
Terminal Evaluation Report

UNDP-GEF Project: Technology transfer for climate resilient flood management in Vrbas River Basin

GEF Project ID: 5604

UNDP Project ID: 5241

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| Country: | Bosnia and Herzegovina |
| Region: | Europe and the CIS |
| GEF Focal Area: | Climate Change |
| Trust Fund: | Special Climate Change Fund (SCCF) |
| Implementing Partner / Executing Entity: | United Nations Development Programme (UNDP) |
| Other Partners Involved: | Ministry of Spatial Planning, Construction and Ecology of Republika Srpska; Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina |

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| 16 March 2020 | 03 | Draft final |
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Opening Page

PROJECT DETAILS:

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|---|---|--------------------|
| Project Name: | Technology transfer for climate resilient flood management in Vrbas River Basin | |
| Project ID: | GEF Project ID: 5604 | UNDP PIMS ID: 5241 |
| Country: | Bosnia and Herzegovina | |
| Region: | Europe and the CIS | |
| Focal Area: | Climate Change Adaptation | |
| Funding Source: | Special Climate Change Fund (SCCF) | |
| GEF Focal Area Objective: | CCA-3: Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology | |
| Implementing Partner / Executing Entity: | United Nations Development Programme | |
| Implementation Modality: | Direct Implementation Modality (DIM) | |
| Other Partners Involved: | Ministry of Spatial Planning, Construction and Ecology of Republika Srpska; Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina | |

FINANCIALS:

| | |
|-----------------------------------|----------------|
| Project Preparation Grant: | USD 150,000 |
| GEF Project Grant: | USD 5,000,000 |
| Cofinancing Total: | USD 77,260,000 |
| GEF Agency Fees: | USD 475,000 |
| Total Cost: | USD 82,410,000 |

PROJECT TIMELINE:

| | |
|---|------------------|
| Received by GEF: | 01 October 2013 |
| Preparation Grant Approved: | 05 February 2014 |
| Concept Approved: | 03 March 2014 |
| Project Approved for Implementation: | 09 February 2015 |
| State Date: | 24 March 2015 |
| Project Closed (extended): | 31 March 2020 |

TERMINAL EVALUATION DETAILS:

| | |
|----------------------------|-------------------------|
| TE Timeframe: | September–December 2019 |
| Terminal Evaluator | James Lenoci |
| Reporting Language: | English |

The terminal evaluation (TE) Consultant would like to acknowledge the informative feedback and logistical support provided by the project stakeholders, including national, state and local government level partners, the Project Manager and project team members, the UNDP CO staff, the UNDP Regional Technical Advisor, Chief Technical Advisor, technical assistance consultants and service providers, and local beneficiaries of the delivered non-structural measures.

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Executive Summary

The project was approved under the GEF Special Climate Change Fund (SCCF) and implemented through a direct implementation modality, with UNDP as the implementing partner / executing entity. Basic project information and finances are summarized below in **Table 1**.

Table 1: Project summary table

| Project Title: Technology transfer for climate resilient flood management in Vrbas River Basin | | at endorsement (USD million) | at TE* (USD million) |
|--|--|--|-------------------------|
| GEF Project ID: | 5604 | GEF financing, PPG grant: | 150,000 |
| UNDP Project ID: | 5241 | GEF financing, project grant: | 5,000,000 |
| Country: | Bosnia and Herzegovina | IA own: | 1,560,000 |
| Region: | Europe and the CIS | Government: | 75,700,000 |
| Focal Area: | Climate Change | Other: | 0 |
| Focal Area Objective: | CCA-3, Special Climate Change Adaptation Fund (SCCF) | Total co-financing: | 77,260,000 |
| | | Total Project Cost: | 82,410,000 |
| Implementing Partner / Executing Entity: | UNDP | Prodoc Signature (date project began): | 24 Mar 2015 |
| Other Partners Involved: | Ministry of Spatial Planning, Construction and Ecology of Republika Srpska; Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina | (Operational) Closing Date: | Proposed: |
| | | | Actual: |
| | | | 31 Mar 2015 |
| | | | 31 Mar 2020 |

Note: Total expenditures based upon figures through 30 September 2019

PROJECT DESCRIPTION:

The "Technology transfer of climate resilient flood management in Vrbas River Basin" project is a 5-year, USD 5 million SCCF funded project with the overall objective to transfer technologies for climate resilient flood management in order to increase resilience of highly exposed rural poor, returnee and displaced persons communities in Vrbas River Basin (VRB). Adaptation technologies for climate resilient flood risk management (FRM) include the development of state-of-the-art hydrological and hydrodynamic models and GIS tools for the VRB incorporating climate change predictions and producing flood hazard maps as the basis for spatial planning and long-term strategic FRM. The project includes the upgrade and rehabilitation of the hydrometric network, the harmonization and centralization of the hydrometric database, and development of a flood forecasting system and enhanced early warning system within the VRB. Emergency response capacities have been enhanced through the development of emergency response plans and provision of training in flood-specific civil protection are provided. The project has worked closely with VRB municipalities in applying climate resilient community-based non-structural measures and has provided extensive training to local communities on climate resilient FRM approaches.

