes have been driving increased frequency and intensity of floods and increasing economic damages from floods have been significant, especially in the water, agricultural and housing sectors. The total economic impact of the 2014 floods is estimated to have reached 2.04 billion EUR, or 15% of B&H's GDP in 2014.
2. **Agriculture** employs approximately 20% of total work force and 46% of landuse in B&H and is the most vulnerable sector to climate change. Agricultural losses due to floods can be substantial depending on the timing of the flood during the growing period. In addition, agricultural land suffers from pollution following floods and have to be left uncultivated until rehabilitated. In torrent catchments, the sediment load and debris carried by flash floods to agricultural land result in significant losses and abandonment of productive land.
3. The **hydropower** potential of B&H, is estimated at 8,000 megawatts (MW), with technical potential of 6,800 MW and economic potential of 5,800 MW, placing the country among the leading hydropower production nations in Southern Europe. More frequent and intense rain events lead to intensive runoff and increased peak river flows and result in reduced power production and damage to hydropower infrastructure. During 2010 and 2014 flood events, hydro power plants (HPPs) didn’t adequately adjust their discharge and as a result largely worsened the flood damage. The Adriatic Sea Basin is particularly heavily modified with a large number of existing and planned hydropower dams and have already experienced an extensive variability in generation due to climate change. While generally designed and licenced to include flood alleviation functions, the HPPs in Adriatic Sea basin requires improved management through forecasting to minimize climate change impacts on their operations. Elsewhere in B&H, there is a need to operate HPPs taking into account climate induced flood risks.
4. **Settlements** and development/economic activities in the high-risk areas: One of the root causes of increasing vulnerability and damage from floods is increasing exposure. Spatial planning legislation and development control does not take account of flood risk and no flood zones with land use and construction rules have been developed. As a result, irreversible adverse land use practices in the floodplain and the building of houses and economic activity (including subsistence agriculture) in the floodplain, are common practices which significantly contribute to exposure. Lack of regulatory framework, as well as lack of awareness of the risks and continued uncontrolled adverse practices, will further exacerbate the problem, and will increase the vulnerability and costs from flooding. In addition, due to cheap land, some of the highly exposed flood risk areas have been inhabited by the most vulnerable population such as war refugees and displaced persons.

*Context: In describing the mitigation and/or adaptation needs, briefly describe the target region/area of the proposed interventions including information on the demographics, economy, topography, etc.* *Related projects/interventions: Also describe any recent or ongoing projects/interventions that are related to the proposal from other domestic or international sources of funding, such as the Global Environment Facility, Adaptation Fund, Climate Investment Funds, etc., and how they will be complemented by this project/programme (e.g. scaling up, replication, etc.). Please identify current gaps and barriers regarding recent or ongoing projects and elaborate further how this project/programme complements or addresses these.* **Legislative and Policy Context**1. The State of Bosnia and Herzegovina as the central authority has only limited and specific powers with regard to the water sector and environmental protection: The Ministry of Foreign Trade and Economic Relations (MoFTER) has water-related competencies at the level of Bosnia and Herzegovina. Due to the lack of a State-level framework and the constitutional character of B&H and its entities, the current state of affairs is complex and heterogeneous, and the responsibilities for water management rest with the Entities (Ministry for Agriculture, Forestry and Water Management of RS and Ministry for Agriculture, Water Management and Forestry of FB&H). The B&H constitutional and legal framework does not contain specific and clear principles that should guide the constitutive elements of the State in their management of shared water resources across entity or district borders. The State-level authorities therefore have no responsibility for regulating these inter-entity relations.
2. The legal framework is not unified across the country and there are certain discrepancies in legislation between Entities (FB&H and RS) and even among Cantons within FB&H. The two Entities and the Brčko District have relevant political, administrative and legal jurisdiction in their own territories, with some coordination and cooperation between them. Furthermore, the Federation of Bosnia and Herzegovina is divided into 10 Cantons which have their own authorities (ministries) with responsibilities in the water sector, including adoption of their own relevant laws. This complex administrative structure results in a number of different institutions in charge of water management issues and increases the need for coordination at the B&H level.
3. The Law on Water of Republika Srpska was aligned with the EU Floods Directive in 2017 to provide the legal basis for better flood risk management. It defines the method of flood risk assessment and management in order to reduce the harmful effects that floods pose to humans, economic activity and the environment, and includes definition of preliminary risk assessment requirements, development of flood hazard and risk maps, establishing forecasting and early warning systems, as well as regulating the development of Flood Risk Management Plan. This amendment has catalysed and identified a need for a whole series of the necessary amendments of the entire Law on Waters in order to fully regulate the area of water management and to align the legislation with the remaining requirements and the EU Directives governing this area.
4. Following adoption of the amended Law in July 2017, a number of bylaws/regulatory documents have been created and adopted to fully incorporate the Floods Directive into national legislation. One of the most important is the Decree on Content and Key Elements of Flood Risk Assessment and Management (December 21017), which regulates content and procedure for Preliminary Flood Risk Assessment (PRFA), process of flood hazard and risk mapping, content and appearance of the maps, goals of flood risk mapping and measures for their achievement, programme of activities for preparation of Flood Risk Management Plan (FRMP), content of the Plan and necessary elements for it’s update and other issues related to flood risk assessment and management.
5. In Federation of Bosnia and Herzegovina (FB&H) the Draft Amendment of the Water Law FB&H was officially submitted to the FB&H Parliament at the end of 2017. The goals of the proposed amendment is ‘’additional improvement of protection from harmful effects of waters based on experiences of 2014 floods and requirements of the EU Flood Directive’’. The proposed legislative changes put attention to the financial aspects of water sector management, issuing of water licenses and harmonization with EU Water Framework and Flood Directive.
6. The **Water management** **Strategy** **in FB&H** (2010-2022, adopted 2011) and the **Republika Srpska Strategy for** **Integral Water Management** (2014–2024), both acknowledge climate change but identify no concrete adaptation measures to address it. These entity strategies require coordination and harmonization, in order to provide an aligned B&H-wide strategy. Under EU IPA IPA 2007 – 2011, Water management plans 2016-2021 were developed for Sava river basin for Republika Srpska and for Federation Bosnia and Herzegovina, but were only adopted in Feb 2018 for Republika Srpska and in May 2018 for FB&H. These plans, among other issues, will deal with protection against the detrimental effects of water, protection from erosion, defence against ice, and drought control. They are to be revised and updated every six years. Within International Sava Commission, water management plan for direct Sava watershed has been developed (http://www.savacommission.org/srbmp/en/draft) and has been in public consultation phase since 2014.
7. **B&H’s Climate Change Adaptation and Low Emission Development Strategy** is of key importance to defining and planning adaptation action. The Strategy was adopted by the B&H Council of Ministers on October 8, 2013 and utilized the then available observed and projected climate change impacts on key sectors in the country including agriculture, water, hydropower, human health, forestry, biodiversity/ sensitive ecosystems and tourism. The Strategy is based on four specific outcomes covering climate change risks, vulnerabilities and opportunities supporting evidence-based policy development, effective institutional and regulatory framework, mainstreaming CCA approaches into decision making, and effective resourcing with timely and effective implementation. As one of the worst impacts of climate changes the Strategy identifies more frequent and severe floods, along with more frequent flood related damage to HPP and damage to agriculture and forest eco-systems caused by changes in rainfall and weather extremes. It is also recognized in the Strategy that adaptation approaches were limited by a lack of reliable data, which needed to be addressed urgently. Infrastructural improvements (both flood protection and water storage infrastructure) have also been identified as needed, along with mechanisms for better water management. Hydrological modelling and flood mapping are identified as key research project. Strengthened hydro-meteorological monitoring, establishment of the early warning system, water information system, natural disaster data bases are activities identified as priority in the Strategy. However, its implementation has slowed mainly due to lack of knowledge and institutional capacity to project, attract finances and undertake adaptation measures.
8. The Government has initiated the development of the **National adaptation plan**, which should lay out specific activities with timeframes, indicative costs and implementing entities, necessary to combat climate change consequences in the most vulnerable sectors: water management, agriculture, forestry, biodiversity, hydro-energy, human health and tourism. It is anticipated that the National adaptation plan will be ready for UNFCCC submission by the end of 2020.
9. Some of the key strategic documents in Bosnia and Herzegovina such as water management strategies, rural development strategies etc. point out that climate changes affect their sectoral operations, but these documents do not propose measures to mitigate future and adapt to existing climate change. The water management institutional framework is also fragmented and lacks vertical and horizontal cooperation. At the state level, the system for civil protection is headed by the Ministry of Security through the Sector for Protection and Rescue. It leads policy design. However, because of the decentralized nature of the system, the brunt of the responsibility for measures taken to deal with protection and rescue is placed on the entities and Brcko District. The Ministry of Security and the Coordinating Body of BiH (composed of the Council of Ministers, five representatives from the Federation of BiH, five from RS and two from Brcko District) take the leading role only in the event of a large-scale accident with trans-boundary effects or which cannot be resolved at the entity level. Local governments lack capacity and resources to fulfil even basic DRR functions. Civil protection centres are organised on municipal, cantonal and entity levels. There is an emergency warning centre being organised on BiH (country) level, but it is still not in operation. Split responsibilities in the past have already led to artificially triggered floods (e.g., Neretva 1999 when lack of coordination among various electricity agencies provoked confusion resulting in unwanted opening of the gates on some dams).
10. Following the devastating 2014 floods, B&H Council of Ministers adopted in November 2015 an **Action Plan for Flood Protection and River Management** for the period 2014-2017. The Action plan focuses on the following activites: reparation of the existing infrastructure damaged in 2014 floods, transposing of EU flood directive, establishment of the flood forecasting system, adoption of new technologies, capacity development and coordination among institutions. However, due to very low implementation of this Action plan, in Mar 2018, its implementation period was extended till the end of 2021.
11. In 2017, B&H submitted its **Third National Communication (TNC)** to the Conference of the Parties to the UNFCCC, which summarizes information on vulnerabilities to climate change, steps taken to adapt to climate change, measures related to public awareness and education, research and observation and technology transfer. TNC highlights that “due to the increased intensity of rainfall and its greater variability, as well as due to the increased share of heavy rains in the total amount of rainfall, there is the increased risk of flooding especially in the north-eastern part of B&H.” B&H’s Climate Change Adaptation and Low Emission Development Strategy is of key importance to the national adaptation process. The 4th National Communication is currently under preparation.
12. The proposed GCF project is aligned with the Climate Change Strategy and TNC. Project activities are also in line with B&H Action Plan for Flood Protection and River Management adopted in 2014 for the period 2014-2017, extended till 2021 due to poor implementation. B&H government is in process of updating its NDC in 2019 in order to include priorities on adaptation to climate change.

**Related Projects/interventions*****Baseline Investments***1. Government investment in flood risk management is scarce and is mainly focused on ongoing maintenance of very old flood defence structures. The condition of flood control facilities is very poor as a result of wartime damage, many years without maintenance, and minefields around some facilities (TNC). The total annual budget for climate adaptation and resilience activities in B&H related to flood risk management averages US$40 Million comprising mainly donor grants (40%) and loans (60%). After the 2014 floods, flood risk management has been undertaken through many donor-funded projects implemented by or in partnership with relevant ministries. The baseline projects are listed below and elaborated in the feasibility study. The proposed GCF project is scaling up the successfully implemented UNDP/SCCF project “Technology transfer for climate resilient flood management in Vrbas River basin” (Vrbas project, 2015-2020) and extending its many achievements to the rest of B&H. Chapter X of the feasibility provides as detailed discussion of the Vrbas project main interventions, all aspects of which are being scaled up to other basins in B&H.

 ***Baseline Projects***1. **Technology Transfer for Climate Resilient Flood Risk Management** **– USD 5 mil SCCF funded** UNDP implemented project. The SCCF funds are used to enable the communities of the Vrbas basin (12% of B&H) to adapt to flood risk through the transfer of adaptation technologies for climate resilient flood management, upgrade and rehabilitation of the hydrometric monitoring network, development of a flood forecasting system and early warning system, development of emergency response plans, and provision of training in flood-specific civil protection. Importantly, the project provides targeted training on climate-induced Flood Risk Management to over 100 practitioners and decisions makers and develops an institutional capacity development plan for the long-term development of capability and capacity in FRM. The proposed GCF project is scaling up the successfully implemented “Technology transfer for climate resilient flood management in Vrbas River basin” (Vrbas project) and extending its many achievements to the rest of BiH. In addition, GCF project will collaborate with ongoing projects.
2. **Emergency Flood Relief and Prevention Project - EIB Loan**. The total value of this project is 55 million Euros with implementation period 2012-2017, which has been extended till 2020. The purpose of the project is to safeguard the agriculture, industrial and housing areas prone to flood impacts and to enable a stable basis for future development. The main focus of this project is construction of hard engineering structures, mainly along the Sava River. The project also makes an inventory of damages to flood protection infrastructure within the RS's main Danube tributaries.
3. **BiH Floods Emergency Recovery Project – WB Loan** - The objective of this USD 100 mil loan is to meet critical needs and restore functionality of infrastructure essential for public services and economic recovery in floods affected areas. There are three components to the project, the first component being emergency disaster recovery goods. The second component is the rehabilitation of key public infrastructure. The third component is the project implementation support and capacity building.
4. **Advance the National Adaptation Plan (NAP) process for medium-term investment planning in climate sensitive sectors in Bosnia-Herzegovina - USD 2.56 mil GCF funded**, UNDP implemented project (2018-2021) - is to advance adaptation planning in B&H with a focus on sectoral approaches, upgrading the knowledge base for adaptation, prioritising adaptation interventions for the medium term, building institutional capacities for integrating climate change adaptation and demonstrating innovative ways of financing adaptation at the sub-national/local government level. Proposed activities will result in the compilation of a NAP and implementation strategy focused on scaling-up adaptation in key sectors for the medium-term; develop municipal level investment financing instruments with public/private sector engagement; and build national, sub-national and sectoral capacity to integrate and mainstream risk informed planning and budgeting.
5. **UN Floods Recovery Programme "Danas Za Nas"**: started in July 2014, right after the humanitarian response phase, aiming to reestablish normal living conditions, preserve jobs, support local economies and increase disaster resilience in more than 60 communities most affected by the floods. Financed by 28 bilateral donors, this USD 22,6 million worth programme is coordinated by UNDP and implemented by the UN agencies: UNDP, UNFPA, FAO, UNICEF and UNESCO.
6. **EU flood recovery program** - following 2014 floods in BiH, EU launched its EU Floods Recovery Programme for Bosnia and Herzegovina worth 43.52 million Euro, out of which the EU’s contribution is 42.24 million Euro. The Programme aims to rehabilitate 4,000 dwellings for approximately 14,000 people, 100 local roads and bridges, 90 educational institutions (including pre-school facilities), 10 water and sanitation facilities, three municipality buildings, four Centres for social welfare, and four healthcare facilities. The EU Flood Recovery programme is aligned with the Recovery Needs Assessment, which was conducted by domestic authorities with assistance provided by the European Union, the United Nations and the World Bank. The Programme was implemented through UNDP, INICEF and IOM until February 2016.
7. **West Balkans Drina River Basin Management Project (GEF)- World Bank project** to assist the countries of Bosnia-Herzegovina, Serbia and Montenegro to achieve improved planning and implementation for integrated, cooperative management of the trans-boundary Drina River basin. Started in 2017.
8. **Capacity Development for the Integration of Global Environmental Commitments into National Policies and Development Decision Making (GEF)-** for facilitating cross-sectoral and participatory approaches to natural resource management planning and implementation; Including developing individual and institutional capacities to better adapt and apply global environmental management indicators as a monitoring tool to assess the intervention performance and institutional sustainability.
9. **Flood Hazard and Flood Risk Maps of BiH, a project of the Western Balkans Investment Framework (WBIF)**. The overall objective of this project is to prepare the expert basis needed to ensure protection against floods for existing and future facilities and raise the level of knowledge on flood hazard and flood risk in the most prone-to areas of Bosnia and Herzegovina. It will be achieved via development of flood hazard and flood risk maps. Started in 2017.
10. **Floods and Landslides Housing Risk Assessment – EU launched the EU Flood Recovery Programme for B&H**, in order to support recovery efforts after the floods of May 2014. The Programme aims at assisting people in the flood affected areas and communities in the 24 most affected municipalities to normalize their lives. Furthermore, the Programme recognizes the importance of investing in future risk informed decision making and it thus initiated the development of a Flood and Landslide Risk Assessment for the Housing Sector in B&H (Assessment). The Assessment focuses on the flood and landslide risk for the housing sector in Bosnia and Herzegovina, prioritizes locations based on risk ranking and makes recommendations for risk reduction.
11. **NAP project “Development of study on economic impact of climate change on the hydropower sector in Republika Srpska – multipurpose hydrosystem Trebišnjica”**, which is assessing hydrological and energy efficiency of the basin and will also identify additional monitoring needs to support improved HPP system operations and will provide essential input observation data for the more detailed model of the basin. The NAP project aims are as follows: contribution to the protection from flooding of agricultural zones during growing seasons (karst fields) and the protection from flood of settlements and urban zones; water for irrigation of agricultural land is ensured; water for water supply to population and technical purposes is ensured; conditions for low water ‘replenishment’ in the low water period are ensured; conditions are created for optimum energy use of water resources, which are considered as ecologically acceptable/renewable energy sources (reduction of CO2 and greenhouse gases emission); conditions are ensured for use of water for other purposes (tourism, water sports, recreation, etc.); conditions are ensured for social, socioeconomic and any other progress of the population, the region, etc.

**Adaptation solution**1. As discussed above, flood risk management in BiH has been undertaken through many through donor-funded projects implemented by or in partnership with relevant ministries. Most of the baseline projects, elaborated above are focused on post-event recovery only and do not take an integrated approach (see barriers section below) and climate change into consideration. In order to adapt to the intensifying climate-induced flood risk, B&H needs to move towards a more proactive integrated approach to flood risk management that prioritizes risk reduction, risk prevention and preparedness through enhanced use of climate information, establishment of a national flood forecasting and early warning system and enhancement of adaptive capacity and resilience of at-risk communities. However, there are a number of barriers to overcome, in order to move towards this adaptation solution.
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| **B.2. Theory of change (max. 1000 words, approximately 2 pages plus diagram)** |
| *Describe the theory of change and provide information on how it serves to shift the development pathway towards a low-emission and/or climate resilient direction. Provide the diagram of the theory of change (approximately 1 page).* *The theory of change should include any barriers (social, gender, fiscal, regulatory, technological, financial, ecological, institutional, etc., as relevant) that need to be addressed. Use a results chain of inputs, activities, outputs, outcomes, and impact statements, and identify the how and why of causal relations to deliver the project’s expected results.***Barriers to climate resilient flood risk management in B&H*****1. Poor institutional capacity (technical, legislative and financial) for nation-wide Flood Forecasting and Early Warning System (FFEWS)****:* 1. Gaps in the hydrometric observation network and capacities: Financial and human resources constraints coupled with a severely reduced monitoring network since the 1992-1995 war limit B&H’s ability to monitor important hydrometeorological variables at the appropriate spatial and temporal scales, to provide adequate input to hazard management, and to implement an effective national FFEWS. There is, as yet, no comprehensive flood hazard, risk or vulnerability mapping for B&H. Ongoing projects undertaking EU Flood Directive (EUFD) mapping are severely delayed and will only be done for selected high-risk areas within river basins. Technical capacities related to risk identification and assessment, modelling and forecasting, risk prevention/reduction and risk transfer are weak across institutions and governance levels. The existing FFEWS, for most of main watercourses is manually based and ineffective. Interagency communications during and after natural disasters are cumbersome and inefficient. FFEWS does not exist at all for tributaries and torrents. UNDP-run Vrbas project is establishing the first FFEWS platform in B&H which will be run by local water agencies and will cover Vrbas river only, without tributaries. The regulatory framework for FFEWS is incomplete as it lacks protocols/SOPs on climate data generation, data management and communication. There is no national protocol on early warning system. The lack of horizontal (between entities and among sectors within the same entity) and vertical (among state, entity, cantonal and municipal levels) communication within the water management sector further limits effective cross-sectoral climate risk management.

 ***2. Insufficient knowledge and capacities on ecosystem-based and non-structural approaches to climate resilient flood risk reduction***: 1. There is a lack of strategic integrated flood risk management approaches in B&H that identify the best combination of structural and non-structural measures to address climate induced risks. Flood protection currently relies on limited structural measures that are becoming increasingly ineffective in terms of the Standards of Protection they provide in the face of climate change, have high cost, can sometimes result in the problem being moved elsewhere, lack basin-scale appraisal-led approach to the identification of flood defence needs, and lack detailed assessment of risk and consequence of failure. Due to the predominant use of traditional engineered structural measures, inherited from a pre-war communist system, there is little knowledge about non-structural measures and limited capacity to design and implement them. Hence there is currently no strategic integrated flood risk management approach in B&H that identifies the best combination of structural and non-structural measures to address climate induced flood risk. There is therefore a lack of knowledge and application of non-structural measures and ecosystem-based approaches (EbA) to flood risk management, such as the use of agro-forestry, community-based early warning systems, floodplain zoning, reforestation and financial instruments such as index-based flood insurance and other risk transfer mechanisms as a means of minimising the impact of flooding on communities. There is no sector specific flood risk management which embeds gender sensitive climate resilience measures into sectoral development plans. Activities within key sectors such as water management, energy, transport, agriculture, forestry, spatial planning, are not climate risk-informed.

***3. Lack of capacity, knowledge and information for enhanced climate-proof public and private investments into integrated flood risk management and enhanced community response***: 1. Insufficient, outdated and poorly managed flood defences increases exposure to increasing flood risk. In B&H, flood defence implementation is done in a reactive manner and as budgets allow. The limited annual budgets are used to address urgent repairs to existing defences, many of which have exceeded their design life and does not currently take a strategic approach (e.g. river basin approach) nor does it take account of climate change. There is also a lack of technical and financial capacity to design, operate and maintain climate resilient flood protection infrastructure. The Post-Disaster Rapid Needs Assessment (PDRNA) following the 2014 floods revealed that US$49.2 Million in damages to flood protection and control infrastructure was incurred.
2. There is currently a lack of engagement with private and productive sectors in climate-responsive FRM. In order to ensure sustainability of the FRM measures, particularly related to the costs of operating and maintenance of equipment, information provision services, regular maintenance of flood defences, and all other flood risk management activities, there needs to be an engagement and willingness to pay for such from a wide range of beneficiaries including private sector, public sector, and the public at large. Information on the interest in, and willingness to pay is currently lacking.
3. The population, in particular in rural areas, is lacking general understanding of climate induced risks and community response capacities. There is limited knowledge and capacities among local communities to apply climate resilient livelihoods and adaptive strategies for coping with climate-induced hazards. Lack of community resilience is also due to lack of climate risk information at the community level that enables people to respond effectively to flood warnings. This so called, last mile connectivity is key to an effective FFEWS and requires impact-specific information on imminent hazardous flood events. In addition, recording damages and losses from disasters at the local level is not systematically done due to the lack of tools, methods and guidelines for collecting such data, and lack of a centralised damage and loss database.