The project strategy includes the following three outcomes:

- Outcome 1: Key relevant development strategies/policies/legislation integrate climate change-resilient flood management approaches
- Outcome 2: Climate resilient flood risk management is enabled by transferring modern technologies and strengthening institutional capacities
- Outcome 3: New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in Vrbas River Basin

TERMINAL EVALUATION PURPOSE AND METHODOLOGY:

This terminal evaluation was conducted to provide conclusions and recommendations about the relevance, efficiency, effectiveness, sustainability, and progress towards impact of the project. The evaluation also aimed to identify lessons from the project for future similar undertakings, and to propose recommendations for ensuring the sustainability of the results. The evaluation was an evidence-based assessment and relied on feedback from persons who have been involved in the design, implementation, and supervision of the project, review of available documents and records, and findings made during field visits.

ADAPTATION BENEFITS GENERATED:

The project has successfully generated the following adaptation benefits:

Strengthened resilience and enhanced adaptive capacity in the Vrbas River Basin

The 638,600 ha Vrbas River Basin (VRB) is under improved management for climate resilience through development of a flood forecasting and early warning system (FFEWS), which included deployment and transfer of the following hydrometeorological equipment: twenty (20) precipitation stations, seven (7) hydrological stations and two (2) automatic meteorological stations; coordinated online data management and communication protocols; and is supported by a comprehensive, flood risk management (FRM) plan. Transfer of adaptation technology focused on the 13 municipalities (out of a total of 28 in the VRB) that are most susceptible to flooding; the cumulative number of inhabitants, project direct beneficiaries, in these 13 municipalities is 213,470, of which 52.2% are women.

Reduced flood vulnerability through implementation of non-structural measures

Vulnerability to floods have been reduced in eleven (11) municipalities through implementation of twenty (20) non-structural field interventions between August 2017 and November 2019, covering a cumulative reach of 22.55 kilometers and consisting of regulation of torrential streams, cleaning of riverbeds, strengthening of embankments, bolstering riverbank protection with stone embankments and gabion systems, constructing stormwater drainage systems and reinforcing riverbanks with vegetation, including under an agroforestry management system.

Increased coping capacity to flood events through strengthened civil protection systems

Coping capacities of entity (RS and FBiH), canton and municipality level civil protection units have been strengthened through technical training delivered to 571 CPU personnel and municipal officials, information disseminated to the public through radio, television, internet and print media, and transfer of the following communication and warning equipment: 140 portable radio stations delivered to the Federal Authority for Civil Protection FBiH (FUCZ), Republic Authority for Civil Protection of RS (RUCZ), Civil Protection of Central Bosna Canton, and 14 municipalities (Gradiška, Srbac, Laktaši, Čelinac, Kotor Varoš, Banja Luka, Knežev, Mrkonjić, Jezero, Šipovo, Jajce, Donji Vakuf, Bugojno and Gornji Vakuf-Uskoplje), 14 fixed radio stations, 14 mobile stations, 3 radio relays and 8 civil defense sirens.

Enhanced enabling environment through advances to legal framework and institutional strengthening

The enabling environment for flood risk management in the VRB and throughout BiH has been enhanced through advances in the legal framework and institutional strengthening, including amendments to the RS Law on Water which effectively transposes the EU Flood Directive (2017/60/EC), adoption of a RS decree stipulating requirements for FRM plans, adoption to amendments to the RS Law on Spatial Planning, development of eight (8) guidelines on various aspects of flood risk management, and extensive training delivered to regulatory and technical staff of ministries and agencies in FBiH and RS.

Reduced flood vulnerability through broadened collaboration and dialogue across entities and sectors

Vulnerability to floods has been reduced through improved and broadened collaboration and dialogue across entities and sectors, including developing a basin-wide flood forecasting and early warning system (FFEWS), strengthened cooperation among hydromet and water agencies in FBiH and RS, engagement with the hydropower (although further involvement is required) and agricultural sectors, and improved communication among municipalities in the VRB.

Strengthened resilience to climate change through knowledge generated among the professional community

Several professional service providers delivered technical assistance on the project, and the knowledge generated through these activities strengthens resilience to climate change, e.g., through development of flood risk management plan, flood risk and flood hazard maps, and flood forecasting tools, as well as information gained from real-time measurement of hydrometeorological data within the basin.