**Theory of Change**1. To date, flood risk management has been dealt with in a reactive manner, relying on measures such as hard structural protection measures which are expensive to build, provide limited standard of protection and have a limited service life; emergency response once a disaster unfolds, with limited reliance on forecast of the event or satisfactory prior warning of the population, and with limited centralised resources; and post event compensation to victims, and post event recovery and rebuilding.
2. The GCF project has been developed to address the barriers to integrated flood risk management and is aimed at supporting the commitment of the BiH governments to avoid losses of lives and to reduce economic and infrastructure losses caused by climate-induced flood disasters.
3. In the baseline scenario, without the GCF project, the lack of technical, institutional and financial capacities to implement and maintain a fully integrated flood risk management framework, will continue to result in warnings not reaching the communities who are most affected by flood hazards, in a timely manner. The absence of comprehensive and definitive flood risk information and legislative and policy framework will continue to result in an exacerbate weak land use, spatial planning and climate risk management, leading to increased exposure of communities to damages, losses and loss of lives. In addition, lack of institutional and financial capacities and lack of modern methodologies and technologies will prevent the design of climate risk informed mitigation measures. The large proportions of the population at risk from flood hazards (924,453, 26% of the population) currently lack the coping capacities and adaptation strategies at community and individual level to adapt to climate change and to manage and minimise their exposure and resilience to intensifying flood hazards. Low public awareness of climate-induced flood hazards and risks combined with weak local authority and community capacities and lack of community-based structural measures will continue to impact lives, livelihoods of the most vulnerable people. Hence, in the baseline scenario without GCF investment, the BiH population and economy will be facing increasing pressures from more frequent and severe climate induced flooding due to climate change. Losses of lives and economic losses due to climate-induced flood disasters and associated impact on GDP. In addition, continued lack of financial resilience will further limited recovery from more frequent flooding, this keeping the affected population in a cycle of loss and diminishing recovery. Scaling-up of tested integrated FRM approaches will not be possible due to the existing financial gap between DRR needs and investments, underdeveloped national capacities for inadequate flood hazard and risk knowledge for all major basins in BiH.
4. In the adaptation alternative, this GCF project will support the commitment of the BiH governments to avoid losses of lives and to reduce economic and infrastructure losses caused by climate-induced flood disasters. The project will achieve this by enhancing the capacity for flood early warning and implement a national sustainable FFEWS resulting in improved warning times and reduced losses. In addition, the project is introducing innovations by empowering local communities to undertake local disaster risk reduction (DRR) and response measures, that complement the centralized EWS system. The project will enhance the capacity to identify, plan and implement long-term flood risk management strategies at the basin and sub-basin scale by introducing combined structural and non-structural methods including EbA measures. Long-term flood risk investment planning will also be enhanced, and policy and legislation strengthened to enable long-term sustainability of interventions, by engaging the private sector to shoulder some of the increasing costs of required observation networks and risk information and early warning services. Also, the private sector will be informed about their impact on increased flood risk and potential role in flood alleviation and will incorporate FRM activities into their regular operations. It is developing the capacity and systems whereby the current gap between the demand and supply on vital climate risk information is closed. The project will result in improvements in watershed ecosystems and restoration of ecological function through the use of EbA strategies which will reverse the deleterious effects of catchment degradation and enhance livelihoods of rural communities.
5. Comparable efforts (EWs, climate information, and community-based DRM) have shown effective impact related to saving of lives, assets, and livelihoods. For example, in Nepal, the community based EWS directly benefit over 80,000 people in communities around river basin systems. Advanced EWS systems are estimated to be 100% effective in reducing loss of life by cyclones, 60% effective for floods, and 20% effective in case of drought (Teisberg and Weiher (2009)). In Bhutan, EWS project has enhanced capacities of district and local level authorities and communities in disaster risk and climate risk management.
6. The proposed project builds upon lessons learned and success of the past and ongoing interventions, existing data/information, institutional and management frameworks and capacities and, communications and coordination mechanisms operational currently in BiH in CCA and DRR areas. Moreover, it will scale-up the outcomes of the prototype Vrbas Flood project as well as other baseline projects. Therefore, expanding the scope of already attested and verified interventions with close participation of national-wide and local stakeholders is more cost-effective than the implementation of a completely new initiative.
7. The project will transform the existing flood risk management practices in B&H by shifting from an ex-post facto i.e. reactionary post-disaster recovery approach to ex-ante i.e. risk informed preparedness approach based on adequate climate information and risk knowledge. The following elements of the proposed project constitute paradigm shift:
8. innovation and technology transfer: the project will scale up state-of-the-art technologies in floods monitoring, modelling, forecasting and early warning, including “last mile” communication, as well as identification, selection and implementation of EbA measures. These technologies have been successfully tested in B&H and have been recommended for replication across the country;
9. mainstreaming climate risk management into policy and enabling environment;
10. private sector engagement in climate risk management: the project will engage with hydropower and agricultural sectors on climate information management and on the design and implementation climate-resilient structural and non-structural measures combining benefits of flood protection, agriculture and hydropower generation;
11. learning and knowledge sharing: the project will improve the availability and quality of weather and climate information and the use of this information by climate-sensitive sectors; the project will prioritize capacity building of national and local entities responsible for water management;
12. catalyzing change in DRR decision making and investment flows from reactionary disaster response towards informed long-term resilience building;
13. scaling up ecosystem-based adaptation and non-structural solutions: the project will promote nature-based solutions to flood management and the concepts of "making room for water" and "living with floods" among decision makers and communities.
14. addressing long term financial sustainability of FFEWS O&M: the project will propose cost effective technological solutions to FFEWS and flood risk reduction, support setting up budgetary and financial instruments for sustainable O&M.
15. assisting the government in developing risk transfer instruments (insurance, capital market instruments etc.);
16. addressing a pressing, but yet neglected need of B&H to deal with the torrential watercourses which have the highest casualty rate of all weather-related disasters in B&H, as well as very high economic costs.

The following diagrams present the theory of change for the project. |
| **B.3. Project/programme description (max. 2000 words, approximately 4 pages) WE HAVE 17 PAGES** |
| *Define the project/programme. Describe the proposed set of components, outputs and activities that lead to the expected Fund-level impact and outcome results. Components should reflect the project/programme level outcomes.* *This should be consistent with the financing by component in section C.2, the results and performance indicators provided in section E.5, and the implementation timetable in annex 5.**Referring to the feasibility study, describe why this set of interventions was selected instead of alternative solutions and how the project/programme can help unlock the needed support in a sustainable manner. Also identify trade-offs of the selected interventions, if applicable.**For Enhanced Direct Access (EDA) proposals and projects/programmes with financial intermediation (loans or on-granting), describe the selection criteria of the sub-project and types.*1. The project will reduce vulnerability of population to floods across B&H[[4]](#footnote-4) (pluvial, fluvial, torrential and groundwater flooding) through improved climate information and establishment of the flood forecasting and early warning system (FFEWS). Improved generation and use of climate information will enable sound decision making and investment into climate resilient flood risk reduction measures, including both eco-system-based approaches and structural measures. The proposed project aims to address the above barriers and shift the baseline scenario towards climate resilience through three outputs:

**Output 1:** Climate-informed FFEWS and an increased generation and use of climate data reduce vulnerability to flood related disasters**Output 2:** Scaled-up ecosystem-based and non-structural climate resilient flood risk reduction**Output 3:** New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in VRB**Output 1: Climate-informed FFEWS and an increased generation and use of climate data to reduce vulnerability to flood related disasters****Activity 1.1: Expansion of the hydrometric network for enhanced monitoring** **of climate variables in Category I catchments and torrential streams (purchasing and installation of the observation equipment).** 1. Under this activity, the GCF Project will expand the hydrometeorological monitoring network to cover a greater range of hydrometric variables that climate change is bringing. Previous upgrades to the hydrometeorological observation network have not been realized at the appropriate spatial and temporal scale to enable effective flood monitoring, management, forecasting and early warning. In addition to pluvial and fluvial flooding in the biggest catchments (category I catchment), climate change is increasing the risks from torrential streams, which are currently not monitored or studied but cause great damage. The project will provide for an increased density of hydro-meteorological network for the areas at highest risk i.e. category I rivers and torrents. Technical assistance to review and integrate the HPPs hydrometric network into the national network will also be provided. The project will also assist in setting-up sustainable operations and maintenance (O&M) of the network and identify long-term financing mechanisms for the maintenance of the hydrometric network.

 1. Based on a detailed analysis of the existing hydrometric network, and in line with WMO recommendations and procedures, the optimised hydrometric network specification and ICT strategy and plan will be developed. The optimized hydrometric network will enable the monitoring of all flood mechanisms in the target basins (fluvial, torrential, groundwater), and all strategic use of hydrometric data including: flood hazard and risk modelling and mapping, development of strategic flood risk management strategies, development of flood forecasting models and early warning systems.
2. The **optimisation of the hydrometric network** will include an assessment of the existing telecommunications infrastructure and capacity to support the telemetered and automated stations and the development of ICT strategy and plan to support the optimised hydrometric network for effective data transmission, storage, sharing and management. It will also include strengthening of the existing systems and protocols for the collection, transmission, sharing, storage, management and use of the observed data and the digitization, systematization and storage of all paper format data within the relevant hydrometric databases.
3. A gap analysis of the existing hydrometric network has been carried out during the project development phase and equipment has been specified by the relevant Water Agencies and HMIs based the available strategy documents and the existing technical capacities to fully specify, design and operate a modern hydrometric network including its equipment and technologies. The following is the proposed indicative **list of equipment to be acquired by the GCF project**, which can be considered as the upper limit of the required expenditure for budgeting purposes:

Table B‑1: Indicative Hydrometric monitoring stations and equipment to be acquired by the GCF project

|  |  |  |
| --- | --- | --- |
|   | **Quantity** | **Total Capital Cost (USD)** |
| **Groundwater network requirements** |  |  |
| Groundwater monitoring stations for measuring profiles of the most significant karst springs | 9.00 | 163,800.00 |
| Installation of the appropriate measuring equipment into existing piezometers which are out of function or never were installed with measuring equipment  | 24.00 | 172,800.00 |
| Performing piezometer 100 and 200 m deep, with installation of equipment on following locations, average depth of 180 m | 18.00 | 327,600.00 |
| boreholes with average depth up to 50 m, with casing and installation of equipment  | 10.00 | 34,000.00 |
| boreholes with average depth up to 30 m, with casing and installation of equipment | 30.00 | 63,000.00 |
| **Hydrometric network requirements** |  |  |
| Meteorological Stations: GMS program Measurement: Temperature (t, tmin, tmax, tmin5), Humidityt, Wind, preasure, precipitation, insulation, snow depth, soil temperature per depth:(2 cm, 5 cm, 10 cm, 20 cm, 30 cm, 50 cm, 100 cm)AMS sensors:precipitation, temperature, wind, humidity, preasure, global radiation, snow depth, percentage of water in snow.AAS sensors:Soil temperature up to 1m of (5 cm, 10 cm, 50 cm i 100 cm)Humidity of soil up to 1 m (5 cm, 10 cm, 50 cm i 100 cm)humidity of leaves | 26.00 | 403,000.00 |
| Automatic Hydrological stations: The level and depth of the water, pressure, temperature. | 23.00 | 121,900.00 |
| Total cost |   | **1,286,100.00** |

1. The expanded hydrometric network will be supported by **enhanced institutional arrangements**, which will be assessed in terms of existing roles and responsibilities, the capacity of staff to operate and maintain the optimised hydrometric. The project will identify the manpower, resourcing and financial requirements as well as training needs, for the efficient O&M of the optimized network. The project will develop the strategic plan, capacity development and training plan, methodologies, technical guidelines and manuals for the long-term operation and maintenance of the optimised hydrometric network and will provide training for hydrometric staff in the O&M of up-graded hydrometric stations.
2. Total operations and maintenance costs of the expended hydrometric network during the project 6-year implementation period will be $2,658,000. Relevant entity governments, Water Agencies and Hydro Power companies will provide O&M during this implementation period of the project and for at least 20 years thereafter (See Annex YYY for co-financing letters).
3. The GCF project will Identify and develop a long-term **financing mechanisms** for the maintenance of the hydrometric network, based on a review of existing public and private sector financing mechanisms for climate and flood risk management, identification of key private sector players at risk from flooding with an interest in flood risk reduction critical Infrastructure providers/managers, such as utility companies communications, telecommunications, Transportation Sector (Airlines/Air Traffic, road and rail operators), energy (hydropower and other than Hydropower) and private enterprises such as hotel groups, chamber of commerce or business community, insurance and micro-finance companies and undertake awareness raising on flood risk, flood risk management approaches. The assessment will include a willingness to pay analysis for key private sector players to assess their willingness to pay for increased data provision of key hydrometeorological data and tailored products for use in their operations. Private sector willingness to support or partially support the O&M of hydrometric monitoring and early warning systems, equipment and information products will also be assessed and prototype cost recovery mechanisms will be developed for the private sector sources. In addition the project will develop innovative public sector financing mechanisms, establishing and safeguarding public sector long-term commitment of network maintenance, capacity building for design, installation and maintenance of monitoring networks, community-managed gauging stations.

**Activity 1.2:** **Enhancing climate-induced flood hazard, risk and vulnerability information for strategic management and sound decision making for climate induced flood management.** 1. WBIF project is developing EUFD flood hazard and risk maps for all basins in B&H (except Vrbas which is already done) and is expected to be completed by end of 2019. These flood hazard and risk maps will only cover high risk (AFAS ) areas of category I rivers, will not have holistic river basin approach and will not include detailed hydrological modelling, which will be required for future flood forecasting and development of river basin flood risk management plans. Category II rivers pose a significant risk to populations, particularly where torrential flash flooding is significant but there is currently no hazard or risk mapping of torrents, expect for Vrbas basin, and WBIF project will not develop the torrents flood maps. In addition, the IPA2016 has allocated funds for development of flood risk management plans for all basins in B&H, and this work is expected to be completed by the end of 2021. While the WBIF hazard mapping will meet the minimum requires for the EUFD with regard to flood hazard and risk mapping for BiH, the strategic assessment of risk to population, to economic activity and to future development under conditions of climate change is a government priority to support and guide local municipalities to wisely and rationally manage risk exposure to acceptable levels.
2. The GCF project will assess current level of implementation of the EUFD hazard modelling and mapping in each basin and review data availability for implementation of more detailed strategic basin-wide flood hazard and risk modelling and mapping. GCF resources will be used to enhance the developed WBIF hazard models and maps under current and climate change conditions and will take a whole basin approach for the entire project area. To achieve this the GCF project will undertake modelling of the rest of the basins and will incorporate the WBIF models into the basin wide models. The project will commission/purchase essential datasets and surveys to enable flood risk mapping of the non-AFAS areas. The unified basin approach to flood hazard modelling based on EUFD that has been established for BiH and implemented under the Vrbas project will be used for the additional and enhanced modelling and as the basis to establish and/or amend existing numerical hydrological and hydraulic models of the basins based on detailed surveys of the physical characteristics of the river basins. The project will therefore produce high resolution flood hazard inundation maps in line with the EUFD, suitable for use in land use planning, development zoning, strategic flood risk management planning, flood risk mitigation design, establishment of flood insurance criteria, raising public awareness, and emergency planning. These definitive basin hazard maps will be produced for a number of different return periods and for a range of climate change scenarios and will be the basis of climate risk information for use on climate risk management of the BiH.
3. In addition, the enhanced hazard models and maps will be used as the basis of the Flood forecasting and early warning system to be developed within the framework of this project (Activity1.3). The maps will benefit decision makers, and all involved in flood risk management at all levels. They will also enable government and donor agencies to better focus their efforts in dealing with flood hazards in the basin in the future. Importantly the enhanced flood hazard maps will provide the basis for the management of climate-induced flood hazards in BiH now and in the future.
4. The GCF project will enhance the WBIF EUFD hazard and risk modelling by **a) developing hydrological modelling for all main basins (category I rivers), b) undertaking torrents hazard modelling, c) including HPPs and groundwater modelling in flood hazard, risk and vulnerability modelling and mapping for all relevant basins**. An essential task of ﬂood management in HPP modified catchments is determination of an effective reservoir operation strategy that minimizes downstream flood risk and damage, while maintaining dam safety within reasonable limits and optimising water availability for power generation. Operation of HPP reservoirs exposed to ﬂoods presents many challenges, since important decisions have to be made under time pressures in an uncertain context with regard to information availability and the predictability of the unfolding hydro-meteorological situation. To minimise disastrous impact to downstream property, human life or even to the dam itself there needs to be an integrated approach to basin flood risk management which includes adequate representation of HPP operations in the basin flood hazard modelling and mapping, as well as in flood forecasting models. To this end, the project will incorporate HPP operations into flood hazard and risk modelling (to strengthen the role of HPPs in flood alleviation and maximize their capacity to utilize flood forecasts in their operations) in all relevant basins. The project will additionally develop sector-specific climate risk information products for hydropower sectors with a particular focus on the Neretva and Trebisnjica sub-basins of the Adriatic Sea basin. This will be done by reviewing the existing Neretva and Trebisnjica basin models and either upgrading the existing models or developing new models to include HPP operations and groundwater modelling (not currently included in the existing model), and inclusion of representation of the downstream floodplain to enable routing of the flood wave through the floodplain for assessment of flood risk downstream of the reservoirs. This detailed model will build upon the current NAP project “Development of study on economic impact of climate change on the hydropower sector in Republika Srpska – multipurpose hydrosystem Trebišnjica”, which is assessing hydrological and energy efficiency of the basin and will also identify additional monitoring needs to support improved HPP system operations and will provide essential input observation data for the more detailed model of the basin.
5. The GCF project will also develop the institutional capacity of HPPs operators to use climate risk and forecasted information in their operations by providing the necessary supporting protocols, guidance, tools and training. In addition, the ability to assess flood risks posed by dams and reservoirs in the case of overtopping or breaching will be strengthened by reviewing and updating essential dam breach modelling and mapping approaches in BiH and development of updated unified technical guidance and specification for dam breach modelling.

 1. This activity will also build on the bespoke **GIS-based socio-economic flood risk and vulnerability model** (which is based on EU flood Directive methodology for flood socio-economics assessment) developed for Vrbas basin. The developed socio-economic flood risk model will be enhanced with improved receptor and socio-economic datasets to be acquired/established by the GCF project, but the underlying methodology will be the same. The enhanced hazard maps and underlying information will be used in combination with receptor data including infrastructure (bridges, roads and buildings, hospitals, schools, power plants, critical infrastructure), land use (settlements, agriculture, grazing lands, and conservation areas), property and socioeconomics data, to assess the socio-economic impacts of each hazard and produce vulnerability maps for the river basins. The tool will integrate various spatial socio-economic data with the hazard maps, and produce risk maps, which will include economic losses and damages and loss of life estimates. In addition, the project will develop the technical methodology and tools for the systematic collection of socio-economic datasets that are important to flood risk and vulnerability modelling and assessment.
2. To support the development and implementation of the socio-economic flood risk and vulnerability modelling tool, the project will **develop methods and tools for systematic collection of socio-economic data to enable the assessment of the vulnerability of communities** to flood risk under current and climate change conditions, as well as the collection of datasets on assets and infrastructure at risk at the community level. While data about physical assets will be largely based on secondary data held by relevant government institutions, data required for exposure, vulnerability and coping capacity will be based on both primary and secondary data sources. Hence the approach to socio-economic risk and vulnerability assessment will combine survey results with secondary and observed data available from all levels of governments. Survey methodologies and tools will be based on extensive community surveys to help characterise the socio-economic status of the communities and to consult with communities. Participatory GIS (PGIS) methods and tools that were developed under the Vrbas project will be used as a means of systematic collection and integration of local community information into the assessments.

**Activity 1.3: Developing an integrated centralized and community-based flood forecasting and early warning system (CBEWS). GCF Financing - $ 2,075,000; Co-financing - $1,800,000** 1. The GCF project will build on the FFEWS which was developed for the Vrbas and Una-Sana River Basins and will enhance the telecommunications system to support an integrated FFEWS platform, for near real time forecasting and warning dissemination. Under the GCF project the Vrbas prototype will be scaled up to cover the two hydro-energy intensive basins of Neretva and Trebisnjica, and the Una-Sana basin forecasting model will be updated. EU funded Technical assistance for development of the hydrological flood forecasting system for Sava River Basin (Phase 1. Bosna River) project is implementing the Vrbas protype for Bosna River basin, while Drina forecasting model is being developed under the World bank Drina project. The forecasting system to be implemented will update and integrate all existing and new FFEWS models covering the whole territory of BiH. The components of the FFEWS is described in Chapter Y of the FS.
2. The GCF project will therefore develop the meteorological and hydrological forecasting capabilities of WAs and HMIs with responsibility for FFEWS, to enable the production of high-quality, high-resolution (grid-size ~2-3km) impact-based flood forecasts in B&H. It would include the implementation of the “Last-Mile” warning dissemination and communication system and the implementation of training and capacity building programme on FFEWS.
3. The **Community Based Early Warning System (CBEWS)** will be developed on the basis of the prototype implemented in Vrbas basin and will support the centralised forecasting (operational) and early warning system to effectively minimize or prevent the damages from any disaster by implementing action at the local level. One of the main challenges in early warning systems is sustainability. The idea of incorporating the active involvement of the people in the community with an early warning system aims to increase the effectiveness and sustainability of such systems. Learning by actual participation and taking part in the system enables people to better understand the value of these systems not only for themselves but for the whole community that will be affected and make them become more responsible in performing their tasks in implementing and sustaining the system. As for Vrbas project, the selection of communities where CBEWS will be implemented will be based on the following considerations: relative risk and vulnerability, lead time of the extreme events (and the need to localised monitoring and warning), willingness of communities to participate, potential technical constraints for the central system to effectively service the community (e.g. due to remote location or connection problems) and Cost-benefit ratio of the implementation. Due to the difference in size and type of communities that will participate in this scheme, not all approaches will necessarily be the same. This will be reflected in a thorough design of the CBEWSs.
4. The project will **develop sector-specific FFEWS products for the agricultural and hydro power sectors**.
5. The agricultural sector is one area where private sector can be actively engaged in the generation, dissemination and use of climate information which could enhance overall yield and reduce cultivation costs to farmers. The agricultural sector has been identified as one of the most vulnerable to climate change induced flood risk and will incur significant damages more frequently (hence cumulatively significant damages that are difficult to recover from on a regular basis) and during extreme events. This activity will examine opportunities to support the capacities of the Agricultural agencies and extension services through the generation and provision of tailored climate and weather information and advice to the farmers. Through this activity the project bring ICT-based innovations into the communication of forecasts and advisories; improve the use of historical data and derivations; improve medium and shortrange weather forecasts and longer-term predictions for agriculture (seasonal, decadal etc.). This will also include partnerships with the private sector including internet providers or mobile companies that are willing to design tailored information delivery services in collaboration with agribusinesses, farmers’ groups and other clients to deliver timely forecasts and advisories to farmers who will benefit from this service. Climate risk information will catalyse a reduction in agricultural losses coupled with enhanced agricultural livelihoods and will result in overall improvements to the productivity of the agricultural sector.
6. The energy sector is critical to economic and social development in BiH. As a net exporter of energy HPPs operations generate a sizeable portion of the country’s GDP. Energy is essential to practically all aspects of human welfare, including access to water, agricultural productivity, health care, education, job creation and environmental sustainability. HPP development also contributes to the reduction in energy sector global anthropogenic greenhouse gas (GHG) emissions. Emissions reduction targets under the UN Framework Convention on Climate Change (UNFCCC) are expected to significantly increase demand for energy from renewable sources – which are highly sensitive to climate – as well as demand for energy efficiency measures. An aim of the project will be to engage the hydropower and other relevant private/productive sectors in flood risk management. Key to this will be to include HPP companies in the flood risk management of the basins in which they operate through agreement on operations of their systems during flood events. The project will therefore build upon and strengthen engagement of the HPP’s and establish specific areas of cooperation on flood risk management, including private sector financing. In parallel, the project is also aiming to provide support to the HPP sector to enable more climate resilient operations. Energy planning and operations in the hydropower system are markedly affected by meteorological events and hence climate change, on both the demand and supply side. Thus, by properly taking into account weather and climate information, energy systems can considerably improve their resilience to weather extremes, climate variability and change. The project will assess and identify feasible tailored climate services that can support increased efficiency in HPP operations and will develop enhanced tools and systems that provide decision-makers with the ability to analyse and manage risks, under current hydro-meteorological conditions, as well as in the face of climatic variability and change. The development and application of targeted climate products and services will help improve efficiency and reduce risk associated with hydro-meteorological hazards affecting energy systems.
7. To consolidate and sustain the significant technical capacity development that will be achieved under this activity, the project will develop and implement a capacity development plan for embedding flood hazard and risk modelling approaches and FFEWS into appropriate institutions in BiH. In addition, and to ensure consistent application of methods and tools developed under the project, protocols for effective FRM and FEWS will be developed and implemented. Including protocols and SOPs on data generation, data management for FRM, SoPs for “last-mile” warning and dissemination and communication system, data sharing protocols and platform for climate data, across all government institutions in both entities to ensure climate data flow/exchange.
8. The implementation and maintenance of a flood risk management and flood forecasting and early warning system of this scale will require technical capacities in all areas of flood hazard and disaster risk management to ensure the long-term sustainability of the system. Technical expertise and experience in disaster management and emergency response is present, both at entity and municipal levels to varying extents. While technical expertise exists for specific technical areas, awareness and knowledge of climate change adaptative flood risk management and reduction concepts and practices is an area for improvement. Technical capacities related to risk identification and assessment, prevention, risk reduction, risk transfer, preparedness, climate risk management and climate change adaptation require further strengthening across institutions and governance levels. As part of the Vrbas project, an assessment was made of the existing gaps in institutional capacity for flood and landslide hazard and risk management in BiH, the results of which are presented in Chapter XX. After re-mapping the institutional capacity and reassessing gaps and training needs, a revised institutional capacity building plan will be developed under the GCF project to address gaps in resourcing (human, technical and financial). The recruitment and training needs to fill capacity gaps will be addressed. The project will develop training plans for each technical area of expertise related to climate-induced flood risk assessment and management and consolidate into an overall capacity development plan. A long-term capacity plan will be developed and will consider options such as the development of apprenticeships, internships and voluntary schemes for University students, in flood risk management and FFEWS. To address issues of skills shortage, skills retention and succession planning, the project will develop approaches which will include examining the role of the private sector (consultants, contractors, research institutes) in filling these gaps, the use of Continuous Professional Development (CPD) methods involving cross-fertilising of staff with skills across all organisations (e.g. through training in all technical areas before specialising), development of standardised and country-wide accepted guidance documents, codes and standards which will enable, consistency and uniformity of technical approaches.

**Activity 1.4: Developing and implementing protocols and SoPs on data generation, data management and communication for effective FFEWS and flood risk management.**1. The project will revise and implement data access protocols which will be supported by extensive training and capacity building to ensure sustainability. Based on the work undertaken by the Vrbas project, institutional strengthening, coordination, communication will be enhanced by establishing clear communication lines between different agencies, which will avoid any duplication and inefficiencies. Based on the Vrbas recommendations SOPs, Communication Protocols and Codes of Conduct will be developed for each of the institutions responsible for FFEWS. In addition, roles of regional and local authorities will be clarified and detailed. “Last-mile” communication protocols will be implemented as part of the FFEWS. Operational maintenance procedures for hydrometric network will be established.
2. Under the NAP project, “Development of monitoring and evaluation framework for climate change adaptation in BiH”, data sharing protocols are being developed). The NAP study will provide a basis for the development of a protocol for data/information exchange between water and other sectors relevant for integrated water management and climate change (agriculture, forestry, environment, spatial planning and hydro-energy sectors). This study should identify data/information to be exchanged, sectors between which data/information are to be exchanged and timeframes. Special attention is to be paid to data whose exchange will be automatized. The GCF project will assess and further develop the protocols if necessary.
3. To enable access and sharing of climate risk information, a centralised information system and knowledge sharing platform will be required. The Vrbas project developed and established a project SDI comprising GIS database for all spatial data related to the basin flood risk management. The Vrbas GeoPortal is a GIS-based tool which integrated various spatial socio-economic data with the flood hazard and flood risk maps, vulnerability maps including loss/damage models, real time hydro meteorological data, torrents sensitivity model, cadaster of torrents etc. The database was designed to be expandable to include other basins. The flood hazard information system to be developed under the GCF project will consist of an integrated e-Library, databases (including the GIS database previously noted), information systems and knowledge portal (web knowledge portal to increase awareness, provide interactive hazard maps, with integration with social media and possible mobile application to increase community engagement and allow two-way flow of information. The Vrbas Geo-portal is mainly designed to be used by the municipalities for local levels flood risk management to interact with communities through the PGIS tool within the platform. The expanded Geo-portal will continue to function at the local level and will be placed in the ownership of the entity and municipal civil protection units who will have responsibility for maintenance and update of the system in the future. The project will build capacity with civil protection at all levels in the use, and O&M of the portal. UNDP has developed a Disaster Risk Analysis System which is an online data sharing platform for disaster data. The platform has already been populated with flood hazard maps for Vrbas basin and these will be updated to include all flood hazard maps in the future. The GCF project will contribute to the development of the platform and the embedding of flood hazard and risk information as well as expansion of the platform functionality to provide the specific functionality that will be required or using the flood hazard and risk information.
4. As required by the Sendai Framework “to establish and strengthen government coordination forums composed of relevant stakeholders at the national and local levels, such as national and local platforms for DRR”. The flood risk management platform will be a country-wide mechanism for cross-entity, multi-sectoral and inter-disciplinary coordination and policy guidance on flood risk management and risk reduction with public, private and civil society participation involving all concerned entities within B&H. The FRM platform will contribute to such coordination forums. The data sharing platform will coordinate all stakeholder engagement at the entity and local level and will pursue an all-of-society engagement in FRM. It would also have mechanisms for effective dialogue with Local Platforms in place in order to influence, encourage and coordinate local action. In parallel, the country-wide Platform will seek to understand local priorities and issues.

**Output 2: Scaled-up ecosystem-based and non-structural climate resilient flood risk reduction****Activity 2.1: Mainstreaming climate induced flood risk reduction into sectoral planning (agriculture, hydropower, forestry, environment), critical infrastructure and spatial planning**1. The project will enhance the existing legislative and regulatory FRM framework by mainstreaming the climate-induced flood risk management into sectoral planning for agriculture, forestry, environment, hydropower, critical infrastructure and spatial planning. At the state level, a cross-entity approach will be taken to integrate flood risk reductions into sectoral planning to ensure that a holistic approach is taken, particularly where entity lines cross basins. This requires the involvement of key stakeholders, the improvement of coordination, and the implementation of related multilateral and regional environmental agreements. Relevant regulations and standards will be reviewed and adjusted to reflect or take into consideration the impacts of climate change induced flood risk. The project will help the entity level governments to develop climate risk informed key strategies, policies and plans by using evidence-based climate induced flood risk impact, vulnerability and adaptation assessments, analyses of the costs and benefits of adaptation options.
2. In the **Hydropower sector**, there are long term requirements to assess the current and long-term ability to operate dams in a flood alleviation role during large flood events, to ensure that sufficient flood storage is provided without compromising dam safety or power generation, particularly in light of the changing variability and intensity of extreme events.
3. For hydropower operators, failure to adequately consider climate risks may lead to shortcomings in their technical and financial performance, safety and environmental functions. In addition, if not designed and managed appropriately, hydropower systems could have adverse impacts on local communities and the environment, particularly under intensifying climate conditions. The lack of assessment and management of climate change-related risks and opportunities could lead to adverse investment decisions that fail to optimise the role of hydropower infrastructure in providing climate-related services. Under activity 1.2, hydropower operations will be fully included in basin flood hazard and risk models and under 1.3, they will be included in flood forecasting models and tailored products will be produced to support the hydropower sector in the energy intensive Neretva and Trebisnjica sub-basins of the Adriatic Sea basin. These interventions are aimed at a comprehensive inclusion of the hydropower sector into flood risk management and providing support to the hydropower to enable climate risk informed operational and strategic decision making.
4. The development of the HPP models and incorporation in flood models provides several opportunities for the Hydropower sector including improved understanding of changes in extreme events and the impact of climate change on the calculated design floods for a hydropower system. This will provide the ability to assess system performance under different climate change scenarios. Beyond the technical opportunities, there are significant opportunities for using climate risk information to ensure that HPP systems are an effective part of the flood risk management of all basins in BiH and to embed climate change considerations into the strategic planning and operation of the HPP sector.
5. The gap in policies and strategies relating to dams and reservoir safety will be examined with the view to strengthen dam flood safety in BiH and include climate change in dams’ safety policy. Dams, by their very nature, create risks, which increase substantially without proper maintenance and under climate change. The existing large dams in the Adriatic and other basins, as well as planned dams and their reservoirs are of great importance to the economy of BiH. They contribute to hydropower generation and water supply. They also contribute to seasonal and long-term regulation of river flow and therefore impact on river flooding. Reservoir operations, if integrated into the FRM process could potentially provide flood storage and alleviation functions, while at the same time, increasing the efficiency of hydropower generation and water supply. The establishment of effective strategies, guidelines and plans in the area of dam operations and safety are therefore of great importance for BiH, especially with the view of anticipated climate change impacts on hydrological regimes.
6. With respect to the Hydropower energy sector, the project will support the development of climate risk informed sector strategies, policies and plans for the flood safety of dams and will examine the potential role of the existing and planned dams in flood alleviation. The policy will examine and strengthen dam safety guidelines for BiH in line with international best practice. This will include development or enhancement of guidelines for the categorisation of dams into different risk categories, the development of improved methodologies (based on improved climate risk data) for assessing spillway discharge capacities that will need to be provided for dams of different risk categories (with CC considerations), the establishment of dam safety inspection intervals, guidelines on the assessment and quantification of risks associated with dams, including risk of overtopping, exposure to landslides and increased sedimentation, and the development of appropriate risk management plans for individual dams. Stemming from the long term requirements under climate change, the project will assess the current and long-term ability to operate dams in a flood alleviation role during large flood events, to ensure that sufficient flood storage is provided at the start of large events, to ensure dam safety and to provide some attenuation of the flood wave. This will require the involvement of dam owners and operators in the development and eventual implementation of the overall flood management plans for the basins, and the development of individual operating rules for each dam during floods, which meets the dam safety requirements for the dam, and which also fits into the basin flood management plan, particularly during large flood events. This will therefore involve optimisation of the dam operations for the dual uses of power generation and flood alleviation. At the very least, the policy should ensure that dams are maintained and operated in a manner which avoids exacerbation of the flood risk, and which takes account of the increasing risks they pose due to climate change.
7. With respect to the **agricultural sector** the project will ensure that climate change is taken into account in the reduction of flood risk to agriculture. Flood risk informed agricultural master planning will be introduced and will include the consideration of risks and opportunities for flood management in the design and development of agricultural infrastructure.
8. BiH has more than 500,000 farms (estimates of USAID FARMA Project). The average size of approximately 50% of farms is 2 ha, whereas the size of more than 80% of farms is less than 5 ha. Most are privately owned single plot farms growing several types of fruits and vegetables. The agriculture and food industry in BiH are very important for shaping and stabilizing further social and economic development in the country. It provides income generation for the local population and reduces negative social processes (migration, ageing of the rural population, etc.) and enables the preservation and protection of cultural, historical and natural heritage. However, the sector is highly exposed to intensifying climate change induced natural hazard, which exacerbates already weak response to other economic threats. By 2050, flood risk to the agricultural sector under climate change would increase to 7 million USD per event of flood damages compared to the current expected damages of 5.5 Million USD (a 27% increase), and to 12,323ha from current 9,848ha (25% increase).
9. According to the TNC for BiH, adaptive capacity to climate threats in the agricultural sector is low. In terms of available information and knowledge, there is a lack of detailed analysis on regional changes within BiH. Climate data is not fed into early warning systems for farmers, and farmers lack information about adaptive farming techniques, seed varieties, and crops that may be more appropriate with changes in seasonal temperature and precipitation patterns. In terms of skills and management, there is a general need for training farmers in less labour-intensive methods of agriculture, cultivation techniques for better-adapted crops, and hail protection techniques. In the economic sector, there is an overall lack of investment and a lack of crop insurance, which will become increasingly important with future increases in extreme weather. There is a lack of modern technology and there is a low uptake of new technologies due to lack of funding and the small-scale structure of farming. There is also a lack of infrastructure that could address climate threats, such as irrigation systems and reservoirs and rainwater collection. In addition, farmers lack access to broader varieties of climate-suitable seeds and plant varieties. The TNC also states that there is a lack of integration of climate change issues into policies on agriculture and rural development, a lack of coordination and clear jurisdiction for agricultural policies, and a lack of support for agricultural extension programs.
10. BiH policy in the sector of agriculture, food and rural development has achieved considerable progress, but reforms are still necessary in order to fulfill the conditions for the EU association and to make progress in alignment with European standards. A State-level strategic plan and operational programme for the harmonisation of agriculture, food and rural development are in place. However, implementation has not started. The Republic of Srpska rural development strategy and action plan and the Federation of BiH operational programme for the harmonisation of agriculture, food and rural development need to be harmonised with the State-level framework. Some legislation implementing the Framework Law on Agriculture, Food and Rural Development and the Law on Tobacco has been adopted, but there is still an overall lack of implementing legislation that impedes the coordination of harmonised strategies and legislation in this sector throughout the country.
11. It important to shape agricultural policy to orient it toward the strengthening of sector performance and particularly the regulatory and institutional framework, to enable the use of use of climate risk information to develop climate risk management strategies including risk reduction and financial risk transfer to safeguard, strengthen and improve competitiveness of the sector. To adequately protect agricultural livelihoods, it is critical to reduce the underlying drivers of the risks affecting farmers, pastoralists, fishers and foresters. The negative impact of natural hazards and other threats to agriculture and food security can be effectively reduced, mitigated or prevented through investment in sustainable models of food production and the application of appropriate agricultural technologies and practices, which raise yields and increase resilience against production failure. A strategy for the management of risks to the agricultural sector is required to define the approaches that would be appropriate for BiH.
12. The project will develop and mainstream a strategy for climate-smart agriculture which integrates climate risk and adaptation priorities into the agriculture sector plans, investments and budget frameworks, including the investment appraisal skills, economic valuation of climate change impacts, based on sector model, trade off analysis and cost-benefit assessments for a range of plausible adaptation options in agriculture. Technical strategic FRM management approaches to be considered include: ponds and temporary water storage, tillage practices, buffer and grass strips, arable to grassland conversion, re-connecting the river and floodplain (removing watercourse levees and embankments), re-meandering straightened watercourses, drainage management methods, floodplain agro-forestry. The project will develop a range of incentives, such as financial, policy or environmental gains, that will catalyse adoption of proposed FRM agricultural measures. It will consider a range of different instruments to achieve uptake including, for example, full-cost or partial grants to contribute towards any initial set-up costs; selling an area of land and transferring or leasing of parcels of land to be used for FRM purposes. In terms of O&M of FRM measures, the following will be considered: a one off or annual payment to cover income lost; a one off or annual pay payment to cover future increased flood ris The project will develop policy for flood/CC induced risk insurance for agriculture as a key risk transfer mechanism, extending the study undertaken under Vrbas project and addressing the policy and legislative barriers identified to insurance in agriculture.
13. The project will support policy development and implementation, by development of methods and tools to collect empirical data on the business impacts of proposed FRM measures, including information on the willingness of farmers to introduce different types of FRM measures within different farming systems; undertake large-scale surveys of farmers’ attitudes to proposed climate-smart FRM methods and to the use of potential policy instruments to promote its uptake and delivery; undertake an economic analysis of the impact of different FRM measures under different scenarios and across different farming systems; develop the skills, tools and methods as well as generated technical material to enhance agriculture sector-wide planning and make investment decisions more climate risk responsive. Lastly the project will develop guidance documents, methodologies and technical regulations for the agricultural sector on flood risk assessment and management and the use of climate change induced flood risk information and agricultural risk management.
14. Bosnia and Herzegovina has the highest proportion of **forests** and the largest variety of forest species in the Western Balkans and is among the highest value forests in Europe. Forests and forest land cover 63% of Bosnia and Herzegovina's territory (3,231,500 ha), 51% (1,652,400 ha) of which are high forests, 39% (1,252,200 ha) coppice forests , and the remaining 10% comprising shrubs, bare land and other woodland. Approximately 20% is privately owned and 80% is state-owned. The state owns 72% of high forests, while private forest owners are predominantly coppice forest (around 62% of total coppice forests). High forests are more profitable and under systematic forest management, the state undertakes afforestation and conversion of coppice forests to high forests. Between 1990 and 2000, Bosnia and Herzegovina lost an average of 2,500 hectares of forest per year. This amounts to an average annual deforestation rate of 0.11%. Between 2000 and 2005, the rate of forest change decreased by 100.0% to 0.00% per annum. In total, between 1990 and 2005, Bosnia and Herzegovina lost 1.1% of its forest cover, or around 25,000 hectares. Measuring the total rate of habitat conversion (defined as change in forest area plus change in woodland area minus net plantation expansion) for the 1990-2005 interval, Bosnia and Herzegovina lost 4.4% of its forest and woodland habitat.
15. Deforested and degraded catchments increase the vulnerability to flooding from extreme events and impact on people and the assets in river basins and sub-catchments. It also increases maintenance costs of built infrastructure in such basins. The catchment is therefore the eco-system unit within which critical processes must be managed in order to minimise the impact of flooding.
16. The National Communications (INC, SNC, TNC) have suggested a number of mitigation measures including increase in forest productivity and maintaining or increasing the forest area through afforestation/reforestation and rehabilitation of bare lands; increasing carbon sinks through forest conservation and increasing fire protection measures and permanent control of forest health; and reducing forest misuse by raising awareness on the importance of climate change mitigation, to local communities and stakeholders. In addition, a study on “Forests and climate change” was conducted as part of NFP of FBiH. This study recommends further steps directed toward research related to adaptation of forest ecosystems on climate changes, possibilities of using carbon sinks credits, CDM mechanisms and adoption of proper sectoral strategy on climate change mitigation. According to the TNC, adaptive capacities of the forestry sector to climate changes are at a very low level. It states that although there is a possibility that climate change will result in the long-term transformation of almost all forest eco-systems by shifting the schedule and the structure of forest communities, the areas most under threat of climate change have yet to be defined, and there is a lack of a more detailed analysis of climate change effects on individual forest communities; i.e., altitude zones at which they are widespread. Any such changes that will impact the structure and density of the forest cover, will greater exacerbate flood risk in river basins. In terms of the institutional framework, there is a noticeable lack of integration of problems and issues of climate change into forestry policies and strategies, as well as the lack of coordination between the managers and the users of forest resources. Climate change is not mentioned regularly within policy and strategy documents, nor in legislatively defined forest governance plans. With regards to the new forestry measure of IPARD 2014-2020 programme of the European Commission focus points on afforestation and agroforestry, fire prevention and restoration after fire, and improving the resilience and environmental value of forest ecosystems are highlighted.
17. This output will develop catchment management strategies for climate resilient catchment management to reduce the exposure of communities and their physical assets, to climate-induced flood hazards. The project will provide technical assistance to entity forestry (with agriculture and water management) to development and mainstream basin afforestation/reforestation and agro-forestry strategies and other forestry strategies to enhance flood risk management role of forests, as well as FR adaptation priorities into the forestry sector plans, investments and budget frameworks, including the investment appraisal skills, economic valuation of climate change impacts, based on sector model, trade off analysis and cost-benefit assessments for a range of plausible adaptation options in forestry. It will develop a range of incentives, such as financial, policy or environmental gains, that will catalyse adoption of proposed FRM forestry FRM management measures among private forest owners as well as financial dis-incentives to deter illegal practices such as illegal logging, illegal conversion from forest to agriculture and illegal construction which exacerbate deforestation and increases flood risk. The project will support policy development and implementation, by development of methods and tools to collect empirical data on the business impacts of proposed FRM measures, including information on the willingness of private forest owners to introduce different types of FRM forestry management measures. The project will undertake large-scale surveys of private forest owners’ attitudes to proposed climate-smart FRM methods and to the use of potential policy instruments to promote its uptake and delivery. It will undertake an economic analysis of the impact of different FRM forestry measures on the sector. To ensure sustainability, it will develop the skills, tools and methods as well as generated technical material to enhance forestry sector-wide planning and make investment decisions more climate risk responsive. Lastly the project will develop guidance documents, methodologies and technical regulations for the forestry sector on flood risk assessment and management and the use of climate change induced flood risk information in forestry management.
18. Under the Vrbas project a review was undertaken of landuse and **spatial planning regulations** to ensure that vulnerability to flood hazards and a landuse policy developed based on the principles of zoning people, property and economic activity away from high risk areas. In addition, the project reviewed and recommended revisions to strengthen the legislation that govern activities influencing flood hazards, to provide comprehensive floodplain management and spatial planning.
19. In simple terms policy makers and development planners need to know how often, on the average, the flood plain will be covered by water, for how long, and at what time of year in order to develop effective landuse regulations and development control. Natural changes, changes brought on by development activities and climate change affect the floodplain and must be understood, to identify appropriate development and natural resource management practices. Changes in floodplain utilization, such as urbanization and more intensive agricultural production, can increase runoff and flood levels. It is critical for the planner to appreciate these and other effects of land-use change. Consideration of all uses of the floodplain during development planning is prudent, as it enables the planner to foresee and evaluate potential conflicts between present and proposed land use and their relationship to flood events and the hazards they may pose. Acceptable risk criteria can help in distinguishing between different degrees of risk for different development activities. The chosen acceptable frequency of a particular flood event should be appropriate for the type of development activity. For example, it may well be worth the risk of occasional flooding to plant crops in the floodplain where soils are enriched by cyclical flooding and the deposition of sediments, where resulting sand and gravel deposits may lead to commercial exploitation. On the other hand, it is more appropriate to site a large agro-industrial or housing project in an area with a very small probability of a large flood occurring each year. As certain types of development and the people who use and live in them are more at risk from flooding than others, development of flood zones and the development activities allowed in each, should be linked to the probability of flooding as well as the vulnerability of types of development and it’s likely occupants and users.

 1. Under this activity, the project will embed nation-wide risk zoning policy based on risk and hazard maps (produced under activity 1.2) by developing the relevant regulations and guidance documents. Under the Vrbas project a floodplain zoning policy was developed. The focus of the policy is on the promotion of floodplain zoning as a means of efficient flood risk management, in order to retain the natural functions of the floodplain, minimise loss of life and property damage due to flooding, and maximise the goods and services that can be derived from harmonious existence on the floodplains. It uses the hazard maps to define 4 flood zones (Low Flood Hazard Zone, Climate Change buffer, Floodplain Fringe, Functional Floodplain) and overlain onto land use categorized into 4 land use/development classes (Essential/Critical infrastructure, Water compatible development, Emergency Services Infrastructure, Commercial/Public Buildings and Residential) and three vulnerability categories (Highly vulnerable Infrastructure, Moderately Vulnerable Infrastructure, and Less Vulnerable Infrastructure).
2. The existing standards and guidance for the design and implementation of all categories of **critical infrastructure**, do not currently include climate change considerations nor are they based on the most-up-to-date climate risk information or methods for identification, prioritisation, design and implementation of climate proofed infrastructure. Furthermore, it is not clear whether the existing standards are systematically applied.
3. The project will fully review all climate proofing design standards, methodologies, procedures and practice and will introduce climate risk screening methods and embed climate risk reduction criteria across critical infrastructure planning, prioritisation, design, construction and maintenance. It will provide step-by-step guidelines for climate risk reduction measures for all categories of critical infrastructure through the following review and revision of the existing guidance documents. Practitioners will be trained in the new methods of climate resilient infrastructure design, development and operations and maintenance. The intervention will embed the systematic use of climate hazard and risk information (to be developed under Activity 1. 2) in the identification and prioritisation of critical infrastructure projects to provide a more comprehensive, robust and evidence-based means of identifying project needs and will enable an appropriate level of climate risk informed feasibility studies. At the municipal level, the GCF project will also introduce climate risk criteria into the prioritization process and include other methods of measuring benefits of projects based on the introduction of appraisal-led project prioritisation using socio-economic cost-benefit analysis methods and tools to be developed under Activity 1. 2.Enhance current practice with updated CR-informed methodologies, standards for infrastructure design, construction material, use and maintenance of critical infrastructure in BiH.

**Activity 2.2: Implementation and scaling-up of new ecosystem-based flood risk reduction and climate change adaptation methods**1. Under the Vrbas project a range of non-structural measures utilising eco-system-based approaches, or interventions that encourage natural floodplain functions were successfully designed and implemented. This is the first time in B&H that such measures have been implemented. Under the GCF project approaches that are natural and work with the existing landscape and can provide added benefits such as ecosystem services will be developed and implemented in the highest risk basins in B&H and will be complementary of structural measures to ensure that they, in combination with structural measures provide the best solution to flood management and protection. Non-structural measures will include: floodplain reconnection, selective bed raising/riffle creation, wash lands, wetland creation, two-stage channels, re-meandering straightened rivers, land and soil management activities to retain / delay surface flows, woody debris dams on streams and tributaries, flood plain woodland, re-forestation, agro-forestry, creation or re-instatement of a ditch network to promote infiltration (swales, interception ditches, etc), in-channel vegetation management growth to maximise channel roughness. The project will include community-based EbA as part of the solution, which will be particularly important to reduce the impact of torrential floods. The project will scale up successful EBA approaches piloted by the UNDP/SCCF Vrbas River project.
2. Based on hazard and risk modelling and risk reduction strategies to be developed in Activity 1.2, the GCF project will implement a limited number of highest priority eco-system-based measures to address flooding in agriculture and flooding of torrential catchments.
3. Measures include identification of the following erosion reduction on torrential watercourses: gabion walls, sediment barriers etc.; The stabilization of excessively eroding river banks with vegetation cover and its root network; Planting of forest stripes in agricultural land; agro-forestation schemes on areas of floodplain; identification of agriculture infrastructure that could address climate threats, such as irrigation systems and reservoirs and rainwater collection in each target basin; assess and identify flood risks to agricultural infrastructure in target basins, as well as flood risk management opportunities associated with agricultural infrastructure under climate change and potential new infrastructure such as irrigation retention basins that could also serve as flood storage areas;
4. Under this activity a number of non-structural measures will be implemented based on the methods used in the Vrbas project. A number of non-structural measures to be implemented under the GCF project, have been identified, based on the priorities of the Water Agencies. In total 69 structural and non-structural measures were provided by WA’s. Cost benefit analysis was carried out on all measures based on the methodology described in the Economic Analysis annex of the proposal. Projects were ranked on the basis of the benefit to cost ratio, and the two highest priority measures from each target basin were selected (except Vrbas where several non-structural measures have already been implemented). A summary table of non-structural measures to be implemented by the project is provided in Annex 1 of the FS.

**Activity 2.3**: **Documenting and mainstreaming “ecosystem-based adaptation” (EbA) solutions into policies and regulations and promoting concepts of "making room for water" and/or "living with floods" among decision makers and communities**1. EbA approaches applied to flood risk management need to be applied within a defined framework. The introduction of EbA solutions in B&H represents a transfer of a well-established flood management practice from countries that have been using this method for decades. The GCF project will look to these areas for best practice approaches that can be adapted to the B&H context. The project will collect lessons learned from all activities and facilitate dissemination of successful approaches in the country. The successful practices will be codified in a form of guidance documents and upscaling in the rest of the country will be promoted as the guidelines and tools on how to undertake flood risk management for any part of their territories. This activity will document and mainstream non-structural measures into FRM policies and practices. The project will develop country-wide best-practice guidelines, technical specification, standards and protocols for the application of eco-system based non-structural measures and will undertake capacity development in the application of these to the identification, prioritisation, assessment appraisal, design and implementation of such solutions.

**Activity 2.4: Capacity development. Review of institutional capacity and development of long-term institutional plans for FRM.**1. The activity will implement country-wide training programmes in the technical and practical areas of flood risk management for practitioners, decision-makers, communities, emergency responders. Under the Vrbas project an assessment of state, entity and local capacity was undertaken and gaps were identified. The composition of the relevant state, entity and local government departments was also mapped and assessed to determine their functions in flood risk management. Having mapped the institutional capacity and assessed gaps and training needs, an institutional capacity building plan was developed which identifies gaps in staffing levels and gaps in required skills, and outlines the recruitment and training needs to fill those gaps. The GCF project will update the capacity development plan and implement its main recommendations. This will include, adding climate risk management and flood risk management sessions to the trainings for all FRM practitioners, to improve the technical capacity and knowledge base for climate risk management and a long-term adaptation planning for flood risk management, introduction of advanced tools and methods in FRM that are scientifically sound and evidence-based, examination of the feasibility of establishing a University MSc. course in CR-FRM at local Universities, develop training plans for each technical area of expertise related to climate-induced flood risk assessment and management, and consolidation into an overall revised capacity development plan.
2. The project will embed training in FRM and the use of climate risk information in the relevant entity training institutions to improve the technical capacity and knowledge base for hazard and flood risk management, based on a Training of Trainers (ToT) in the below topics through the development and establishment of training curricula, and rosters of trainers and the development of mechanisms for delivering long-term capacity development such as development of key partnerships with universities and other academic research institutions that can be forged to ensure long-term FRM training.
3. Based on the detailed institutional capacity assessment undertaken under the Vrbas project a costed and prioritised Institutional capacity development plan will be developed to address technical, functional and human capacity gaps identified. Based on the identified institutional capacity and assessed gaps and training needs, an institutional capacity building plan will be developed and implemented to address gaps in resourcing (human, technical and financial) under the GCF project. The recruitment and training needs to fill capacity gaps will be addressed. The project will develop training plans for each technical area of expertise related to climate-induced hazard risk assessment and management and consolidate into an overall capacity development plan. To address issues of skills shortage, skills retention and succession planning, the project will develop approaches which will include examining the role of the private sector (consultants, contractors, research institutes) in filling these gaps, the use of Continuous Professional Development (CPD) methods involving cross-fertilising of staff with skills across all organisations (e.g. through training in all technical areas before specialising), development of standardised and locally accepted guidance documents, codes and standards which will enable, consistency and uniformity of technical approaches.
4. Based on Vrbas community-based training and awareness raising initiatives, the project will implement required training in number of communities. The GCF project will assist the government of BiH in shifting from ad-hoc project-based awareness and education efforts to a planned, consistent and sustainable information and communication system for enhanced flood and disaster risk management. To this end, it will develop an awareness raising campaign which will include: **Community level capacity and awareness raising:** Emergency response trainings for first responders in cooperation with Civil Protection; Strategic FRM planning and FRM intervention identification approaches for municipality staff; Development/adaptation of existing guidelines on community DRR/DRM; Development of FRM, DRR and DRM guidelines for specific target groups including teachers, municipal authorities, media, women’s groups; Capacity building and awareness raising of municipal authorities, local NGOs, CBOs or non-CBO community members in Community-based Risk Assessment approaches, Community-based Early Warning Systems and gender-responsive Community-based Flood Risk Management; development of ‘training of trainers’ programme and a syllabus for topics such as first aid, search and rescue and warning dissemination, and example standard specifications for external training providers; Working with the appropriate agencies to develop generic educational material and a 5year training programme on flood and disaster risk and emergency response for use in school outreach programmes, university courses, communities etc. (training material, course notes, plays etc.); training on how to use the hazard and risk maps provided (paper and electronic) to raise awareness but also on how to plan development and other activities locally. **Networking and advocacy**: Organizing annual community forums on FRM and CBEWSs with participation of target communities and representatives of vulnerable groups to exchange information, lessons learned, successes and impediments; Organizing community-government and public-private dialogues around local risks and risk reduction strategies and their financing. **Country-wide media campaign on FRM and FFEWS**: Develop and deliver awareness raising messages through a number of methods including using social media, art and creativity to communicate FRM and FFEWS concepts to broader society and to disseminate project lessons and successes; Organizing TV and radio talk shows around FRM and FFEWS; Media coverage of project activities; Production of footages, Public Social Announcements (PSAs) of short documentaries around FRM and GCF project achievement; Training for media on FRM and FFEWS and annual essay/media article awards competitions.

**Output 3: Climate-proof flood protection investments strengthen adaptive capacity and reduce exposure to climate-induced floods****Activity 3.1: Development of a country-wide investment framework for climate induced floods risk reduction and management including provisions for private sector engagement in climate risk financing and for risk transfer mechanisms**1. The project will develop a strategy and tools for private sector engagement in long-term climate change-induced flood risk management. During proposal development some willingness to pay surveys were undertaken, for a number of sectors and different types of beneficiaries, that will contribute to the effective long-term management of flood risk management and risk reduction. The survey identified key private sector players with a willingness to pay for flood insurance as a key mechanism of transferring risk. Private Sector interest in sector-specific climate risk information products, and their willingness to pay for tailored products that will be used in their operations, and their willingness to support or partially support the O&M of hydrometric monitoring and early warning systems, equipment and information products has been assessed and determined through extensive consultation during proposal development.
2. To enable private sector to invest in climate change adaptation the right enabling environment for private sector adaptation need to be put in place. Private sector participation in investment of climate change adaptation financing can include: Resilient investment: These are broad investments that include a component that is adaptation-related for instance, climate resilient features in addition to investments in the overall infrastructure, and Investment in resilience. These investments are solely adaptation-focused. For example, investing in a flood defence. The project will develop the **Investment framework for climate induced floods risk reduction and management including provisions for public and private/productive sector engagement in climate risk financing and for risk transfer mechanisms.** The activity will involve the following:
* Using the flood hazard and risk modelling results of Activity 1.2, undertake a detailed assessment of the socio-economic risks, damages and losses to priority public and private sector categories, identifying overlaps between the government’s priorities and private sector interests. Facilitate dialogue between relevant public and private sector players to map the adaptation priorities of the Government with that of the sector companies/businesses. Develop sector-specific documentation on various approaches for the private sector to be active in the climate resilience. Identify public-private partnerships, and develop strategies, plans, projects and implementation plans for PPPs
* Working with the relevant priority public and private sectors develop the relevant sector resilience strategies and plans for long-term ongoing investment frameworks that would be required to address flood risk to each sector. Under Activity 2.2, strategy and action plan for delivery of flood resilience in Hydropower, agriculture and forestry sectors will be developed along with tools for addressing flood risk.
* Develop sector specific awareness campaign for the private sectors on climate-related risks and associated opportunities, including documentation and dissemination of sector-specific business cases for climate change adaptation;
* Access to climate risk information and technical resources for the private sector to have the necessary capacity and expertise to address climate risks and create opportunities by investing in climate change adaptation; Development of Sector-specific information dissemination portals as part of the information platform to be developed under 1.2.4
* Incentivisation – mechanisms for enhancing access to finance to improve the risk–reward profile of private sector investment in climate change adaptation;
* Reforming the regulatory framework to ensure policies, laws, and regulations create an enabling environment for private sector investment in adaptation;
* Strengthening governance by bringing together private, public and civil society actors to mainstream climate change adaptation in their decision-making processes and develop partnerships and collaborations.
* Develop a strategy and tools for private sector engagement in long-term climate-proof risk management; Under Activity 1.4, the project is developing climate risk information tools and products to support decision making, understand and assess risks and opportunities and/or identify potential adaptation measures. This will help them make more informed decisions to manage and minimise existing or emerging risks while taking advantage of investment opportunities emerging from a changing climate.
* Develop a strategy and plan and provide technical assistance to financial institutions to mainstream climate change risks into their business models to manage the effects. Given their key role both as providers of finance and as investment facilitators to enterprises, these institutions must develop a consistent view on climate-related issues that can serve as the basis for strategic and operational decisions across a range of business units. This is particularly true for the most climate-vulnerable sectors, such as agriculture, water resource management and infrastructure, which represent some of their largest areas for investments.
* Development of risk financing and risk transfer mechanisms strategy to include private sector engagement strategy for long-term implementation of risk financing and risk transfer mechanisms for entity-level flood risk financing and resilience strategy;
1. Under this activity the project will **develop** **risk financing and transfer mechanisms based on detailed socio-economic risk, damages and losses assessment.** Addressing climate risks could bring opportunities for private sector related to managing existing physical climate risks: Climate change already affects private companies throughout their value chains, and the effective management of these risks may create opportunities to improve financial performance. By managing existing risks through, for instance, contingency planning, market diversification or site retrofits, businesses may benefit from improved processes, increased efficiency and savings. As such, avoiding the costs of physical climate risks can then be seen as an opportunity. Opportunities may also arise in responding to new emerging physical climate risks. As the effects of a changing climate become more visible, it is inevitable that new physical impacts will emerge that require responses. This activity will include:
* the identification or public-sector risk financing mechanisms for flood risk management; Identify and develop
* Risk financing and transfer mechanisms products and tools, based on detailed socio-economic risk, damages and losses assessment;
* Feasibility studies of all identified and shortlisted risk financing mechanisms based on Vrbas project, development of flood insurance models for the assessment of premiums and payouts of flood events of different return periods;
* Technical assistance to financial institutions and financiers, including mirco-financing institutions, for the development of lending products to mainstream the use of climate-risk information into their lending processes that maximises performance and minimises risks and to provide loans to climate responsive/resilient enterprises in B&H (i.e., loans that offer better conditions than the current market practices to borrowers - the conditions are interest rate, loan period and easier credit criteria). These loans will service Small and Medium Enterprises and will provide loans for start-up or expanding climate resilient enterprises, or climate proofing the enterprise.
1. The project will **Scale-up and implement** **flood insurance scheme developed for Vrbas and identify, develop and implement other risk financing and transfer mechanisms products and tools.** Under the Vrbas project a feasibility study for a flood insurance scheme for Vrbas basin explored the potential of developing property or infrastructure investment insurance products that can provide strong flood exposure signals and steer the new infrastructure, settlement development and expansion away from high risk zones. The feasibility study identified the type of scheme that would be most appropriate for BiH and considered ex-ante, ex-post, index-based, and indemnity-based schemes, with various configurations of government role. The feasibility study included a review of data availability for the development of the identified preferred scheme.
2. Based on the feasibility study and the identified type of schemes, a GIS-based index-based flood insurance model and insurance scheme for BiH were developed and included, a basis for setting premiums and payouts at household and community level, in each of the identified flood insurance zones (zones developed from flood hazard and risk maps), the value of premiums in each insurance zone was based on risk indices based on hazard and risk modelling, while the value of the payout out was based on appropriate considerations of proportion of damages and losses to be covered. While index-based insurance was found to be a feasible mechanism for the agriculture sector, the index-based insurance model has found to be inappropriate for BIH due to legal barriers, i.e. Law on Obligations would be breached. Other limitations to establishing flood insurance for the whole of BiH were identified and included institutional and data in particular flood hazard modelling and mapping for other basins to support the definition of flood insurance zones, tariff and premium settings etc.
3. Initial consultation with key stakeholders (community, municipality, private sector companies, insurance companies) on the proposed flood insurance scheme and the insurance zone designations revealed general acceptance of the proposed scheme. The results of willingness to pay surveys for insurance (Chapter 16), showed that all assessed sectors (households, public institutions, business subjects, agricultural producers) have relatively high needs for insurance from natural disasters considering the situation and level of development of insurance market in BiH. There is a significant potential for development of insurance package from natural disasters for all four assessed segments. A high percentage of respondents are not inclined to risk retention in all assessed sectors, representing a potential for change of their attitude and behaviour towards the insurance from natural disasters. The respondents had positive attitude to obligation to insure from assessed disasters by lower price compared to the commercial one. For households, the fixed anticipated premium and insured amount for construction part of building and assets is determined - for insurance from floods, landslides, earthquakes and storms. For households, the variable premium and insured amount is estimated as well. Fixed expected premium and insured amount will be determined for agricultural producers for insurance from floods, drought, hail and other disasters. The project will scale up the flood insurance scheme developed under the Vrbas project and will implement many of its recommendations. This activity will include:
* Undertake a feasibility study into the introduction of micro-insurance for agricultural producers, entrepreneurs and small and medium-sized enterprises in different industries.
* Establish a connection between micro-insurance and microfinance. In order for the micro-insurance program to be implemented in practice, changes to the current regulations in the field of insurance are necessary. The micro-insurance concept is mostly unknown in B & H, while the microfinance sector, however, is quite well-developed and regulated, which is often prerequisite for the successful launch of microinsurance in a new market.
* Feasibility study for creating a regional disaster risk insurance micro-insurance program to increase the degree of diversification of risk.
* Feasibility of issuing catastrophe bonds to transfer disaster risk to the capital market. In addition to insurance and reinsurance companies and other business entities, these bonds may also be broadcast by governments of countries in order to mitigate fiscal pressures after the realization of catastrophic adverse events. Catastrophe bond issuance helps governments and public entities to transfer the natural disaster risks to the international capital market. In this way, multi-year protection is provided for the covered risks at a fixed price and the government can diversify its risk financing strategy.
* Identification of potential sector-specific natural disaster (including floods) insurance product packages for insurance in each of the defined sectors, based on studies to estimate cost-benefit,
* Develop sector-specific awareness raising and knowledge management tools on importance of insurance from natural disasters
* Provide technical assistance and training of insurance sector practitioners in the development of insurance products packages from natural disasters adjusted to the needs of the assessed sectors and insurers.
* Develop and implement a programme of engagement of relevant state institutions, insurers and reinsurers, financial institutions, capital market institutions, etc.
1. The project will **Develop** **tool for appraisal-led design for structural and non-structural FRM measures, FRM investment planning, climate risk financing mechanisms and for appraisal-led FRM options design and decision-making, based on cost benefit analysis (CBA) approaches.** The project will scale up the bespoke GIS-based socio-economic risk model that was developed for the Vrbas project to provide a country-wide tool for flood risk assessment, cost-benefit analysis and the identification and appraisal of climate resilient intervention measures for use in strategic planning, development risk financing, transfer and management strategies and investment planning in the future. The hazard maps to be developed will be used in combination with infrastructure (bridges, roads and buildings), land use (settlements, agriculture, grazing lands, and conservation areas), property and socio-economics data, to model the socio-economic impacts of each hazard and produce vulnerability maps. This vulnerability map based on the accurate hazard mapping of the current situation will form the baseline. The tools will calculate direct and indirect, tangible and intangible damages and losses including to infrastructure, agriculture property, along with concomitant social effects associated with loss of potable water and agricultural productivity. The baseline model will form the basis of future appraisal-led flood risk management and risk-informed infrastructure planning. Quantification of damages and losses will be linked to a CBA module to be developed as an additional module under the GCF project to enable identification of flood risk financing requirements, and strategies from which annual investment plans can be developed. The project will develop a unified methodology for appraisal-led design for structural and non-structural measures using climate risk information and cost-benefit appraisal methods and application of methods to the detailed design of prioritised structural and non-structural measures. FRM practitioners will be trained in the use of the appraisal methods and models and importantly, capacity will be built to enable the use of updating and maintenance of the models. Municipal planners and managers will also be trained in the use of the models for appraisal-led FRM planning.

**Activity 3.2: Formulated multi-year climate resilient municipal investment plan and gender sensitive community preparedness plan implemented in selected municipalities (10-12) and 1 canton in Vrbas, Una-Sana and Bosna, Neretva and Trebišnjica basins**1. Based on the risk financing and risk transfer strategies and tools developed in 3.1, the project will develop municipal investment plans for climate-resilient investment planning for flood risk management in 10-12 municipalities and 1 canton in the Vrbas, Una-Sana and Bosna basins. The most vulnerable municipalities and cantons will be identified from the enhanced WBIF hazard and risk modelling and mapping to be undertaken under Activity 1.2. Municipal investment plans will be based on cost-benefit analysis and appraisal-led identification of climate-risk informed structural and non-structural FRM requirements and will identify both public and private finance mechanisms.
2. The project will **develop and implement municipal investment plan for climate-resilient FRM planning for 10-12 highest risk communities and 1 canton**. It will develop new approaches to investment planning to ensure that investment including annual and periodic maintenance of FRM interventions which can be met in the long-term and will include climate proofing. Approaches will include:
* Identification of financing models for investment maintenance costs (e.g. of community-based scheme that involve the use of tariffs or in-kind contributions to establish municipal maintenance programmes or engagement of private sector in infrastructure maintenance financing).
* Development of municipal FRM investment plans based on risk-informed project designs, including maintenance, and costs-benefit analysis based on CBA methods and models.
* Use of municipality investment plans for technical justification for budget allocation to cover investment and maintenance cost for FRM activities.
* Project will assist government in identifying and prioritising flood risk financing, based on the principles of portfolio risk assessment (PRA) and associated cost-benefit analysis. Furthermore, the CBA tools to be developed by the project will be embedded in municipality as a standardised requirement for developing annual infrastructure investment plans.
* Formulate multi-year climate resilient municipal investment plan and gender sensitive community preparedness plan implemented in the highest risk municipalities (10-12) and 1 canton.
1. Using the example of Community Emergency Flood preparedness plans the GCF project will support the **development of community preparedness plans** for the the most vulnerable 10-12 communities in target basins, excluding Vrbas in line with the procedure, methodology and content of CFEP in BiH as defined by Law of Protection and Rescue in RS and FBiH including cantons. In accordance to the Law, the CFEP will consists of the following documents: Vulnerability and risk assessment, Prevention plan, Preparedness plan, Mobilisation plan, Emergency plan, Evacuation plan.

**Activity 3.3:** **Implementation of climate-proof structural flood risk reduction and anti-erosion interventions in Vrbas, Una-Sana and Bosna, Neretva and Trebisnjica river basins**1. This activity will focus on implementation of priority structural flood risk reduction interventions for areas at highest risk. The structural measures will be financed through loan resources and Water Agencies. The priority will be given to multi-purpose structures combining benefits of flood protection, agriculture and hydropower generation. GCF funds will provide technical assistance to co-finance design of climate resilient flood defences as part of a strategic river basin approach which will include structural and non-structural measures to address climate change. The project will embed climate-change responsive design of flood defences and will develop standard methodologies, tools, guidelines and capacity for climate resilient flood defence design and implementation. It will utilise flood hazard and risk modelling and will embed CBA and appraisal-led prioritisation methods in developing and implementing structural measures that maximise benefit, make allowance for climate change and which consider environmental impacts. This activity will be implemented in the Vrbas River basin based on the climate risk information generated by the UNDP/SCCF project (risk maps, climate and flood modelling, socio-economic risk information) and in the Una-Sana and Bosna river basins for which some geodetic surveys and hydrological modelling already exists, and for which detailed modelling will be done under WBIF and enhanced under the GCR project. The Vrbas experience will be replicated in the other basins.
2. A number of structural measures have been identified by Water Agencies, for implementation under the GCF project using climate proofed designs. Some of these measures will be co-financed by EiB loan and by WAs. All climate proofing detailed designs of the measures will be financed by the GCF project. An initial appraisal of the measures has been carried out based on existing flood risk information and local understanding. As part of project formulation, the measures are undergoing Social and Environmental Screening in line with GCF criteria, and the environmental and social management framework (ESMF) and plan (ESMP) for the project will be developed. During project implementation, a deeper appraisal will be undertaken to confirm the performance in terms of flood damages reduction, technical feasibility of implementation, social and environmental safeguards. Changes in flood levels with the measure against the baseline scenario will also be investigated and the likely effects of such changes assessed. The reduction in damages resulting from an option (as compared to the baseline) represents the option benefits. As part of the over project economic analysis, the structural measures to be implemented under the project as co-financing, will be assessed using CBA methods. The project will apply the methodologies developed in Sub-Activity 2.1.3 for climate resilient flood defence design to undertaken climate resilient detailed design for all structural measures to be implemented by the project.
3. Under this sub-activity, the investment in construction of the structural measures will be implemented. For each measure the site specific environmental and social safeguards plan (SESP) will be developed and implemented using GCF funds.
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| **B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)** |
| *Provide a description of the project/programme implementation structure, outlining legal, contractual, institutional and financial arrangements from and between the GCF, the Accredited Entity (AE) and/or the Executing Entity(ies) (EE) or any third parties (if applicable) and beneficiaries.* *Provide information on governance arrangements (supervisory boards, consultative groups among others) set to oversee and guide project implementation. Provide a composition of the decision-making body and oversight function, particularly for Enhanced Direct Access (EDA) proposals.* *Provide information on the financial flows and implementation arrangements (legal and contractual) between the AE and the EE, between the EE or any third party and beneficiaries. For EEs that will administer GCF funds, indicate if a Capacity Assessment has been carried out. Where applicable, summarize the results of the assessment.**Describe the experience and track record of the AE and EEs with respect to the activities (sector and country/region) that they are expected to undertake in the proposed project/programme.*  *Provide a diagram(s) or organogram(s) that maps such arrangements including the governance structure, legal arrangements, and the flow and reflow of funds between entities.*1. UNDP with Direct Implementation Modality will assume full responsibility and accountability for the overall project management, including monitoring and evaluation of project interventions, achieving of project output and specified results, the efficient and effective use of resources, and reporting to GCF.
2. The management arrangements for this project are summarized in the chart below:
3. The implementation of the project will be carried out in full collaboration with and consultation of Bosnia and Herzegovina UNFCCC and GCF Focal Point, the Ministry of Spatial Planning, Construction and Ecology of the Republic of Srpska (MSPCEE) and the Ministry of Foreign Trade and Economic Relations (MoFTER). As per the GCF framework readiness and preparatory support grant agreement, the project will be implemented according to the UNDP Direct Implementation Modality. Such modalities will be particularly beneficial, given the complexity of B&H’s administrative set-up, that includes two self-governing entities and applies multi-layered administrative procedures, the recently approved United Nations Programme / United Nations Development Assistance Framework (UNDAF) for 2015 – 2019 and UNDP’s Country Programme Document (CPD) for 2015 – 2019 for Bosnia and Herzegovina stipulate that all projects be implemented under the direct implementation modality (DIM). Furthermore, this modality has been supported and agreed by governments at all levels (state and entity) and is in line with the Standard Basic Assistance Agreement (SBAA, 1995) between the UNDP and the Government of B&H. Guided by these above-mentioned country programme frameworks, the DIM will be applied in a way to consider potentials for maximum cost-effectiveness and tailored capacity development of counterpart government institutions.
4. Agreement on intellectual property rights and use of logo on the project’s deliverables and disclosure of information: To accord proper acknowledgement to the GCF for providing grant funding, the GCF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GCF will also accord proper acknowledgement to the GCF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy and the relevant GCF policy.
5. Disclosure of information: Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy and the GCF Disclosure Policy.
6. The project will be implemented following UNDP’s direct implementation modality, according to the Readiness and Preparatory Support Grant Agreement between the GCF and UNDP*.*
7. The Project Board (PB) is comprised of the following organizations: The Ministry for Spatial Planning, Civil Engineering and Ecology, Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Ministry of Agriculture, WaterManagement, and Forestry of Federation of B&H, Ministry of Agriculture, Forestry, and Water Resources of Republika Srpska and UNDP. Furthermore, as the Senior Supplier; UNDP provides quality assurance for the project, ensures adherence to the DIM guidelines and ensures compliance with GCF and UNDP policies and procedures. The Project Board is responsible for making, by consensus, management decisions when guidance is required by the Project Manager. Project Board decisions will be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, the final decision shall rest with the UNDP (represented by the UNDP Programme Manager). The Project Board will meet as necessary and agreed, and at least once a year.
8. The Project Management Unit, under supervision of the UNDP and B&H GCF focal point, will run the project on a day-to-day basis within the constraints laid down by the Project Board. The Project Manager function will end when the final project terminal evaluation report and other documentation required by the GCF and UNDP has been completed and submitted to UNDP. The Project Manager is responsible for day-to-day management and decision-making for the project within the Annual Work Plan approved by the PB and reviewed by UNDP. The Project Manager’s prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The annual work plan is prepared by the Project Manager and reviewed and approved by PB. However, the UNDP-Global Environmental Finance Unit, as part of its quality assurance role, provides the final approval. The Project Manager is also responsible for managing and monitoring the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required and update the status of these risks by maintaining the project risks log according to the DIM Guidelines.
9. The project organisation structure is as follows:

 1. Project Support comprises primarily of technical institutes which can provide input and alleviate project implementation (hydro-meteorological institutes, statistics institutes, agricultural institutes) and local governments together with associations of cities and municipalities of Republika Srpska and Federation of B&H Environmental Protection Funds, the civil society and other local and international NGOs. The coordination among these institutions and government agencies will be ensured through the inter-agency working group.
2. Local stakeholders and community members have a key role in the implementation and monitoring of the project. During the inception phase of the project, UNDP, will consult with all stakeholders, including vulnerable community members, NGOs, civil society, women organizations, etc., to facilitate an understanding of the roles, functions, and responsibilities within the Project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The project Logic Framework (indicators, means of verification, assumptions) will be reviewed and the quarterly and annual plans will be refined engaging the communities from the targeted counties. The stakeholders will also be engaged during the mid-term and final evaluations to assess the progress of the project and enable adaptive project management in response to the needs and priorities of the communities.
3. **Project Board:** The Project Board (also called Project Steering Committee) is responsible for making by consensus, management decisions when guidance is required by the Project Manager, including recommendations for UNDP/Implementing Partner approval of project plans and revisions, and addressing any project level grievances. In order to ensure UNDP’s ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Programme Manager.
4. Specific responsibilities of the Project Board include:
* Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
* Address project issues as raised by the project manager;
* Provide guidance on new project risks, and agree on possible countermeasures and management actions to address specific risks;
* Agree on project manager’s tolerances as required;
* Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
* Appraise the annual project implementation report, including the quality assessment rating report; make recommendations for the workplan;
* Provide ad hoc direction and advice for exceptional situations when the project manager’s tolerances are exceeded; and
* Assess and decide to proceed on project changes through appropriate revisions.
1. The composition of the Project Board includes the following roles:

Executive: The Executive is an individual who represents ownership of the project who will chair the Project Board. This role can be held by a representative from the Government Cooperating Agency or UNDP. The Executive is: *Ministry of Spatial Planning, Civil Engineering and Ecology of Republika Srpska, GCF and UNFCCC focal point and Ministry of Foreign Trade and Economic Relations of B&H.*1. The Executive is ultimately responsible for the project, supported by the Senior Beneficiary and Senior Supplier. The Executive’s role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The executive has to ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of beneficiary and suppler.
2. Specific Responsibilities: (as part of the above responsibilities for the Project Board)
* Ensure that there is a coherent project organisation structure and logical set of plans;
* Set tolerances in the AWP and other plans as required for the Project Manager;
* Monitor and control the progress of the project at a strategic level;
* Ensure that risks are being tracked and mitigated as effectively as possible;
* Brief relevant stakeholders about project progress;
* Organise and chair Project Board meetings.
1. Senior Supplier: The Senior Supplier is an individual or group representing the interests of the parties concerned which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The Senior Supplier’s primary function within the Board is to provide guidance regarding the technical feasibility of the project. The Senior Supplier role must have the authority to commit or acquire supplier resources required. If necessary, more than one person may be required for this role. Typically, the implementing partner, UNDP and/or donor(s) would be represented under this role. The Senior Suppler is: *UNDP CO B&H*
2. Specific Responsibilities (as part of the above responsibilities for the Project Board)
* Make sure that progress towards the outputs remains consistent from the supplier perspective;
* Promote and maintain focus on the expected project output(s) from the point of view of supplier management;
* Ensure that the supplier resources required for the project are made available;
* Contribute supplier opinions on Project Board decisions on whether to implement recommendations on proposed changes;
* Arbitrate on, and ensure resolution of, any supplier priority or resource conflicts.
1. Senior Beneficiary: The Senior Beneficiary is an individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary’s primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries. The Senior Beneficiary role is held by a representative of the government or civil society. The Senior Beneficiary is: *Ministry of Agriculture, Water-Management and Forestry of Federation of B&H, and Ministry of Agriculture, Forestry and Water Resources of Republika Srpska, Water agency for Sava River Basin, Water Agency for Adriatic basin and PI “Vode Srpske” .*
2. The Senior Beneficiary is responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The Senior Beneficiary role monitors progress against targets and quality criteria. This role may require more than one person to cover all the beneficiary interests. For the sake of effectiveness, the role should not be split between too many people.
3. Specific Responsibilities (as part of the above responsibilities for the Project Board)
* Prioritize and contribute beneficiaries’ opinions on Project Board decisions on whether to implement recommendations on proposed changes;
* Specification of the Beneficiary’s needs is accurate, complete and unambiguous;
* Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary’s needs and are progressing towards that target;
* Impact of potential changes is evaluated from the beneficiary point of view;
* Risks to the beneficiaries are frequently monitored.
1. **Project Manager**: The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Project Board within the constraints laid down by the Board. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager’s prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The PM will be supported by a technical officer, a civil engineer, a project officer focusing on work with municipalities, financial expert and an administrative assistant, as well as part-time international Chief Technical Advisor.
2. The Implementing Partner contracts the Project Manager, who should be different from the Implementing Partner’s representative in the Project Board.
3. Specific responsibilities include:
* Provide direction and guidance to project team(s)/ responsible party (ies);
* Liaise with the Project Board to assure the overall direction and integrity of the project;
* Identify and obtain any support and advice required for the management, planning and control of the project;
* Responsible for project administration;
* Plan the activities of the project and monitor progress against the project results framework and the approved annual workplan;
* Mobilize personnel, goods and services, training and micro-capital grants to initiative activities, including drafting terms of reference and work specifications, and overseeing all contractors’ work;
* Monitor events as determined in the project monitoring schedule plan/timetable, and update the plan as required;
* Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
* Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
* Be responsible for preparing and submitting financial reports to UNDP on a quarterly basis;
* Manage and monitor the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
* Capture lessons learned during project implementation;
* Prepare the annual workplan for the following year; and update the Atlas Project Management module if external access is made available.
* Prepare the Annual Project Report and submit the final report to the Project Board;
* Based on the Annual Project Report and the Project Board review, prepare the AWP for the following year.
* Identify follow-on actions and submit them for consideration to the Project Board;
* Ensure the terminal evaluation process is undertaken as per the UNDP guidance, and submit the final TE report to the Project Board;
1. **Project Assurance:** UNDP provides a three – tier supervision, oversight and quality assurance role – funded by the agency fee – involving UNDP staff in Country Offices and at regional and headquarters levels. Project Assurance must be totally independent of the Project Management function. The quality assurance role supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. This project oversight and quality assurance role is covered by the accredited entity fee provided by the GCF.
2. UNDP has been selected by the Government to act as the Delivery Partner for this project. UNDP delivers the following GCF-specific oversight and quality assurance services:(i) day to day project oversight supervision covering the start-up and implementation; (ii) oversight of project completion; and (iii) oversight of project reporting. A detailed list of the services is presented in the table below.

| **Function** | **Detailed description of activity** | **Typical GCF fee breakdown** |
| --- | --- | --- |
| **Day-to-day oversight supervision** | 1. **Project start-up:**
* In the case of readiness proposals, if needed assist the NDA and/or government partners prepare all the necessary documentation for approval of a readiness grant proposal
* Prepare the Project Document with the government counterparts
* Technical and financial clearance for the Project Document
* Organize Local Project Appraisal Committee
* Project document signature
* Ensure quick project start and first disbursement
* Hire project management unit staff
* Coordinate/prepare the project inception workshop
* Oversee finalization of the project inception workshop report
1. **Project implementation:**
* Project Board: Coordinate/prepare/attend annual Project Board Meetings
* Annual work plans: Quality assurance of annual work plans prepared by the project team; issue UNDP annual work plan; strict monitoring of the implementation of the work plan and the project timetable according to the approved readiness proposal
* Prepare GCF/UNDP annual project report:  review input provided by Project Manager/team; provide specialized technical support and complete required sections
* Procurement plan: Monitor the implementation of the project procurement plan
* Supervision missions: Participate in and support in-country GCF visits/learning mission/site visits; conduct annual supervision/oversight site missions
* Risk management and troubleshooting: Ensure that risks are properly managed, and that the risk log in Atlas (UNDP financial management system) is regularly updated; Troubleshooting project missions from the regional technical advisors or management and programme support unit staff as and when necessary (i.e. high risk, slow performing projects)
* Project budget: Provide quality assurance of project budget and financial transactions according to UNDP and GCF policies
* Performance management of staff: where UNDP supervises or co-supervises project staff
* Corporate level policy functions: Overall fiduciary and financial policies, accountability and oversight; Treasury Functions including banking information and arrangements and cash management; Travel services, asset management, and procurement policies and support; Management and oversight of the audit exercise for all GCF projects; Information Systems and Technology provision, maintenance and support; Legal advice and contracting/procurement support policy advice; Strategic Human Resources Management and related entitlement administration; Office of Audit and Investigations oversight/investigations into allegations of misconduct, corruption, wrongdoing and fraud; and social and environmental compliance unit and grievance mechanism.
 | 70% |
| **Oversight of project completion** | * Initiate, coordinate, finalize the Project Completion Report, Final Independent Evaluation Report and management response
* Quality assurance of final evaluation report and management response
* Independent Evaluation Office assessment of final evaluation reports; evaluation guidance and standard setting
* Quality assurance of final cumulative budget implementation and reporting to the GCF
* Return of any un-spent GCF resources to the GCF
 | 10% |
| **Oversight of project reporting** | * Technical review of project reports: quality assurance and technical inputs in relevant project reports
* Quality assurance of the GCF annual project report
* Preparation and certification of UNDP annual financial statements and donor reports
* Prepare and submit fund specific financial reports
 | 20% |
|  | **TOTAL** | **100%** |

 |
| **B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)**  |
| *Explain why the project/programme requires GCF funding, i.e. Why is the project/programme not currently being financed by public and/or private sector? Which market failure is being addressed with GCF funding? Are there any other domestic or international sources of financing?* *Explain why the proposed financial instruments were selected in light of the proposed activities and the overall financing package. i.e. What is the coherence between activities financed by grants and those financed by reimbursable funds? How were co-financing amounts and prices determined? How does the concessionality of the GCF financing compare to that of the co-financing? If applicable, provide a short market read on the prevailing of the pricing and/or financial markets for similar projects/programmes.**Justify why the level of concessionality of the GCF financial instrument(s) is the minimum required to make the investment viable. Additionally, how does the financial structure and the proposed pricing fit with the concept of minimum concessionality? Who benefits from concessionality?* 1. The total annual budget for climate adaptation and resilience activities in B&H related to flood risk management averages US$40 Million while the damages due flooding from a single event is expected to reach US$800 Million by mid-century due to climate change. It is important to note that donor grants including post 2014 recovery investments which will not be available from 2019 and investments in flood risk management will barely cover maintenance of existing infrastructure. The shortfall in expenditure on climate change adaptation is due to the lack of financial capacity of the B&H Government to fund such activities without assistance. Bosnia can access loans to undertake structural measures and will take a loan with EIB to finance the highest priority structural measures, but it needs technical assistance through timely complementary intervention to shift the current paradigm from piecemeal, project-based efforts to the adaptation alternative which will bring long-term transformative change. In so doing the large expected financial burden of damages and losses due to climate change impact of extreme hazardous flood events can be avoided in the long-term.
2. GCF investment will provide for the technical assistance and capacity building to ensure that flood risk management is undertaken in an integrated manner that secures the lives, livelihoods and assets of the most vulnerable people in B&H and reduces their susceptibility to climate change-induced flood risk that they have limited coping mechanisms to withstand GCF investment will not result in revenue generation or financial returns to private sector. GCF will finance public goods and will assist the government of B&H to meet its obligations providing flood protection and early warning services to vulnerable communities in the face of climate change. Thus, GCF funding will cover additional costs of the Government associated with the increasing climate change impacts and risks, including additional monitoring of torrential catchment, where flood risk is increasing, and which is currently missing from the monitoring network, enhanced climate data and information for effective FFEWS, enhanced capacities of public sector to deliver climate information services, enhanced capacities to integrate climate risks into the design and implementation of structural and non-structural flood protection measures, enhanced awareness of climate risks and preparedness among the vulnerable communities. These project activities are essential for improving climate risk information availability to the general public, improving community resilience and strengthening institutions with mandates to strategically manage climate risks.

*In your answer, please consider the risk sharing structure between the public and private sectors, the barriers to investment and the indebtedness of the recipient. Please reference relevant annexes, such as the feasibility study, economic analysis or financial analysis when appropriate.* |
| **B.6. Exit strategy and sustainability (max. 500 words, approximately 1 page)** |
| *Explain how the project/programme sustainability (financial, institutional, social, gender equality, environmental) will be ensured in the long run after project closure, including how the project’s results and benefits will be sustained.* *Include information pertaining to the longer-term ownership, project/programme exit strategy, operations and maintenance of investments (e.g. key infrastructure, assets, contractual arrangements). In case of private sector, please describe the GCF’s financial exit strategy through IPOs, trade sales, etc.**Provide information on additional actions to be undertaken by public and private sector or civil society as a consequence of the project/programme implementation for scaling up and continuing best practices.* 1. The project’s sustainability and exit strategy is rooted in the key elements of design and implementation. The following assures long-term sustainability beyond the project implementation period:
2. **Investment in human resources and institutions**: the project is focused on strengthening institutions that will have skilled human resources, information, tools and technologies to effectively pursue their mandate in climate risk management. The project investments will improve availability of risk information and create effective response mechanisms. This project will incorporate lessons learned and benefit from the existing collaborative relationship between UNDP and all of the key flood risk management partners and will foster strong partnerships with and among relevant institutions to ensure shared goals and shared vision beyond the project. The project will help ensure sustainability by supporting all relevant government ministries in line with government policy, programme and strategic priorities. The establishment of methods and tools for developing and implementing flood risk management strategies, the introduction of risk assessment methods, standards, tools, guidance and regulatory documents make this project highly replicable within B&H (e.g. the introduction of non-structural intervention design, implementation and O&M). The embedding of risk assessment, risk management and risk reduction methods for flood hazards will be particularly important. Furthermore, this project has been developed with full awareness of other climate risk and flood risk related projects in the region. This makes this project highly complementary, and potentially replicable to other projects regionally. As detailed above, this project plans to attract private sector investment – particularly in cost sharing regimes for long-term O&M for hydrometric equipment. Hence, by the end of the project, the activities and monitoring network will be self-sustaining into the future. In addition, all activities will be conducted in ways that empower local stakeholders. Capacity building programs set up will ensure the ongoing transfer of skills to create knowledge sharing and better climate services for the future.
3. **Investment in development of long-term climate risk financing:** The project is developing fully-articulated long-term municipal risk management plans for 10-12 highest risk municipalities and 1 canton, and sector resilience plans for highest risk critical infrastructure sectors, which will set the direction for systematic risk informed sectoral flood risk management in the future. In addition, the project will develop long-term risk financing mechanisms and investment plans. Cost-benefit assessment methodologies and a socio-economic risk model will be embedded into the identification and design of climate proofed structural and non-structural measures and will form the basis of municipal investment planning. Risk financing and risk transfer mechanisms to be developed and implemented by the project, will ensure that financial and economic resources are identified and available after GCF assistance ends and will ensure cost-effective financing of flood risk reduction measures, and investments over time.
4. **Investment in social and economic assets of vulnerable communities:** The damaging effects of extreme events and changes in weather patterns exacerbated by climate change will limit the potential for socioeconomic development in vulnerable and isolated communities. However, investing in climate resilient structural and no-structural measures can help reduce the vulnerability of these areas. Flood defences that are “climate proofed” will have structural stability and functional longevity in the face of climate changes. Furthermore, the development and implementation of climate-proofing standards for the design and construction of critical infrastructure, will strengthen the reliability of infrastructure and, in turn, reduce the impact on communities during flood events. This project will embed climate risk information and enhancing the capacity to prioritize, budget, locate and deploy critical infrastructure that is functionally stable in the face of climate hazards. This will help ensure the financial sustainability of critical infrastructure climate proofing efforts for the long-term.
5. **Investment in natural capital:** To achieve long-term resilience and safeguard investments and communities against climate induced disasters and slow onset changes in weather patterns, functional and protected watersheds. Creating stable and well-managed natural capital is an investment in long-term sustainability of social and economic assets that the GCF project will create in the face of climate change.
6. The GCF project will develop an integrated river-basin development approach and will implement some of the structural and non-structural intervention measures in selected high priority areas. These will provide strong replicability impact as they will establish the methods, standards and approaches that will work across B&H and define these in guidance, legal and policy documents. The potential for scaling up these approaches is therefore significant. There is at least a threefold replication potential for the EbA measures, community based EWS, municipal risk management plans, municipal insurance schemes etc. Having in mind institutional and geographical similarities of all Western Balkans countries, there is a regional replication potential for a national FF EWS and O&M schemes.
7. **Post-project O&M:** Cofinancing from government and private sector will include budgeted O&M costs for a period well beyond the project duration. In terms of maintenance of the expanded hydrometric network, during and after the end of the project (please refer to co-funding letter, (Annex ??).
8. In addition, the project will assist relevant government institutions in developing long-term O&M financial planning to ensure hydrometric network equipment, FFEWS and all systems implemented under the project will be maintained in the long-term. The project interventions have been also designed to strengthen financing and implementation of O&M for implemented structural and non-structural measures in the long-term. To this end, the project will address current and future requirements for maintenance by developing and embedding CBA, asset management and portfolio risk management methods that ensure the systematic identification and prioritisation of the maintenance costs over the lifespan of the infrastructure.
9. Specifically, the project will provide the following safeguards to financial sustainability:
* Long-term investment planning for FRM including identification of long-term O&M financing needs
* Review budgetary requirements for long-term maintenance of hydrometric network and structural and non-structural interventions based on climate risk information to be developed by the project, and development of a financing model for the long-term maintenance (using cost-benefit modelling to support the financing model)
* Strengthening the approach to O&M for a harmonised O&M framework by implementing capacity development in O&M of the optimized hydrometric network
* Improve private sector involvement and partnership in the area of flood risk management
* Development of risk financing and risk transfer mechanisms
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| **FINANCING INFORMATION** |
| **C.1. Total financing**  |
| **(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)** | **Total amount** | **Currency** |
| Enter amount | Options  |
| **GCF financial instrument** | **Amount** | **Tenor** | **Grace period** | **Pricing** |
| (i) | Senior loans | Enter amount | Enter years | Enter years | Enter % |
| (ii) | Subordinated loans | Enter amount | Enter years | Enter years | Enter % |
| (iii) | Equity | Enter amount |  |  | Enter % equity return |
| (iv) | Guarantees | Enter amount | Enter years |  |  |
| (v) | Reimbursable grants | Enter amount |  |  |  |
| (vi) | Grants | Enter amount  |  |  |  |
| (vii) | Results-based payments | Enter amount |  |  |  |
| **(b) Co-financing information** | **Total amount** | **Currency** |
| Enter amount | Options |
| **Name of institution** | **Financial instrument** | **Amount** | **Currency** | **Tenor & grace** | **Pricing** | **Seniority** |
| Click here to enter text. | Options | Enter amount | Options  | Enter yearsEnter years | Enter% | Options |
| Click here to enter text. | Options | Enter amount | Options  | Enter yearsEnter years | Enter% | Options |
| Click here to enter text. | Options | Enter amount | Options  | Enter years Enter years | Enter% | Options |
| Click here to enter text. | Options | Enter amount | Options  | Enter yearsEnter years | Enter% | Options |
| 1. **Total financing**

**(c) = (a)+(b)** | **Amount** | **Currency** |
| Enter amount | Options  |
| **(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)** | *Please explain if any of the financing parties including the AE would benefit from any type of guarantee (e.g. sovereign guarantee, MIGA guarantee).* *Please also explain other contributions such as in-kind contributions including tax exemptions and contributions of assets.* *Please also include parallel financing associated with this project or programme.*  |
| **C.2. Financing by component**  |
| *Please provide an estimate of the total cost per component and output as outlined in section B.3. above and disaggregate by source of financing. More than one co-financing institution can fund a single component or output. Provide the summarised cost estimates in the table below and the detailed budget plan as annex 4.*The Government of the B&H is requesting GCF funds to cover the additional costs (required due to the impacts of climate change) of technical assistance and capacity building for enhanced flood risk knowledge, monitoring, forecasting and warnings, for scaling up ecosystem-based and other non-structural risk management approaches, and for facilitating climate risk-informed flood protection investments (Activities 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2). The Governments of FB&H and RS will co-finance from the Entity budget funds the upgrading and maintenance of the hydrometeorological observation network, implementation of FFEWS, regulatory improvements, resilience and investment planning and implementation of non-structural flood risk reduction measures (Activities 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2). Implementation of climate-proof structural risk reduction measures (Activity 3.3.) will be co-financed through loan resources (EIB). Private sector (HPPs) will co-finance enhanced flood risk monitoring, forecasting and warning and structural risk reduction investments (Activities 1.1, 1.2.1.3, 1.4, 2.2).*This table should match the one presented in the term sheet and be consistent with information presented in other annexes including the detailed budget plan and implementation timetable.* *In case of a multi-country/region programme, specify indicative requested GCF funding amount for each country in annex 17, if available.* |
| **C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)** |
| C.3.1 Does GCF funding finance capacity building activities? | Yes [x]  No [ ]  |
| C.3.2. Does GCF funding finance technology development/transfer? | Yes [x]  No [ ]  |
| *If the project/programme is expected to support capacity building and technology development/transfer, please provide a brief description of these activities and quantify the total requested GCF funding amount for these activities, to the extent possible.* |

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| **EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA**  |
| *This section refers to the performance of the project/programme against the investment criteria as set out in the GCF’s* [*Initial Investment Framework*](https://www.greenclimate.fund/documents/20182/239759/Investment_Framework.pdf/eb3c6adc-0f24-4586-8e0d-70aa6fb8c3c8)*.*  |
| **D.1. Impact potential (max. 500 words, approximately 1 page)** |
| *Describe the potential of the project/programme to contribute to the achievement of the Fund’s objectives and result areas. As applicable, describe the envisaged project/programme impact for mitigation and/or adaptation. Provide the impact for mitigation by elaborating on how the project/programme contributes to low-emission sustainable development pathways. Provide the impact for adaptation by elaborating on how the project/programme contributes to increased climate-resilient sustainable development. Calculations should be provided as an annex. This should be consistent with section E.2 reporting GCF’s core indicators.* 1. This project has the potential to prevent loss of life, property and critical infrastructure assets for 924,453 people (26% of the population). The project is targeting those most vulnerable to flood risk and the impact potential of the enhanced flood risk management and intervention measures is high and will safeguard vulnerable communities and their economic assets from these climate induced disasters. In addition, community resilience and livelihoods will be increased through the EbA strategies which will additionally enhance the environmental and ecological protective functions of the river basins.
2. The project will increase resilience and enhance livelihoods of the most vulnerable segments of population, particularly women, children and the elderly. Physical damage and economic losses due to impacts of extreme flood disasters will decrease by at least x% (calculated against baseline Damage and Loss) . Nationally, economic losses from extreme flood hazards is $800 Million USD annually. This is a considerable financial burden and development setback for a middle-income country. Through the project interventions that will enable climate change adaptation in the long-term, the project will help reduce these levels of economic damages.
3. The XX non-structural measures to be implemented by the project will have the effect of averting $XXXXX USD in annual economic damages in the target communities, impacting XXX,000 beneficiaries and protecting XX ha of land from flooding.
4. The XX structural measures to be implemented by the project will have the effect of averting $XXXXX USD in annual economic damages in the target communities, impacting XXX,000 beneficiaries and protecting XX ha of land from flooding
5. Increased efficiency of HPP will results in increased electricity generation from RES of xxx GW, which will reduce emissions for xxx t CO2
6. It is expected that the proposed project adaptation interventions, will provide essential climate resilience to the most vulnerable, enable them to participate more effectively in a productive society and will protect people, property and community assets from floods. The gender-specific and vulnerability needs of people at risk of flooding will be considered throughout the project in terms of policies and regulations, identification, prioritization, design and implementation of intervention measures, through the use of cost-benefit analysis which includes socio-economic indicators based on gender and vulnerability disaggregated socio-economic data.
7. The project will implement floodplain zoning policy which will be based on the matching of permitted landuse to category of flood risk with vulnerability of occupants/users of the land as a key consideration of permissible development (based on the principle of avoidance of high risk areas). This will have a direct impact in terms of protection of the most vulnerable from exposure to flood risk.
8. The project design has been informed through consultation with various stakeholders and has sought to reflect the gender differentiated aspects of flood risks. Information on the needs of vulnerable groups (women, ethnic minorities, disabled, elderly) has been collected and will continue to be collected through ongoing and inclusive stakeholder engagement and the embedding of tools and methodologies for the collection of gender sensitive socio-economic data for development of the flood socio-economic risk and vulnerability model to be developed under output 1.2. Through a Gender Action Plan (GAP), which addresses the needs of not only women and other vulnerable groups, concrete actions will assist in fulfilling BiH’s commitment to gender equity and international obligations on gender responsive climate change and disaster risk measures. The GAP will draw on lessons learnt from the UNDP Vrbas project include the need for gender responsive planning and implementation. It will include gender analysis as part of risk and vulnerability and support capacity building of staff and implementing partners to collect sex and age disaggregated baseline data; develop specific performance indicators to monitor, report or track progress, inform decision making; and strengthen accountability on commitments for gender equality. For example, the project will seek to mainstream gender into the process of developing community flood response plans and CBEWS to ensure women’s involvement in all stages of the process:
* Planning: Take women’s opinion, experience, skills and knowledge into account when developing the community flood response plans and CBEWS
* Design: Prioritize and ensure women participation in all stages from project planning to implementation; ensure provision enhance the women’s capacity.
* Implementation of projects: Ensure women’s participation in implementation
* Monitoring & Evaluation: Balance participation to make M&E more effective
 |
| **D.2. Paradigm shift potential (max. 500 words, approximately 1 page)** |
| *Describe the degree to which the proposed activity can catalyze impact beyond a one-off project or programme investment. Describe the following, if applicable:* * *Potential for scaling up and replication*
* *Potential for knowledge sharing and learning*
* *Contribution to the creation of an enabling environment*
* *Contribution to the regulatory framework and policies*
* *Overall contribution to climate-resilient development pathways consistent with relevant national climate change adaptation strategies and plans*
1. The project will change the paradigm of existing flood risk management in BiH in the face of climate change through enhanced institutional capacity at all levels, improved climate information and understanding of risk, mainstreaming non-structural ecosystem-based risk management approaches, engaging private sector and climate-proofing public and private investments in flood risk management. The baseline pathway will lead to progressively increasing risk of catastrophic loss of life, property and economic assets and livelihoods throughout B&H. The alternative pathway reduces the risk to 924,453 people (26% of the population) through introduction of an integrated approach, which will embed new skills, methods and technologies to assess the flood hazard, risk and vulnerability, to better understand the risk, and to develop a range of risk reduction and management strategies.
2. The project will enhance the capacity for flood early warning and implement a national sustainable FFEWS resulting in improved warning times and reduced losses. In addition, the project is introducing innovations by empowering local communities to undertake local disaster risk reduction (DRR) and response measures, that complement the centralized EWS system. The project will enhance the capacity to identify, plan and implement long-term flood risk management strategies at the basin and sub-basin scale by introducing combined structural and non-structural methods including EbA measures. Long-term flood risk investment planning will also be enhanced, and policy and legislation strengthened to enable long-term sustainability of interventions, by engaging the private sector to shoulder some of the increasing costs of required observation networks and risk information and early warning services. Also, the private sector will be informed about their impact on increased flood risk and potential role in flood alleviation and will incorporate FRM activities into their regular operations. It is developing the capacity and systems whereby the current gap between the demand and supply on vital climate risk information is closed. The project will result in improvements in watershed ecosystems and restoration of ecological function through the use of EbA strategies which will reverse the deleterious effects of catchment degradation and enhance livelihoods of rural communities. The Theory of Change section of this proposal demonstrates how the current barriers can be removed through the project activities to achieve transformational change.
3. The project will transform the existing flood risk management practices in B&H by shifting from an ex-post facto i.e. reactionary post-disaster recovery approach to ex-ante i.e. risk informed preparedness approach based on adequate climate information and risk knowledge. The following elements of the proposed project constitute paradigm shift:
4. innovation and technology transfer: the project will scale up state-of-the-art technologies in floods monitoring, modelling, forecasting and early warning, including “last mile” communication, as well as identification, selection and implementation of EbA measures. These technologies have been successfully tested in B&H and have been recommended for replication across the country;
5. mainstreaming climate risk management into policy and enabling environment;
6. private sector engagement in climate risk management: the project will engage with hydropower and agricultural sectors on climate information management and on the design and implementation climate-resilient structural and non-structural measures combining benefits of flood protection, agriculture and hydropower generation;
7. Transformation of the management of HPP operations through development climate responsive operating rules, and sector-specific operating models will increase their resilience and increasing their generating capacities and operating efficiencies. The inclusion of dams and reservoirs in flood hazard, risk and forecasting models, and the development of HPP operational models, will significantly transform the flood management and response strategies that are implemented in all basins in BiH in the future.
8. learning and knowledge sharing: the project will improve the availability and quality of weather and climate information and the use of this information by climate-sensitive sectors; the project will prioritize capacity building of national and local entities responsible for water management;
9. catalyzing change in DRR decision making and investment flows from reactionary disaster response towards informed long-term resilience building;
10. scaling up ecosystem-based adaptation and non-structural solutions: the project will promote nature-based solutions to flood management and the concepts of "making room for water" and "living with floods" among decision makers and communities.
11. addressing long term financial sustainability of FFEWS O&M: the project will propose cost effective technological solutions to FFEWS and flood risk reduction, support setting up budgetary and financial instruments for sustainable O&M.
12. assisting the government in developing risk transfer instruments (insurance, capital market instruments etc.);
13. addressing a pressing, but yet neglected need of B&H to deal with the torrential watercourses which have the highest casualty rate of all weather-related disasters in B&H, as well as very high economic costs.

Potential for Knowledge Sharing and learning1. The project has particularly strong emphasis on knowledge generation, learning and information sharing/dissemination. First, the project will enhance and introduce new hazard and risk assessment modelling and mapping tools and generate definitive flood hazard, risk and vulnerability maps for all basins in BiH. The project will train WA and HMI staff in the use and maintenance of these new tools and technologies. Furthermore, the project will develop damage and loss accounting methods, tools, and technologies.
2. The project is generating climate risk information which will be used to increase knowledge and provide information for all stakeholders including decision makers in progressing with climate resilient development. To enable wide reaching use and application of climate risk information, the project is developing data sharing protocols to enable data/information exchange between water and other sectors relevant for integrated water management and climate change (agriculture, forestry, environment, spatial planning and hydro-energy sectors).
3. To enable access and sharing of climate risk information, a centralised information system and knowledge sharing platform will be developed, based on the project SDI and GeoPortal established by the Vrbas project, which comprises GIS database for all spatial data related to the basin flood risk management. The GeoPortal is a GIS-based tool which integrates various spatial socio-economic data with the flood hazard and flood risk maps, vulnerability maps including loss/damage models, real time hydro meteorological data, torrents sensitivity model, cadaster of torrents etc. The database was designed to be expandable to include other basins. The flood hazard information system to be developed under the GCF project will consist of an integrated e-Library, databases (including the GIS database previously noted), information systems and knowledge portal (web knowledge portal to increase awareness, provide interactive hazard maps, with integration with social media and possible mobile application to increase community engagement and allow two-way flow of information. The GeoPortal will serve the municipalities for local level flood risk management to interact with communities through the PGIS tool within the platform and will be placed in the ownership of the entity and municipal civil protection units who will have responsibility for maintenance and update of the system in the future. In addition, UNDP has developed a Disaster Risk Analysis System which is an online data sharing platform for all disaster data. The GCF project will contribute to the development of the platform and the embedding of flood hazard and risk information as well as expansion of the platform functionality to provide the specific functionality that will be required or using the flood hazard and risk information.
4. As required by the Sendai Framework “to establish and strengthen government coordination forums composed of relevant stakeholders at the national and local levels, such as national and local platforms for DRR”. The flood risk management platform will be a country-wide mechanism for cross-entity, multi-sectoral and inter-disciplinary coordination and policy guidance on flood risk management and risk reduction with public, private and civil society participation involving all concerned entities within BiH. The FRM platform will contribute to such coordination forums. The data sharing platform will coordinate all stakeholder engagement at the entity and local level and will pursue an all-of-society engagement in FRM. It would also have mechanisms for effective dialogue with Local Platforms in place in order to influence, encourage and coordinate local action. In parallel, the country-wide Platform will seek to understand local priorities and issues.
5. Under Activity 2.4, the project will implement country-wide training programmes in the technical and practical areas of flood risk management for practitioners, decision-makers, communities, emergency responders based on previous institutional capacity needs and gap assessment of state, entity. The GCF project will update the capacity development plan and implement its main recommendations. This will include, adding climate risk management and flood risk management sessions to the trainings for all FRM practitioners, to improve the technical capacity and knowledge base for climate risk management and a long-term adaptation planning for flood risk management, introduction of advanced tools and methods in FRM that are scientifically sound and evidence-based, examination of the feasibility of establishing a University MSc. course in CR-FRM at local Universities, develop training plans for each technical area of expertise related to climate-induced flood risk assessment and management, and consolidation into an overall revised capacity development plan.
6. The project will embed training in FRM and the use of climate risk information in the relevant entity training institutions to improve the technical capacity and knowledge base for hazard and flood risk management, based on a Training of Trainers (ToT) in the below topics through the development and establishment of training curricula, and rosters of trainers and the development of mechanisms for delivering long-term capacity development such as development of key partnerships with universities and other academic research institutions that can be forged to ensure long-term FRM training.
7. The project will implement a knowledge management (KM) framework (See Chapter XX of the FS for detailed description of the KM framework). It will have the following key aims:
* To ensure access to data and information generated by the project as well as long-term access to data on which stakeholders’ essential institutional functions rely and/or data and information that can be used for evidence for policy and practice advice **(connecting people to information and knowledge)**
* Connect key stakeholder groups, practitioners and experts to ensure that key learning and experience is shared within and across sectors **(connecting people to people)**
* Ensure staff in the stakeholder institutions know about effective and relevant KM techniques so that knowledge is shared, captured and retained by the institutions and shared within and across the sector **(institutional KM improvement)**

By developing and promoting KM as a tool for continuous and sustainable improvement and ensuring that KM tools generated by the project will be systematically used and maintained within the stakeholder institutions **(Developing and embedding KM tools and practices)**.**Contribution to the enabling environment**1. The project is creating three main categories of enabling conditions for climate resilient communities and their physical assets. First, innovative tools and methods will be introduced for hazard, risk and vulnerability assessment, modelling and mapping to enhance WBIF modelling and mapping to produce definitive hazard maps will be provided for key flood hazard and risk information that will enable climate resilient strategies, policies and practices in all sectors in BiH. Development of sector specific operational and flood forecasting modelling tools and products will enable sector development along climate resilient development pathways, for the HPP and agriculture sectors.
2. The project will establish a fully-integrated flood forecasting and early warning system across the country, using state-of-the-art hydrometeorological and agrometeorological monitoring, modelling (hydrological and hydraulic models, DEM, etc.), forecasting (meteorological forecasting, use of ground weather radar, satellite imagery and aerial photography), EWS platform, telecommunications (GMS, internet, SMS, CCTV, TV and radio, walkie talkies, etc.) and information (GIS, web-based information portal and meta-databases, etc.) technologies. It will also create new climate and weather products (e.g. climate advisories) for various users (HPP and agriculture. Participatory “Last Mile” communication solutions tailored to the needs of local communities, including CBEWSs and demonstration of cost-effective risk reduction and community resilience measures through the combination of structural and non-structural protection measures are relatively new for BiH.
3. Furthermore, the project will combine best available science and local knowledge for vulnerability assessment, hazard and risk mapping ad will introduce appraisal-led flood risk management and investment planning processes at river basin and community levels by introducing cost-benefit analysis methods and tools to embed climate-risk informed, appraisal-led methods of strategic planning for Flood Risk Management and climate change adaptation and investment planning thus enabling risk informed budgeting and resource allocation. Furthermore, technologies will be utilized to create efficiency in this process.
4. The project will enable the application of EBA and non-structural solutions by embedding the new methodologies and national technical guidance documents to ensure long-term incorporation of such methods alongside more traditional structural measures.
5. Thirdly, the project will create the conditions to unlock both public and private sector finance for scalable investments into flood risk reduction. Municipal investment plans based on cost-benefit analysis and appraisal-led identification of climate-resilient flood risk management investment requirements will identify both public and private finance mechanisms. Such investment planning will enable evidence-based advocacy for public sector investment into climate-resilient FRM.
6. The project will develop a strategy and tools for private sector engagement in long-term climate-proof risk management and provide technical assistance to financial institutions to mainstream climate change risks into their business models to manage the effects. The project will develop public-private partnerships for long-term implementation of risk financing and risk transfer mechanisms for entity-level flood risk financing and resilience strategy. The project is developing such risk financing and transfer mechanisms based on detailed socio-economic risk, damages and losses assessment.
7. Importantly, the project is scaling up and implementing the flood insurance scheme developed for Vrbas alongside other risk financing and transfer mechanisms products and tools to be identified. This will potentially include, the introduction of micro-insurance for agricultural producers, entrepreneurs and small and medium-sized enterprises in different industries; creating a regional disaster risk insurance micro-insurance program to increase the degree of diversification of risk; introduction of catastrophe bonds to transfer disaster risk to the capital market; sector-specific natural disaster (including floods) insurance product packages for insurance in each of the defined sectors, based on studies to estimate cost-benefit

Contribution to Regulatory Framework and policies1. The project will revise and implement a number of protocols, and SOPs, and Codes of Conduct for each of the institutions responsible for FRM and FFEWS. These will include, SoPs for “last-mile” warning and dissemination and communication system, Protocols and SOPs on data generation, data management for FRM, data sharing protocols and platform for climate data, across all government institutions in both entities including spatial Data Infrastructure to be developed/enhanced to ensure climate data flow/exchange.
2. The project will enhance the existing legislative and regulatory FRM framework by mainstreaming the climate-induced flood risk management into sectoral planning for agriculture, forestry, environment, hydropower, critical infrastructure and spatial planning.
3. A draft floodplain development policy based on detailed climate-risk informed flood hazard, risk and vulnerability maps, will be scaled up to spatial planning and development control for all other basins. This policy will underpin the floodplain planning and development control to achieve basin-wide climate resilience to increasing flood risks and will result in a paradigm shift from uncontrolled floodplain development to climate-risk informed controlled floodplain usage. Hence the project will develop the country-wide floodplain zoning policy and legislation, based on hazard, risk and vulnerability mapping.
4. The project will develop strategies for the management of critical infrastructure in the floodplain in order to improve the resilience of critical infrastructure, based on a shared, consistent, proportionate and risk-based approach to reducing vulnerability over time, and embedding flood resilience measures into the planning, design, construction and long-term management of critical infrastructure. The project will enhance/updated CR-informed methodologies, standards for infrastructure design, construction material, use and maintenance of all categories of critical infrastructure.
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| **D.3. Sustainable development (max. 500 words, approximately 1 page)** |
| *Describe the wider benefits and priorities of the project/programme in relation to the Sustainable Development Goals and provide an estimation of the impact potential in terms of:* * *Environmental co-benefits*
* *Social co-benefits including health impacts*
* *Economic co-benefits*
* *Gender-sensitive development impact*
1. The project will deliver sustainable development co-benefits including ecosystem services protection, income generation, gender sensitive livelihood enhancement and job creation, and improved resilience of physical assets of communities. The main ***economic co-benefits*** from the project investment are derived from the avoided socio-economic losses for flood disasters. Under climate change, economic losses from single extreme hazard events are expected to reach US$800 Million[[5]](#footnote-5) which could significantly impact and reverse socio-economic development gains of B&H. Avoided losses to sectors such as agriculture and hydropower could be significant. The project interventions that provide sector-specific risk information and risk management strategies will be important for the long-term development of the hydropower sector; such information as water flow forecasts will be critical for planning, risk information will assist with optimising operations and avoid unplanned and ill-timed releases of water during flood events that have deleterious impacts downstream. Climate risk informed planning of the hydropower sector is important nationally - secure hydropower development will help continue a shift to clean energy. Climate risk information will also safeguard assets such as transportation (roads and bridges) which are critical to the economic development and functioning of communities. Economic co-benefits will also be realised in the agriculture sector which comprises 7.8% of GDP, but on which 20% of population relies and which is at high risk from flood hazards. Prevention of agricultural losses, coupled with enhanced agricultural livelihoods through agro-forestry opportunities, will result in overall enhanced productivity of the agricultural sector.
2. This project will directly benefit the most vulnerable parts of the population and will have significant benefits to ***gender equity***. The project will engage local gender experts to ensure that gender considerations are a key part of any consultation or activity planning process. Flooding and disasters in general, impact women disproportionately. In B&H there are significant gender inequalities, fuelled by traditional gender roles. Men are more than twice as likely as women to be employed, self-employed or engaged in contract work. For effective flood risk management, the project will ensure that women are primary stakeholders and will therefore need to be involved in decisions on the types of solutions that are implemented. The project will therefore safeguard local communities and their assets from climate disasters with particular attention to women, and other vulnerable groups.
3. ***Environmental co-benefits*** mainly relate to EbA strategies such as riparian plantings and agro-forestry which will provide water retention functions; regulation of hydrological flows (buffer runoff, soil infiltration, groundwater recharge, maintenance of base flows); natural hazard mitigation (e.g. flood prevention, peak flow reduction, soil erosion and landslide control); increased streambed stabilization resulting in decreased erosion, habitat preservation, and reforestation. The project will increase the resilience of vulnerable people, properties, infrastructure and economic sectors. Further the project will enhance the resilience of forest ecosystems, including protected areas as well as will protect streams, reservoirs and lakes from siltation and thus, aquatic fauna from increased turbidity. The project is addressing climate-induced flood risks by introducing FRM and CCA measures. In general, the project is providing key environmental protection benefits through the introduction of disaster risk reduction, climate change adaptation and protection of people, property and the environment from major hazards. In the long-run the project will bring about significant environmental benefits by increasing the country’s resilience to climate-induced flood disasters and thus, enabling its population to better protect national assets, including environmental assets (land, forest and land resources).
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| **D.4. Needs of recipient** **(max. 500 words, approximately 1 page)** |
| *Describe the scale and intensity of vulnerability of the country and beneficiary groups and elaborate how the project/programme addresses the issue (e.g. the level of exposure to climate risks for beneficiary country and groups, overall income level, etc.). Describe how the project/programme addresses the following needs:* * + *Vulnerability of the country and/or specific vulnerable groups, including gender aspects (for adaptation only)*
	+ *Economic and social development level of the country and the affected population*
	+ *Absence of alternative sources of financing (e.g. fiscal or balance of payments gap that prevents government from addressing the needs of the country; and lack of depth and history in the local capital market)*
	+ *Need for strengthening institutions and implementation capacity*
1. Bosnia and Herzegovina (B&H) is a middle-income country with an estimated 3.5 million inhabitants. The 1992-1995 war has had a devastating impact on its human, social and economic resources, leading to enormous challenges of the post-war reconstruction and economic and social recovery. This challenge has been further compounded by the transition towards market economy requiring structural reforms and improved governance.
2. Due to the war time devastation and the unsuccessful transition of economy, a large part of Bosnia and Herzegovina’s population still lives in poverty. Between 2000 and 2017, Bosnia and Herzegovina’s HDI value increased from 0.672 to 0.768, an increase of 14.4 percent. However, when the value is discounted for inequality, the HDI falls to 0.649, a loss of 15.5 percent due to inequality in the distribution of the HDI dimension indices. The Human inequality coefficient for B&H is equal to 15.3 percent. B&H has a Gender Inequality Index value of 0.166, ranking it 37 out of 160 countries in 2017. The slow rate of the post-war economic recovery has been compounded by the negative impacts of climate change on key sectors such as agriculture, energy (hydropower), the environment, in particular, due to the increased frequency and magnitude of flood disasters, which have tripled in the last decade. In 2010 the second largest flood on record caused damages of US$ 200 million or approximately 1% of GDP. In May 2014, B&H experienced its worst flooding in 150 years which resulted in 26 deaths and US$2.7 Billion worth of damages (15% of GDP).
3. The most damaging floods have had devastating impacts on the most vulnerable groups including the rural poor, war returnees and displaced persons. Based on indicative information from local authorities, a significant proportion of the flood victims belong to one of these vulnerable groups. For example, in several municipalities in the Vrbas basin up to 100% of affected households have been identified as war returnees or displaced persons and are least equipped to cope with and recover from floods. This has led to a deepening of poverty in flood affected areas. Climate change and climate-induced floods have a significant impact on the most important economic sectors such as agriculture, water management, hydropower, and limits country’s already low adaptive capacity.
4. **Agriculture** employs approximately 20% of total work force and 46% of land use in B&H. It is the most vulnerable sector to climate change. Agricultural losses due to floods can be substantial depending on the timing of the flood during the growing period. In addition, agricultural land suffers from pollution following floods and have to be left uncultivated until rehabilitated. In torrent catchments, the sediment load and debris carried by flash floods to agricultural land result in significant losses and abandonment of productive land.
5. The **hydropower** potential of B&H is estimated at 8,000 megawatts (MW), with technical potential of 6,800 MW and economic potential of 5,800 MW, placing the country among the leading hydropower production nations in Southern Europe. More frequent and intense rain events lead to intensive runoff and increased peak river flows and result in reduced power production and damage to hydropower infrastructure. During 2010 and 2014 flood events, hydro power plants (HPPs) didn’t adequately adjust their discharge and as a result largely worsened the flood damage. The Adriatic Sea Basin is particularly heavily modified with a large number of existing and planned hydropower dams and have already experienced an extensive variability in generation due to climate change. While generally designed and licenced to include flood alleviation functions, the HPPs in Adriatic Sea basin will require improved management through forecasting to minimize climate change impacts on their operations. Elsewhere in B&H, there is a need to operate HPPs taking into account climate induced flood risks.
6. Floods pose significant risks to the **critical infrastructure** sector in B&H, which comprises physical and information technology facilities, networks, services and assets. Damages or disruption to this infrastructure have serious impacts on health, safety, security and economic well-being of citizens and on the effective functioning of governments. Earlier floods have resulted in catastrophic damages to water infrastructure. Potential indirect effects of climate change on the water supply and sanitation situation include the impacts of energy interruptions, increasing the unreliability of piped water and sewerage services. Often located in low lying areas, water and wastewater utilities are particularly vulnerable to flooding. Water and debris can inundate the facility, thereby damaging equipment and structures and causing power outages. Such impacts can lead to various consequences including costly repairs, disruptions of services, hazardous situations for personnel and public health advisories.
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| **D.5. Country ownership** **(max. 500 words, approximately 1 page)** |
| *Please describe how the beneficiary country takes ownership of and implements the funded project/programme. Describe the following:* * *Existing national climate strategy*
* *Existing GCF country programme*
* *Alignment with existing policies such as NDCs, NAMAs, and NAPs*
* *Capacity of Accredited Entities or Executing Entities to deliver*
* *Role of National Designated Authority*
* *Engagement with civil society organizations and other relevant stakeholders, including indigenous peoples, women and other vulnerable groups*
1. The proposal development is initiated at the request of the Government of B&H and builds upon a very strong national ownership. B&H’s Climate Change Adaptation and Low Emission Development Strategy is a key policy document informing the national adaptation priorities. The strategy includes four outcomes covering climate change risks, vulnerabilities and opportunities for evidence-based policy development, effective institutional and regulatory framework, mainstreaming CCA approaches into decision making, and effective resourcing with timely and effective implementation. As a response to devastating 2014 floods, B&H Council of Ministers in November 2014 adopted an Action Plan for Flood Protection and River Management (2014-2021). The project is a direct response to the priorities that have emerged from the B&H National Communications, Climate Change Adaptation and Low Emission Development Strategy and Action Plan for Flood Protection and River Management, which indicate that problems of floods has been exacerbating in the last years and is expected to become progressively more serious due to climate change.
2. Strong country ownership is also demonstrated by significant government co-financing commitments. Co-financing support for the project will be provided by the Republika Srpska government through an EIB loan of US$21.5 Million for structural measures and additionally through US$34.5 Million of the public funds to be provided by both Governments of FB&H and RS for co-financing of EbA measures, the O&M of structural measures and hydromantic equipment.
3. To initiate the development of this project, a UNDP-GEF technical mission was undertaken in March 2018. During the mission consultations with the key national and regional authorities and a meeting with B&H GCF NDA have been conducted. The NDA, as well as other relevant institutions in charge of environment and water/flood management expressed an interest in developing a new GCF project proposal with UNDP on flood risk management based on the outcomes of the existing Vrbas River project. B&H has developed its first GCF country programme, which was submitted by NDA i May 2019. This project has been given priority in near-term programming.
4. Further consultations were conducted with all key stakeholders in July and September 2018 when the Idea Note was presented and finalized at joint workshops. The Project idea was also presented in detail to the Project Boards of Vrbas and NAP projects consisting of GCF NDA and representatives of the ministries in charge of water management and environment. These discussions informed the development of the Concept Note, which involved all relevant institutions in B&H: the GCF NDA, ministries in charge of water management, water agencies and hydro-meteorological institutes. Validation meeting for the Concept Note engaging all relevant stakeholders was held on 5 February 2019, all stakeholder expressed their support to the proposal. In addition, separate meetings were held with HPP representatives who showed a great interest and willingness to be part of the project. Validation meeting for the Full Proposal engaging all relevant stakeholders was held on 16 October 2019, all stakeholder expressed their support to the proposal. In addition, separate meetings were held with HPP representatives, entity ministries of agriculture and forestry who showed a great interest and willingness to be part of the project.
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| **D.6. Efficiency and effectiveness** (**max. 500 words, approximately 1 page)** |
| *Describe how the financial structure is adequate and reasonable in order to achieve the proposal’s objectives, including addressing existing bottlenecks and/or barriers, and providing the minimum concessionality to ensure the project is viable without crowding out private and other public investments. Refer to section B.5 on the justification of GCF funding requested as necessary.* *Please describe the efficiency and effectiveness of the proposed project/programme, taking into account the total financing and mitigation/ adaptation impact the project/programme aims to achieve, and explain how this compares to an appropriate benchmark.**Please specify the expected economic rate of return based on a comparison of the scenarios with and without the project/programme.* *Please specify the expected financial rate of return with and without the Fund’s support to illustrate the need for GCF funding to illustrate overall cost effectiveness.**Please explain how best available technologies and practices have been considered and applied. If applicable, specify the innovations/modifications/adjustments that are made based on industry best practices.*UPDATE this section after finalization of project economic analysis1. The project addresses the fundamental barriers to achieving resilience to climate-induced floods through the provision of technical capacities, policies and legislative enhancements, and by investing in structural and non-structural risk reduction measures, including EbA approaches. The combination of interventions related to ecosystem-based approaches and structural measures, as proposed by this project, has been shown to lead to significantly larger improvements in resilience to communities, compared to an approach focusing on one of those strategies. By addressing the capacity to undertake risk assessment and monitoring and to generate missing climate risk information, the project will lay the foundation for efficient and risk-informed flood risk management in the future. In addition, by addressing the legislative and policy gaps, the project is ensuring long-term sustainability of project interventions. Furthermore, the adoption of this holistic and integrated approach that addresses all the root causes, will have long-term efficiency and effectiveness benefits, compared to the *ad hoc*, *ex-post, non-climate-responsive* approach to flood risk management that is currently undertaken. Climate induced extreme events are estimated to result in $800 Million USD in damages annually in B&H, while the cost of the project is $70 Million USD. The project therefore has a potential project **IRR** of > 10%[[6]](#footnote-6).
2. GCF investment will catalyse US$ 56 million of co-financing from public and private sector including US$25million loan resources for the structural measures. The project partners and beneficiaries will also secure O&M costs against all project supported infrastructure and hydrometric equipment. The public good nature of this project’s outputs doesn’t entail significant revenue generation or cost recovery from the project although the project will support engagement of the public sector for limited cost-recovery to cover the operation and maintenance of monitoring and early warning systems. Where income generation opportunities might occur indirectly because of project outcomes, these would apply directly to the beneficiaries (for instance, improved agricultural productivity), primarily as household income.
3. Overall, the proposed solutions are based on successful best practices, community ownership, and synergies across the three outputs and inter-related activities and build upon ongoing efforts to ensure their efficiency and cost-effectiveness. The proposed activities and interventions will reach 924,453 people or 26% of the population at risk from flooding and will indirectly benefit 100% of the population through better economic resilience and stable GDP in the face of flood events*.*
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| **LOGICAL FRAMEWORK**  |
| *This section refers to the project/programme’s logical framework in accordance with the GCF’s* [*Performance Measurement Frameworks*](https://www.greenclimate.fund/documents/20182/239759/5.3_-_Performance_Measurement_Frameworks__PMF_.pdf/60941cef-7c87-475f-809e-4ebf1acbb3f4) *under the* [*Results Management Framework*](https://www.greenclimate.fund/documents/20182/239759/5.2_-_Results_Management_Framework__RMF_.pdf/a0558a59-ef20-4ba8-b90b-8d3ae0c8458f) *to which the project/programme contributes as a whole, including in respect of any co-financing.*  |
| **E.1. Paradigm shift objectives** |

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| *Please select the appropriated expected result. For cross-cutting proposals, tick both.*[ ]  Shift to low-emission sustainable development pathways[x]  Increased climate resilient sustainable development |

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| **E.2. Core indicator targets** |
| *Provide specific numerical values for the GCF core indicators to be achieved by the project/programme. Methodologies for the calculations should be provided. This should be consistent with the information provided in section A.* |
| E.2.1. Expected tonnes of carbon dioxide equivalent (t CO2 eq) to be reduced or avoided (mitigation and cross-cutting only) | Annual | Click here to enter text. t CO2 eq |
| Lifetime | Click here to enter text. t CO2 eq |
| E.2.2. Estimated cost per t CO2 eq, defined as total investment cost / expected lifetime emission reductions (mitigation and cross-cutting only) |

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| --- | --- |
| (a) Total project financing | \_\_\_\_\_ Choose an item.  |
| (b) Requested GCF amount  | \_\_\_\_\_ Choose an item. |
| (c) Expected lifetime emission reductions  | \_\_\_\_\_ t CO2eq |
| **(d) Estimated cost per t CO2eq (d = a / c)** | \_\_\_\_\_ Choose an item. **/ t CO2eq** |
| **(e) Estimated GCF cost per t CO2eqremoved (e = b / c)** | \_\_\_\_\_Choose an item. **/ t CO2eq** |

 |
| E.2.3. Expected volume of finance to be leveraged by the proposed project/programme as a result of the Fund’s financing, disaggregated by public and private sources (mitigation and cross-cutting only) |

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| (f) Total finance leveraged  | \_\_\_\_\_ Choose an item. |
| (g) Public source co-financed | \_\_\_\_\_ Choose an item. |
| (h) Private source finance leveraged  | \_\_\_\_\_ Choose an item. |
| **(i) Total Leverage ratio (i = f / b)** | \_\_\_\_\_ |
| (j) Public source co-financing ratio (j = g / b)  | \_\_\_\_\_ |
| (k) Private source leverage ratio (k = h / b) | \_\_\_\_\_ |

 |
| E.2.4. Expected total number of direct and indirect beneficiaries, (disaggregated by sex)  | Direct | Click here to enter text.Click here to enter text.% of female |
| Indirect | Click here to enter text.Click here to enter text.% of female |
| *For a multi-country proposal, indicate the aggregate amount here and provide the data per country in annex 17.* |
| E.2.5. Number of beneficiaries relative to total population (disaggregated by sex) | Direct | 924,453 (26 %) of country |
| Indirect | 2,631,135 (74 %) of country |
| *For a multi-country proposal, leave blank and provide the data per country in annex 17.* |

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| **E.3. Fund-level impacts** |
| *Select the appropriate impact(s) to be reported for the project/programme. Select key result areas and corresponding indicators from GCF RMF and PMFs as appropriate. Note that more than one indicator may be selected per expected impact result. The result areas indicated in this section should match those selected in section A.4 above. Add rows as needed.*  |
| **Expected Results** | **Indicator** | **Means of Verification (MoV)** | **Baseline** | **Target** | **Assumptions** |
| Mid-term | Final |
| *A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions* | *A1.1 Change in expected losses of lives and economic assets (US$) due to the impact of extreme climate-related disasters* | D&L Database for BiHProject reports Municipality post-flood assessment reports data | Economic loss exposure equivalent to 15% of GDP | 25% reduction in economic losses in 6 target basins | 50% reduction in economic losses in 6 target basins | Structural and non-structural measures meet their design standards in reducing the risks to populations and reduction in agricultural and other economic loses |
| *A3.0 Increased resilience of intrastructure and the built environment to climate change* | *A3.1 Number of physical assests made more resilient to climate variablility and change, considering human benefits* | WA asset registerProject reports | Outdated and non climate proofed flood instructure in BiH. | X climate proofed infrastructure in 3 basinsXX beneficiaries in 3 of the target basins | X climate proofed infrastructure implemented in 6 basinsXX beneficiaries in 6 of the target basins | WA’s, Municipalities, and community members are willing and able to implement climate-resilient structural design and development practices. |
| *Choose appropriate expected results* | *Choose appropriate indicators*  |  |  |  |  |  |

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| **E.4. Fund-level outcomes** |
| *Select the appropriate outcome(s) to be reported for the project/programme. Select key expected outcomes and corresponding indicators from GCF RMF and PMFs as appropriate. Note that more than one indicator may be selected per expected outcome. Add rows as needed.* |
|  |
| **Expected Outcomes** | **Indicator** | **Means of Verification (MoV)** | **Baseline** | **Target** | **Assumptions** |
| Mid-term) | Final |
| A5.0 Strengthened institutional and regulatory systems for climate-responsive planning and development | *A5.1 Institutional and regulatory systems that improve incentives for climate resilience and their effective implementation*  | Project reports: annual reports; mid-term and final evaluations, site visits. | Absence of knowledge and capacities on hazard, vulnerability and risk assessment and modelling.Lack of protocols, updated methodologies, standards and tools |  | Climate-informed multi-hazard risk reduction and management planning frameworks and implementation capacities are in place | Government has a political will, institutional capacity and necessary resources to support O&M of new technologies, systems etc. |
| A6.0 Increased generation and use of climate information in decision-making | *A6.1 Use of climate information products/services in decision-making in climate sensitive sectors*  | Project reports: annual reports; mid-term and final evaluations, site visits. |  |  | Sector-specific climate information product/servies for HPP and agric;Cross-sectoral platform for sharing and use of CC FRM data  | Government has a political will, institutional capacity and necessary resources to support long-term updating of climate risk information, sectors willingness to support O&M of products/services; Government and private sector willingness to support O&M of expanded monitoring network which will support climate data generation |
| A7.0 Strengthened adaptive capacity and reduced exposure to climate risks | *A7.2 Number of males and females reached by [or total geogrpahic coverage of] climate-related early warning systems and other risk reduction measures established/strengthened*  | Project reports: annual reports; mid-term and final evaluations, site visits. | Absence of FFEWS across the country at all levelsFully functional FFEWS exists only for Vrbas and Una-SanaLow public awareness of FFEWSs, risk reduction and resilience measures |  | By the end of the project, FFEWS established in all river basins –necessary institutional/regulatory framework for its smooth and effective operations set; CBEWSs are established in 60 high-risk communitiesIncreased resilience of 26% of population | Government has a political will, institutional capacity and necessary resources to support proper O/M of FFEWSNo staff and budget cuts occur at WA’s and HMIsTarget communities understand shorter- to longer-term benefits of FFEWSs and risk reduction interventions and engage on a voluntary basis in operations and maintenance of such systems |

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| **E.5. Project/programme performance indicators** |
| *The performance indicators for progress reporting during implementation should seek to measure pre-existing conditions, progress and results at the most relevant level for ease of GCF monitoring and AE reporting. Add rows as needed.* |
| **Expected Results** | **Indicator** | **Means of Verification (MoV)** | **Baseline** | **Target** | **Assumptions** |
| Mid-term | Final |
| Fully integrated flood forecasting and EWS and enhanced climate information to facilitate timely preparation and response | 1.1 Number of new hydro-meteorological monitoring equipment purchased, installed and operational1.2 Number of river basins for which enhanced flood hazard and risk maps 1.3 Number of integrated centralized and community-based flood forecasting and early warning system1.4 Number of protocols and SoPs on data generation, data management and communication for effective FFEWS and flood risk management | Project reports, evaluation reports, site observations, databases, web-sites, monitoring and risk assessment productsKnowledge system: e-library, created databases, information systems, knowledge portal | Hydrometric monitoring network inadequate, Lack of key data sets for development of hazard and risk models Lack of socio-economic data for risk, damages, losses, exposure and vulnerability assessments (beyond Vrbas River Basin). flood risk maps and vulnerability assessment available only for Vrbas Basin; FFEWS only exists for Vrbas and Una-Sana basins | 1.1. Hydro-meteorological observation network expanded with: 9-Groundwater monitoring stations; 24- rehabilitated piezometers; 18-new piezometer 100 and 200 m deep ; 10- boreholes with average depth up to 50 m; 30- boreholes with average depth up to 30 m; 26-Meteorological stations; 23-Hydrological stations1.2. 6 river basins with enhanced flood hazard and risk maps1.3. integrated centralized and community-based flood forecasting and early warning system; 1.4 a) SoPs for “last-mile” warning and dissemination and communication system, b) Protocols and SOPs on data generation, data management for FRM, c) data sharing protocols and platform for climate data, across all government institutions in both entities including spatial Data Infrastructure to be developed/enhanced to ensure climate data flow/exchange | 1.1. Hydro-meteorological observation network expanded with: 9-Groundwater monitoring stations; 24- rehabilitated piezometers; 18-new piezometer 100 and 200 m deep ; 10- boreholes with average depth up to 50 m; 30- boreholes with average depth up to 30 m; 26-Meteorological stations; 23-Hydrological stations1.2. 6 river basins with enhanced flood hazard and risk maps1.3. integrated centralized and community-based flood forecasting and early warning system; 60 communities with CBEWS1.4 a) SoPs for “last-mile” warning and dissemination and communication system, b) Protocols and SOPs on data generation, data management for FRM, c) data sharing protocols and platform for climate data, across all government institutions in both entities including spatial Data Infrastructure to be developed/enhanced to ensure climate data flow/exchange | Government commitments to secure adequate O/M of monitoring equipment, relevant software and databases are fulfilled on a continuous basis both during the project implementation and afterwardsCapacities built across relevant institutions through the project are maintained and periodically updatedRelevant government institutions cooperate on the implementation of the FFEWS and data management.  |
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| People and livelihoods are informed and benefiting from nature-based flood risk measures | 2.1. Number of sectoral policies with climate induced flood risk reduction mainstreamed2.2. Number of non-structural and ecosystem-based flood risk reduction measures implemented 2.3 Number of guidelines, technical specifications. Standards and protocols for non-structural measures2.4. Level of institutional capacity for implementation of FRM and FFEWS among key government agencies | Project reports, evaluation reports, web-sites, monitoring and risk assessment products; Institutional capacity assessment scorecard for all institutions; Project reviews, progress reports, independent evaluation report, peer reviews. | CC-induced FRM not mainstreamed into policies; Institutional and technical capacities for the design and imple-mentation of non-structural and EbA FRM measures are absent or very limitedLack of coherent institutional capacity development framework that embeds FRM and FFEWS capacities into relevant institutions | 2.1 flood risk reduction mainstreamed into Hydropower, Agriculture and Forestry sectoral policies; floodplain zoning policy and development control implemented in 3 target basins2.2. X non-structural and EbA measures implement in 3 basins2.3. guidelines, technical specifications. Standards and protocols for non-structural measures2.4. At least 25% increase over baseline in institutional capacity within WA’. HMIs, municipalities (in 3 basins);  | 2.1 flood risk reduction mainstreamed into Hydropower, Agriculture and Forestry sectoral policies; floodplain zoning policy and development control implemented in 6 target basins2.2. X non-structural and EbA measures implement in 6 basins2.3. guidelines, technical specifications. Standards and protocols for non-structural measures2.4. At least 50% increase over baseline in institutional capacity within WA’. HMIs, municipalities (in 6 basins); FRM training embedded in existing government training programmes for long-term FRM training in BiH | Government has political will to implement relevant regulatory reform to embed CC-induced FRM in relevant institutions and are willing to conduct regulatory and institutional reformCapacities created as a result of project are maintained and periodically upgraded; Women involvement is encouraged Various Sectoral Ministries; willingness to engage in the programme and transfer received know-how to stakeholders; Government engages in each step of the development of the sectoral policies, endorses it officially and takes a commitment to implement it through allocation of relevant funds for implementation of priority measures and/or resource mobilization |
| Climate-proof flood protection investments increase resilience of the most vulnerable groups | 3.1. Number of country-wide investment frameworks for climate induced floods risk reduction and management including provisions for private sector engagement in climate risk financing and for risk transfer mechanisms3.2. Number of Multi-year climate resilient municipal investment plan and gender sensitive community preparedness plan implemented in selected municipalities (10-12) and 1 canton in Vrbas, Una-Sana and Bosna, Neretva and Trebišnjica basins developed3.3. Number of climate-proof structural flood risk reduction and anti-erosion interventions implemented in Vrbas, Una-Sana and Bosna, Neretva and Trebisnjica river basins |  |  | 3.3. X climate-proof structural flood risk reduction and anti-erosion interventions implemented in Vrbas, Una-Sana and Bosna, Neretva and Trebisnjica river basins | 3.1. Investment framework for climate induced floods risk reduction and management; risk financing and transfer mechanism; flood insurance scheme; tool for appraisal-led design for structural and non-structural FRM measures, FRM investment planning, climate risk financing mechanisms and for appraisal-led FRM options design and decision-making; 3.2. At least 12 Multi-year climate resilient municipal investment plan and gender sensitive community preparedness plans developed 3.3. Y climate-proof structural flood risk reduction and anti-erosion interventions implemented in Vrbas, Una-Sana and Bosna, Neretva and Trebisnjica river basins |  |
| **E.6. Activities**  |
| *All project activities should be listed here with a description and sub-activities. Significant deliverables should be reflected in the implementation timetable. Add rows as needed.* |
| **Activity** | **Description** | **Sub-activities** | **Deliverables** |
| Activity 1.1: Expansion of the hydrometric network for enhanced monitoring of climate variables in Category I catchments and torrential streams (purchasing and installation of the observation equipment) | The GCF Project will expand the hydrometeorological monitoring network to cover a greater range of hydrometric variables that climate change is bringing. Previous upgrades to the hydrometeorological observation network have not been realized at the appropriate spatial and temporal scale to enable effective flood monitoring, management, forecasting and early warning. In addition to pluvial and fluvial flooding in the biggest catchments (category I catchment), climate change is increasing the risks from torrential streams, which are currently not monitored or studied but cause great damage | 1.1.1. Detailed gap analysis of the existing hydrometric network, development of optimised hydrometric network specification, development of ICT strategy and plan for hydrometric 1.1.2. Increase density of the hydro-meteorological observation network and expand monitoring to include greater range of hydrometric variables that climate change is bringing 1.1.3. Setting-up sustainable O&M for the network1.1.4. Identification of long-term financing mechanisms for the maintenance of the hydrometric network | Hydro-meteorological observation network expanded with: 9-Groundwater monitoring stations; 24- rehabilitated piezometers; 18-new piezometer 100 and 200 m deep ; 10- boreholes with average depth up to 50 m; 30- boreholes with average depth up to 30 m; 26-Meteorological stations; 23-Hydrological stationsStrategic plan, methodologies, guidelines and manuals for the operation and maintenance of the optimised hydrometric network;Prototype mechanism for private sector cost recoveryPublic Sector O&M financing strategy, action plan, budgetary allocation mechanisms and tools |
| Activity 1.2: Enhancing climate-induced flood hazard, risk and vulnerability information for strategic management and sound decision making for climate induced flood management | The GCF project will enhance the WBIF EUFD hazard and risk modelling by a) developing hydrological modelling for all main basins (category I rivers), b) undertaking torrents hazard modelling, c) including HPPs and groundwater modelling in flood hazard, risk and vulnerability modelling and mapping for all relevant basins. | 1.2.1: Enhance WBIF project’s EUFD hazard and risk modelling by developing hydrological modelling for all main basins (category I rivers)1.2.2: Enhance WBIF project’s EUFD hazard and risk modelling by developing full basin hydraulic models1.2.3: Torrents hazard, risk and vulnerability mapping nationally (category II rivers), 1.2.4: HPP modelling for development of enhanced operating rules for HPPs. Incorporation of HPP operations into flood hazard and risk modelling - Upgrading models in Adriatic Sea basin to include groundwater modelling | Enhanced EUFD hazard and risk models and maps for all main basins; Torrents hazard, risk and vulnerability mapping country wide; and HPP modelling for development of enhanced operating rules for HPPs. Incorporation of HPP operations into flood hazard and risk modelling |
| Activity 1.3: Developing an integrated centralized and community-based flood forecasting and early warning system (CBEWS) | Under the GCF project the Vrbas prototype will be scaled up to cover the two hydro-energy intensive basins of Neretva and Trebisnjica, and the Una-Sana basin forecasting model will be updated. The project will Implement CBEWS for 60 high priority communities and develop sector-specific FFEWS products and develop and implement a capacity development plan for embedding flood hazard and risk modelling approaches and FFEWS into appropriate institutions in BiH | 1.3.1: Development and Implementation of National FFEWS system (integrated and Community-based) (based on Vrbas specification). 1.3.2: Implement CBEWS for high priority communities for which CBEWS1.3.3: Review, identification and development of sector-specific FFEWS products for agriculture and hydropower/energy sectors1.3.4: Identify and implement a capacity development plan for embedding flood hazard and risk modelling approaches and FFEWS into appropriate institutions in BiH | FFEWS model and platform integrating all basin FFEWS models; CBEWS for 60 high priority communities; develop sector-specific FFEWS products for HPP and agriculture; capacity development plan for embedding flood hazard and risk modelling approaches and FFEWS into appropriate institutions in BiH |
| Activity 1.4: Developing and implementing protocols and SoPs on data generation, data management and communication for effective FFEWS and flood risk management | The project will revise and implement a number of protocols, and SOPs, and Codes of Conduct for each of the institutions responsible for FRM and FFEWS. These will include, SoPs for “last-mile” warning and dissemination and communication system, Protocols and SOPs on data generation, data management for FRM, data sharing protocols and platform for climate data, across all government institutions in both entities including spatial Data Infrastructure to be developed/enhanced to ensure climate data flow/exchange. | 1.4.1: Implementation of SoPs for last-mile warning and dissemination and communication system. Based on Vrbas design, specify the last-mile system (including dissemination and warning technologies) will be implemented1.4.2: National protocols and SOPs on data generation, data management for FRM.1.4.3: Develop data sharing protocols and platform for climate data, across all government institutions in both entities | SoPs for “last-mile” warning and dissemination and communication system, Protocols and SOPs on data; FRM, data sharing protocols; platform for climate data, across all government institutions  |
| Activity 2.1: Mainstreaming climate induced flood risk reduction into sectoral planning (agriculture, hydropower, critical infrastructure) and spatial planning | The project will enhance the existing legislative and regulatory FRM framework by mainstreaming the climate-induced flood risk management into sectoral planning for agriculture, forestry, environment, hydropower, critical infrastructure and spatial planning | 2.1.1: Development of climate induced flood risk reduction into sectoral strategies, plans and technical guidelines for agriculture, hydropower, critical infrastructure, forestry and environment2.1.2: Development of national floodplain zoning policy and legislation, based on national hazard, risk and vulnerability mapping, flood resilient building codes and embedding of climate change considerations in the design and construction standards of critical infrastructure2.1.3: Enhance current practice with updated CR-informed methodologies, standards for infrastructure design, construction material, use and maintenance of critical infrastructure in BiH2.1.4: Capacity development for climate resilient infrastructure design, construction and O&M approaches | Sectoral strategies, plans and technical guidelines for agriculture, hydropower, critical infrastructure, forestry and environment; National floodplain zoning policy and legislation implemented in all basins; Updated CR-informed methodologies, standards for infrastructure design, construction material, use and maintenance of critical infrastructure in BiHCapacity development plan for climate resilient infrastructure design, construction and O&M approaches |
| Activity 2.2: Implementation and scaling-up of new ecosystem-based flood risk reduction and climate change adaptation methods | The project will implement catchment management measures inlcuding X non-structural measures  | 2.2.1: Catchment management for reduced erosion 2.2.2: Non-structural measures implemented by Vrbas project scaled up to other basins | Catchment management for reduced erosion; X Non-structural measures implemented; Best-practice guidelines for non-structural measures; Technical specification, standards and protocols for design and implementation of non-structural measures; Training for new non-structural measures |
| Activity 2.3: Document and mainstream EbA solutions into policies and regulations and promote non-structural measures among decision makers and communities | The project document best practice non-structural approaches that can be adapted to the B&H context and collect lessons learned and facilitate dissemination of successful approaches in the country. The successful practices will be codified in a form of guidelines and tools. This activity will document and mainstream non-structural measures into FRM policies and practices. . | 2.3.1: Best-practice guidelines for non-structural measures2.3.2: Technical specification, standards and protocols for design and implementation of non-structural measures 2.3.3: Review and implementation of training required for new non-structural measures | Best-practice guidelines, technical specification, standards and protocols for the application of eco-system based non-structural measures; , * methodology for system evaluation
* methodology and guidance for undertaking risk assessment and appraisal of EbA measures
* knowledge portal and common resource centre to collect, collate and share knowledge and fill these gaps to advance uptake of nature-based solutions.
* Knowledge portal for collaboration between ecologists, or specialists to allow to co-working and knowledge sharing.

Capacity development in the application of methods for the identification, piroritisatiom design and implementation of basin appropriate EbA solutions* Training for 200 FRM practitioners at all levels and all relevant types of stakeholders (entity, municipal, community)
 |
| Activity 2.4: Capacity development. Review of institutional capacity and development of long-term institutional plans for FRM | The activity will implement country-wide training programmes in the technical and practical areas of flood risk management for practitioners, decision-makers, communities, emergency responders.  | 2.4.1: Embedding FRM training in existing government training programmes for long-term FRM training in BiH.2.4.2: Based on the detailed institutional capacity assessment undertaken under the Vrbas project develop a costed and prioritised Institutional capacity development plan to address – technical, functional and human capacity gaps identified2.4.3: Based on Vrbas community-based training and awareness raising initiatives, implement required training in number of communities | FRM training embedded in existing government training programmes for long-term FRM training in BiH; **Flood hazard and risk assessment, hydrometry, forecasting and modelling, EWSs** 1) Carry out workshops on hydrometry to include modern methods and equipment specification2) Design and put in place mentoring programme with younger engineers shadowing experienced staff with relevant institutions3) Embedding methods for periodic review of monitoring needs and hydrometric network optimization and strategic planning for the future 4) Developing budgetary requirements for long-term maintenance of optimized hydrometric network and development of a financing model to be put forward to government for the long-term maintenance of networks (using cost-benefit modelling to support the financing model) 5) Develop curricular and conduct trainings in hydrometric network design and implementation including ToT6) Develop curricular and conduct trainings for local O&M staff on equipment maintenance including ToT7) Introduce university courses in flood hazard modelling and mapping (WA’s and HMIs to form links to university and help introduce courses) 8) Develop curricular, conduct training of HMI and WS staff in hydrology, hydraulic modelling and GIS, flood risk assessment and mapping including ToT9) Develop curricular for flood forecasting procedures and undertake ToT10) Develop curricular for flood warning procedures and undertake ToT11) Develop curricular for Common Alerting Protocols and undertake ToT12) Develop curricular and conduct training of WA and HMI staff in remote sensing including ToT13) Develop curricular on the new FFEWS system for all institutions involved in FFEWS as identified by institutional mapping and institutional arrangement plan for FFEWS and undertake ToT**Vulnerability and Risk Assessment**1) Introduce university courses on gender sensitive vulnerability and risk assessment and modelling (WA’s and HMIs to form links to university and help introduce courses) 2) Develop capacity in the assessment of damages, losses and risk to life will require specialist training of individuals already involved in economics assessments3) Develop curricular and conduct trainings in damages and losses assessment including ToTTraining provided in the following at local level:1) Emergency response trainings for first responders in cooperation with Civil Protection; 2) Strategic FRM planning and FRM intervention identification approaches for municipality staff;3) Development/adaptation of existing guidelines on community DRR/DRM and DRR/DRM specific target groups; Capacity building and awareness raising of municipal authorities, local NGOs, CBOs or non-CBO community members in Community-based Risk Assessment approaches, Community-based Early Warning Systems and gender-responsive Community-based Flood Risk Management training; 4) Development of ToT programme, syllabus and standard specifications for external training providers; 5) Develop generic educational material and a 5year training programme on flood and disaster risk and emergency response for use in school outreach programmes, university courses, communities etc. (training material, course notes, plays etc.); 6) Training on the use of hazard and risk maps**river basin flood risk management planning and the use of climate information**: 1) Develop curricular and conduct training in Strategic FRM planning and FRM intervention identification approaches including ToT2) Develop curricular and conduct training in land use policy and construction permitting system including ToT3) Develop curricular and conduct training on proposed new floodplain development zoning policy regarding for various sectoral ministries and institutions including ToT4) Awareness raising workshop for all government departments. Use of the project developed website to store hazard and vulnerability information including maps. 5) Targeted awareness and learning events on flood risk assessment and management for relevant sectoral investors (Ministry of Energy, Hydropower sector, hydrothermal, agriculture sectors)6) A series of targeted training workshops for municipalities 7) Workshops and round tables on risk management financing and risk transfer instruments |
| Activity 3.1: Investment framework for climate induced floods risk reduction and management | The project will develop a strategy and tools for private sector engagement in long-term climate change-induced flood risk management. The project will develop the most appropriate mechanisms for risk transfer, risk financing and supporting cost recovery mechanisms from a variety of sources. The Activity will also include the development of policy and legislation for private sector engagement in climate risk financing and for risk transfer mechanisms such as flood insurance. | 3.1.1: Investment framework for climate induced floods risk reduction and management including provisions for public and private/productive sector engagement in climate risk financing and for risk transfer mechanisms; 3.1.2: Develop risk financing and transfer mechanisms based on detailed socio-economic risk, damages and losses assessment; 3.1.3: Scale-up and implement flood insurance scheme developed for Vrbas and identify, develop and implement other risk financing and transfer mechanisms products and tools. 3.1.4: Develop tool for appraisal-led design for structural and non-structural FRM measures, FRM investment planning, climate risk financing mechanisms and for appraisal-led FRM options design and decision-making, based on CBA approaches | Sector resilience strategies and plans for long-term ongoing investment frameworks that would be required to address flood risk to each sector; Sector specific awareness campaign;Sector-specific information dissemination portals as part of the information platform to be developed under 1.2.4; Risk financing and risk transfer strategy for private sector engagement in risk financing and risk transfer mechanisms for entity-level flood risk financing and resilience strategy; risk financing and transfer mechanisms; flood insurance scheme implemented; Tool for appraisal-led design for structural and non-structural FRM measures based on cost benefit analysis (CBA) approaches;  |
| Activity 3.2: Formulated multi-year climate resilient municipal investment plan and gender sensitive community preparedness plan implemented in selected municipalities (10-12) and 1 canton in Vrbas, Una-Sana and Bosna, Neretva and Trebišnjica basins | The project will develop municipal investment plans for climate-resilient investment planning for flood risk management in 10-12 municipalities and 1 canton in the Vrbas, Una-Sana and Bosna basins.  | 3.2.1: Develop preparedness plans for 10-12 highest risk communities and 1 canton based on Vrbas methodology 3.2.2: Develop preparedness plans for 10-12 highest risk communities based on Vrbas methodology  | Financing models for investment maintenance costs; Standardised CBA tools embedded in municipality for developing annual infrastructure investment plans; Municipal FRM investment plans based on risk-informed project designs, including maintenance, and costs-benefit analysis based on CBA methods and models. Multi-year climate resilient municipal investment plan and gender sensitive community preparedness plan implemented in the highest risk municipalities (10-12) in Vrbas, Una-Sana and Bosna basins; Community preparedness plans for the 10-12 communities in line with the procedure, methodology and content of CFEP in BiH as defined by Law of Protection and Rescue in RS and FBiH |
| Activity 3.3: Implementation of climate-proof structural flood risk reduction and anti-erosion interventions in Vrbas, Una-Sana and Bosna river basins (co-financed) | This activity will focus on implementation of priority structural flood risk reduction interventions for areas at highest risk. The structural measures will be financed through loan resources and Water Agencies. | 3.3.1: Detailed design of climate resilient flood protection structural measures identified using CBA methods and appraisal-led optioneering to identify and prioritise critical flood protection structures.3.3.3: Investment in the implementation of new flood defences and the rehabilitation and upgrade of existing flood defences with climate proofing | Detailed design of X structural measures;X structural measures implemented. |
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| **E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, approximately 1 page)** |
| *Besides the arrangements (e.g. annual performance reports) laid out in AMA, please give a summary of the project/programme specific arrangements for monitoring and evaluation. Please provide the types of interim and final evaluations. Describe Accredited Entity (AE) project reporting relationships, including to the NDA/Focal Point and between AE and Executing Entity (EE) as relevant, identifying reporting obligations from the EE to the AE. This should relate to the frequency of reporting on project indicators, implementation challenges and financial status.*1. GCF funding will be used to ensure that monitoring and evaluation systems are put in place to track progress over the 6 years of project implementation towards the planned project outcomes and fund level impacts. This will be achieved through the means of verification outlined in Table E.2 above, where progress on each indicator from the baseline to the end-point targets for those indicators will be tracked. Additionally, through the results framework outlined in tables E.4 and E.5 the project impact will be assessed using the following 6 domains of impact:
* Impact on physical and financial assets
* Impact on Social Capital, Empowerment and change of behavior
* Impact on Food Security
* Environmental Impact
* Impact on Institutions, policies, and the regulatory framework
* Impact on Gender
1. An iterative systematic gender-sensitive socio-economic vulnerability assessment (SVA) will be introduced through the Output 1, Activity 1.2. as a tool to measure and monitor change in socio-economic vulnerability of BiH communities. The SVA tool will rely on a combination of census data, socio-economic parameters and field surveys. Initially, through the integration of hazard maps and maps of infrastructure (bridges, roads and buildings, hospitals, schools, power plants, critical infrastructure), land use (settlements, agriculture, grazing lands, and conservation areas), property and socio-economics data, the project will produce economic vulnerability maps for the river basins and establish baseline risk. The tool will be further used to monitor changes in vulnerability and risks from multiple hazards at municipal and national level.
2. Further, under the Output 1, activity 1.3. the project will carry out monitoring and evaluation of the designed FFEWS. Under the project, activity 2.4 change in institutional capacities to implement FFEWS and manage climate risk information will be measured through the integrated institutional capacity assessment scorecard. Institutional capacity assessment will be conducted in the Years 1, 3 and 6 of the project.
3. In order to examine the impacts of the project on rural communities, the review will examine whether the interventions implemented by the project have enhanced the value and derived benefits from existing community assets such as land, water, livestock and livelihoods. Impact on income generation and improvement in livelihoods will be key direct benefits to be examined while improved skill or health, education, and socio-economic conditions will be key indirect benefits to be examined. Impact on increased capacity of local communities to exploit potential economic opportunities and to develop stronger link with the markets and external partners, through the risk reduction and adaptation interventions provided by the project, will be examined. Efforts to strengthen local level organizations in the implementation of similar projects in the future will be a key impact as this will reflect whether the project has built local capacity to implement and use these new climate resilient measures in the long-term. Likely contribution of the project to food security will be examined. Key elements of food security is availability (production and trade), access (income, markets and prices) and stability (storage and other marketing arrangement at household and local level.

 1. Environmental degradation very often contributes to non-resilience to climate change and increased risk from climate-related disasters. The extent to which the project contributes to rehabilitation of the environment (particularly of the agricultural resource base and watershed management) in areas currently affected by land degradation and at high risk of hazards, is strongly associated with poverty impact. This domain concentrates on the local level environmental impacts of the project, as well as any environmental consequences of the project. It is also concerned especially with those environmental aspects, which are under the control of, or are influenced by, the rural communities. Environmental impacts may be negative as well as positive intended or unintended and all of these will be examined.
2. Existing institutions, policies and regulatory frameworks significantly influence the lives and resilience of the rural poor. This encompasses the change brought about in sectoral and national policies affecting exposure of local communities to flood hazards. In addition, the degree to which the project impacts local-level decision making capacity, is also a relevant consideration and important to this project. Hence the effectiveness of the ‘last mile’ component of the EWS and particularly the CBEWS will be closely assessed. The review will examine the extent to which a contribution has been made to improving the national, and particularly local institutions to implement, and manage CBEWS which affects the lives and livelihoods of rural communities.
3. To monitor and measure the changes brought by the project, impact evaluation will be designed to assist the project team to collect baseline information/data, final survey to gain insights into developmental and adaptive impact of the interventions that will be carried out during the project. For this purpose, before any interventions take place, a robust baseline survey needs to be administered. During the project, it is expected follow-up surveys and final large survey will also be carried out at end of project. The impact of the project will be assessed by undertaking the following:
* A household survey targeting beneficiary households at least two times (baseline and final) during the project implementation;
* Analysis of the survey data;
* Follow-up survey which will be used by project staff; and
* Training of project staff on the follow-up survey methodology.
1. The impact indicators will include but should not be limited to: (i) extent to which structural measures and non-structural measures have reduced exposure to hazards (e.g. whether frequency of flooding has reduced etc.) (ii) changes in income from agriculture and related activities (changes in income should take into account the level of home consumption); (iii) yield from agricultural production for key produce; (iv) yield of home gardens; (y) migration for seasonal work; (vi) farm land left fallowed; (vii) freshwater availability for household use; (viii) change in family savings.
2. As part of the community survey a section will be included to monitor community involvement in the design and implementation of community-based EWS and community response plans – tracking participation in paid work opportunities, as well as ongoing involvement in resilience building through in-kind commitment of time to maintenance and enforcement activities. Comprehensive capacity and awareness building to foster community engagement will be carried out by the project under Activity 2.4. All community capacity building, training and awareness activities will be accompanied with feedback collection/result monitoring tools. Finally, monitoring over the implementation and results of site specific structural protection measures at XX sites will be ensured as outlined in the SEMF.
3. Since the project impacts from many of the interventions are likely to be realized close to the end and after the project implementation, the impact evaluation methodology and tools will be embedded within responsible agencies to monitor in the long-term, thus ensuring regular surveying of the key impact and development indicators required for long-term assessment of project impact.
4. Project monitoring and evaluation will be undertaken in compliance with the [UNDP POPP](http://www.undp.org/content/undp/en/home/operations/accountability/programme_and_operationspoliciesandprocedures.html), the [UNDP Evaluation Policy](http://www.undp.org/content/undp/en/home/operations/accountability/evaluation/evaluation_policyofundp.html).

***Oversight and monitoring responsibilities:***1. The Project Manager under the technical guidance of the CTA will monitor the project progress on a regular basis, through developing, updating and oversighting implementation of Annual Work plan and M&E plan, periodic site visits, consultations with stakeholders and beneficiaries, desk review of and reporting of project progress. He/She will also periodically monitor and update the risk log and inform the Project Board and the UNDP Country Office of any delays or difficulties during implementation, including the implementation of the M&E plan, so that the appropriate support and corrective measures can be adopted. The Project Manager will also ensure that all project staff maintain a high level of transparency, responsibility and accountability in monitoring and reporting project results.
2. The Project Board will conduct annual project reviews to assess how the project is progressing towards achieving its objectives, what are the impediments and how they can be removed.
3. The UNDP Country Office will support the Project Manager as needed, including through annual or (upon demand) more frequent supervision missions. The UNDP Country Office is responsible for complying with UNDP project-level M&E requirements as outlined in the [UNDP POPP](http://www.undp.org/content/undp/en/home/operations/accountability/programme_and_operationspoliciesandprocedures.html). Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP Regional Technical Advisor as needed. The project target groups and stakeholders including the NDA will be involved as much as possible in project-level M&E through Project Board Meetings, Annual Project Reviews, stakeholder consultations and participation in field visits.
4. A project inception workshop will be held after the UNDP project document has been signed by all relevant parties to: (a) re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project implementation; (b) discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms; (c) review the results framework and discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E plan; (d) review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; (e) plan and schedule Project Board meetings and finalize the first year annual work plan. The Project Manager will prepare the inception report no later than one month after the inception workshop. The final inception report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board.
5. The Project Manager under the guidance of the CTA, the UNDP Country Office, and the UNDP Regional Technical Advisor will provide objective input to the annual Project Implementation Report (PIR) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually well in advance of the PIR submission deadline and will objectively report progress in the Development Objective tab of the PIR. The annual PIR will be shared with the project board and other stakeholders. The UNDP Country Office will coordinate the input of the NDA Focal Point and other stakeholders to the PIR. The quality rating of the previous year’s PIR will be used to inform the preparation of the next PIR. The final project PIR along with the terminal evaluation report and corresponding management response will serve as the final project report package.
6. An independent mid-term evaluation will be undertaken within fourth quarter of the third year of project implementation. Findings and responses outlined in the management responses will be taken unto consideration as corrective measures or measures to enhance the project results during planning and implementing activities for upcoming three-year period. The terms of reference, evaluation process and the final MTE report will follow the standard templates and guidance available on the [UNDP Evaluation Resource Center](http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance_Midterm%20Review%20_EN_2014.pdf). The final MTE report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board. The final MTE report will be available in both English and Georgian languages.

***Additional GCF evaluation requirements:*** 1. An independent terminal evaluation (TE) will take place no later than three months prior to completion of the project. The terms of reference, the review process and the final TE report will follow the standard templates and guidance available on the [UNDP Evaluation Resource Center](http://web.undp.org/evaluation/documents/guidance/GEF/UNDP-GEF-TE-Guide.pdf). The final TE report will be cleared by the UNDP Country Office and the UNDP Regional Technical Adviser, and will be approved by the Project Board. The TE report will be available in English.
2. The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the management response to the public UNDP Evaluation Resource Centre (ERC) ([http://erc.undp.org](http://erc.undp.org/index.html;jsessionid=2409E7F665E19DE2CD6AFD11CED0F002)). Once uploaded to the ERC, the UNDP Independent Evaluation Office will undertake a quality assessment and validate the findings and ratings in the TE report, and rate the quality of the TE report.
3. The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure in order to support ex-post evaluations.
4. A detailed M&E budget, monitoring plan and evaluation plan will be included in the UNDP project document.
5. UNDP will perform monitoring and reporting throughout the reporting period in accordance with the AMA and Funded Activity Agreement (FAA). UNDP has country presence and capacity to perform such functions. In the event of any additional post-implementation obligations over and above the AMA, UNDP will discuss and agree these with the GCF Secretariat in the final year of the project and will prepare a post-implementation monitoring plan and budget for approval by the GCF Board as necessary.
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| **RISK ASSESSMENT AND MANAGEMENT** |
| F.1. **Risk factors and mitigations measures (max. 3 pages)**  |
| *Please describe financial, technical, operational, macroeconomic/political, money laundering/terrorist financing (ML/TF), sanctions, prohibited practices, and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures. Insert additional rows if necessary.* For probability: High has significant probability, Medium has moderate probability, Low has negligible probabilityFor impact: High has significant impact, Medium has moderate impact, Low has negligible impactProhibited practices include abuse, conflict of interest, corruption, retaliation against whistleblowers or witnesses, as well as fraudulent, coercive, collusive, and obstructive practices |
| **Selected Risk Factor 1**  |
| Category | Probability | Impact |
| Select | Select | Select |
| Description |
| *Please describe the risk to the best of your knowledge at this point in time.*  |
| Mitigation Measure(s) |
| *Please describe how the identified risk will be mitigated or managed. Do the mitigation measures lower the probability of risk occurring? If so, to what level?*  |
| **Selected Risk Factor 2**  |
| Category | Probability | Impact |
| Select | Select | Select |
| Description |
| *Please describe the risk to the best of your knowledge at this point in time.*  |
| Mitigation Measure(s) |
| *Please describe how the identified risk will be mitigated or managed. Do the mitigation measures lower the probability of risk occurring? If so, to what level?*  |
| **Selected Risk Factor 3**  |
| Category | Probability | Impact |
| Select | Select | Select |
| Description |
| *Please describe the risk to the best of your knowledge at this point in time.*  |
| Mitigation Measure(s) |
| *Please describe how the identified risk will be mitigated or managed. Do the mitigation measures lower the probability of risk occurring? If so, to what level?* |

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| **GCF POLICIES AND STANDARDS** |
| G.1. **Environmental and social risk assessment (max. 750 words, approximately 1.5 pages)**  |
| *Provide the environmental and social risk category assigned to the proposal as a result of screening and the rationale for assigning such category. Present also the environmental and social assessment and management instruments developed for the proposal (for example, ESIA, ESMP, ESMF, ESMS, environmental and social audits, etc.). Provide a summary of the main outcomes of these instruments. Present the key environmental and social risks and impacts and the measures on how the project/programme will avoid, minimize and mitigate negative impacts at each stage (e.g. preparation, implementation and operation), in accordance with GCF’s* [*ESS standards*](https://www.greenclimate.fund/safeguards/environment-social)*. If the proposed project or programme involves investments through financial intermediations, describe the due diligence and management plans by the Executing Entities (EEs) and the oversight and supervision arrangements. Describe the capacity of the EEs to implement the ESMP and ESMF and arrangements for compliance monitoring, supervision and reporting. Include a description of the project/programme-level grievance redress mechanism, a summary of the extent of multi-stakeholder consultations undertaken for the project/programme, the plan of the Accredited Entity (AE) and EEs to continue to engage the stakeholders throughout project implementation, and the manner and timing of disclosure of the applicable safeguards reports following the requirements of the GCF* [*Information Disclosure Policy*](https://www.greenclimate.fund/disclosure/policy) *and* [*Environmental and Social Policy.*](https://www.greenclimate.fund/safeguards/environment-social)*Describe any potential impacts on indigenous peoples and the measures to address these impacts including the development of an Indigenous Peoples Plan and the process for meaningful consultation leading to free, prior and informed consent, pursuant to the GCF* [*Indigenous Peoples Policy*](https://www.greenclimate.fund/safeguards/indigenous-peoples)*.* *Attach the appropriate assessment and management instruments or other applicable studies, depending on the environmental and social risk category as annex 6.*  |
| G.2. **Gender assessment and action plan (max. 500 words, approximately 1 page)**  |
| *Provide a summary of the gender assessment and project/programme-level gender action plan that is aligned with the objectives of GCF’s* [*Gender Policy*](http://www.greenclimate.fund/documents/20182/818273/1.8_-_Gender_Policy_and_Action_Plan.pdf/f47842bd-b044-4500-b7ef-099bcf9a6bbe?version=1.1)*. Confirm a gender assessment and action plan exists describing the process used to develop both documents. Provide information on the key findings (who is vulnerable and why) and key recommendations (how to address the vulnerability identified) of the gender assessment. Indicate if stakeholder consultations have taken place and describe the key inputs integrated into the action plan, including: how addressing the vulnerability will ensure equal participation and benefits from funds investment; key gender-related results to be expected from the project/programme with targets; implementation arrangements that the AE has put in place to ensure activities are implemented and expected outcomes will be achieved, monitored and evaluated.**Provide the full gender assessment and project-level gender action plan as annex 8.*  |
| G.3. **Financial management and procurement (max. 500 words, approximately 1 page)** |
| *Describe the project/programme’s financial management including the financial monitoring systems, financial accounting, auditing, and disbursement structure and methods. Refer to section B.4 on implementation arrangements as necessary.* *Articulate any procurement issues that may require attention, e.g. procurement implementation arrangements and the role of the AE under the respective proposal, articulation of procurement risk assessment undertaken and how that will be managed by the AE or the implementing agency. Provide a detailed procurement plan as annex 10.* The financial management and procurement of this project will follow UNDP financial rules and regulations available here: <https://info.undp.org/global/documents/frm/Financial-Rules-and-Regulations_E.pdf>Further guidance is outlined in the financial resources management section of the UNDP Programme and Operations Policies and Procedures available at <https://info.undp.org/global/popp/frm/Pages/introduction.aspx>.UNDP has comprehensive procurement policies in place as outlined in the ‘Contracts and Procurement’ section of UNDP’s Programme and Operations Policies and Procedures (POPP). The policies outline formal procurement standards and guidelines across each phase of the procurement process, and they apply to all procurements in UNDP. See here: <https://info.undp.org/global/popp/cap/Pages/Introduction.aspx>The project will be implemented following the National Implementation Modality (NIM) following NIM guidelines available at:<https://info.undp.org/global/documents/_layouts/WopiFrame.aspx?sourcedoc=/global/documents/frm/National%20Implementation%20by%20the%20Government%20of%20UNDP%20Projects.docx&action=default&DefaultItemOpen=1>All projects will be audited following the UNDP financial rules and regulations noted above and applicable audit guidelines and policies. UNDP will ascertain the national capacities of the Implementing Partner/Executing Entity by undertaking an evaluation of capacity following the Framework for Cash Transfers to Implementing Partners/Executing Entities (part of the Harmonized Approach to Cash Transfers - [HACT](http://www.undg.org/archive_docs/7110-Framework_for_Cash_Transfers_to_Implementing_Partners.doc)). |
| G.4. **Disclosure of funding proposal**  |
| *Note: The Information Disclosure Policy (IDP) provides that the GCF will apply a presumption in favour of disclosure for all information and documents relating to the GCF and its funding activities. Under the IDP, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Information provided in confidence is one of the exceptions, but this exception should not be applied broadly to an entire document if the document contains specific, segregable portions that can be disclosed without prejudice or harm.* *Indicate below whether or not the funding proposal includes confidential information.*[ ]  No confidential information: The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.[ ]  With confidential information: The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence. Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes:* full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity’s disclosure policy, and
* redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information. |

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| ANNEXES |
| **H.1. Mandatory annexes**  |
|[ ]  Annex 1 | NDA no-objection letter(s) [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_1_template_-_NDA_no-objection_letter.docx/dac6e101-5a91-63b3-817e-627286c79c85) |
|[ ]  Annex 2 | Feasibility study - and a market study, if applicable |
|[ ]  Annex 3 | Economic and/or financial analyses in spreadsheet format |
|[ ]  Annex 4 | Detailed budget plan [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_4_template_-_Detailed_budget_plan.xlsx/2d34b526-e650-804a-81ca-ecb5a293985d) |
|[ ]  Annex 5 | Implementation timetable including key project/programme milestones [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_5_template_-_Implementation_timetable.xlsx/2e73b0d1-3f1d-5870-609a-3e6b39905e9c) |
|[ ]  Annex 6 | E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3): [**(ESS disclosure form provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_6_form_-_ESS_disclosure_report.dotx/b5fd8542-6a8a-5a37-f099-5e6d6744fa25)[ ]  Environmental and Social Impact Assessment (ESIA) or [ ]  Environmental and Social Management Plan (ESMP) or [ ]  Environmental and Social Management System (ESMS)☐ Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People’s Plan, Land Acquisition Plan, etc.) |
| [ ]  | Annex 7 | Summary of consultations and stakeholder engagement plan  |
|[ ]  Annex 8 | Gender assessment and project/programme-level action plan [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_8_template_and_guide_-_Gender_assessment_and_action_plan.doc/fe5711ca-8fcf-1a14-5d3e-804aad1a7827) |
|[ ]  Annex 9 | Legal due diligence (regulation, taxation and insurance)  |
|[ ]  Annex 10 | Procurement plan [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_10_-_Procurement_plan.docx/4a360e64-5f03-e02e-408b-6239fccaedb3) |
|[ ]  Annex 11 | Monitoring and evaluation plan [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_11_template_-_Monitoring_and_evaluation_plan.docx/6a3b64be-9712-454b-b948-99cf8ffc43bb) |
|[ ]  Annex 12 | AE fee request [**(template provided)**](https://www.greenclimate.fund/documents/20182/193373/Funding_Proposal_Annex_12_template_-_AE_fee_request.xlsx/4e9450c0-6bf0-8290-24b7-2ff43ca95c01) |
| [ ]  | Annex 13 | Co-financing commitment letter, if applicable [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_13_template_-_Co-financing_commitment_letter.docx/16bb3e0a-be63-19cd-d352-460176f4a569)  |
|[ ]  Annex 14 | Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule  |
| **H.2. Other annexes as applicable** |
|[ ]  Annex 15 | Evidence of internal approval [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_15_template_-_Evidence_of_internal_approval.docx/dcb5743a-46d9-0e8f-2da6-b9b58371f82b)  |
| [ ]  | Annex 16 | Map(s) indicating the location of proposed interventions |
| [ ]  | Annex 17 | Multi-country project/programme information [**(template provided)**](https://www.greenclimate.fund/documents/20182/574712/Funding_Proposal_Annex_17_template_-_Multi-country_project_programme_information.xlsx/95110afa-ab09-f948-1abe-5887bcfec594) |
| [ ]  | Annex 18 | Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project |
| [ ]  | Annex 19 | Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity |
| [ ]  | Annex 20 | First level AML/CFT (KYC) assessment |
| [ ]  | Annex 21 | Operations manual (Operations and maintenance) |
| [ ]  | Annex x  | Other references |

*\* Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*

1. Bosnia and Herzegovina is a member of the International Commission for the Protection of the Danube River (ICPDR). [↑](#footnote-ref-1)
2. BiH TNC [↑](#footnote-ref-2)
3. See Chapter 2 of the FS. [↑](#footnote-ref-3)
4. The project’s implementation of an integrated approach to FRM will in fact benefit populations vulnerability to floods across the whole country through the implementation of a national FFEWS, the use of climate risk-informed flood risk information in policy and decision making and through national disaster risk financing mechanisms. As part of project development, we are currently undertaking the relevant studies to prioritise the specific target sites where project structural and non-structural measures will be implemented, and these will be detailed at full proposal and feasibility stage. Based on flood socio-economic risk assessment and identification of the highest risk river basins, these are likely to be in Vrbas, Una-Sana and Bosna river basins. [↑](#footnote-ref-4)
5. Socio-economic impact of floods under current and climate change conditions in BiH was done as part of Pre-feasibility assessment [↑](#footnote-ref-5)
6. A full economics analysis for the project will be undertaken during project formation and included in the full proposal. [↑](#footnote-ref-6)