Strengthened resilience through preliminary development of natural disaster insurance

Climate resilience of communities has also been enhanced through preliminary development of natural disaster insurance, as a risk transfer instrument.

SUMMARY OF CONCLUSIONS:

The relevance of the project was substantiated in 2014 when extensive areas in BiH were devastated by record-setting flood events; the project concept was submitted in January of that year, before the flood events. The GEF funds have provided important incremental benefits to the flood risk management (FRM) efforts in BiH, specifically in the Vrbas River Basin (VRB). Shortly after the 2014 floods many donor partners and financial institutions disbursed technical and

financial assistance, including the European Investment Bank (EIB) which extended a EUR 55 million loan in 2014 for reconstruction of emergency flood protection structures in the Sava River Basin. The activities completed under the EIB loan comprised the largest proportion of cofinancing for the project. The GEF grant has funded a series of complementary non-structural measures, including development of flood forecasting and decision support systems, delivery of communication systems and strengthening flood warning systems, development of a participatory GIS-based flood risk management information system for the public and local governments, advanced planning for flood risks through overlaying flood risk and flood hazard maps to land use plans, assessment of socioeconomic vulnerabilities, constructing field interventions such as river channel cleaning and reinforcement of embankments to reduce vulnerabilities of at-risk communities, and preliminary development of natural disaster insurance primarily for residential stakeholders, as a risk transfer mechanism.

The project was aligned with Objective CCA-3 of the Programming Strategy for the GEF SCCF (2010-2014): “Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology”. The project remains relevant to the SCCF priorities, as the two subsequent SCCF programming strategies, for 2014-2018 and 2018-2022, contain similar technology transfer oriented objectives. The adaptation technology deployed and transferred on the project has provided flood management stakeholders with improved tools to make more informed and timely decisions, enabled more effective coordination across entities and enhanced knowledge of flood risks and hazards and the potential impacts of climate change.

Considering the primary objective of the project was technology transfer, there were commendable advances with respect to policy development, including transposing the EU Flood Directive in the RS. The VRB flood risk management (FRM) plan is another important achievement in terms of a policy tool and planning framework. The government of RS has approved the FRM plan, but the FBiH has elected to wait for the IPA II, EU-funded project to develop flood risk management plans countrywide. Although the VRB is considered an internal river in BiH, it extends across the RS and FBiH entities, and approvals of policies and management plans are handled separately at the entity level. This modality is an administrative reality that is factored into planning and decision making throughout BiH.

The project has contributed towards improved stakeholder involvement among the hydrometeorological institutes and water agencies in the two entities. The project strategy emphasized engagement with the agricultural and energy (hydropower) sectors, which are important stakeholders in the VRB and with respect to water resources management in general in the country. Several climate scenarios were modeled for the agricultural sector and extensive trainings were delivered to VRB extension officials and farmers on agricultural production in the floodplains of the VRB. And, hydropower sector stakeholders have been involved in the development communication protocols for improved flood risk management. The extent of engagement with the hydropower sector will need to increase as the protocols for the FFEWS are further developed and rolled out. As confirmed in the development of the FRM plan, the forestry sector is also an important stakeholder, e.g., due to forest loss in some of the upstream stretches in the VRB, discharges of some of the Vrbas River tributaries are on an increasing trajectory. In fact, the discharge from the Vrbanja Stream has been greater than the main channel of the Vrbas River on some occasions. Forest loss has also led to increased torrential flooding with significant sediment load in the flows due to exposed soils on steep slopes during intense rainfall events. The project made important contributions in the understanding and management of torrential floods, through torrent susceptibility modeling and development of torrent flood risk maps. Considering mountainous nature of many sections of river basins in BiH, these outputs are particularly valuable for flood risk management within the VRB and elsewhere in the country.

Regarding the risk transfer instruments included under Component 3, the project made substantive progress in assessing the local market conditions, surveying willingness to pay and evaluating viable products for BiH. The index-based products envisaged in the project strategy were determined unviable under current socioeconomic circumstances and more pertinent to the agricultural sector than for residential property, which was found to be the most appropriate segment to focus on. Based on experiences from a natural disaster insurance product introduced in Romania in 2008, a similar, mandatory product is proposed for BiH. The insurance sector, primarily in RS, has been actively engaged in the preparatory work facilitated under the project and remain committed to continue after project closure. Developing the requisite legal framework for the envisaged obligatory natural disaster insurance product will be a key step towards making genuine progress moving forward. The UNDP could provide an important and influential role in the process, bridging the governmental and private sectors and representing the needs of marginalized communities in at-risk areas.

The project has benefited from experienced and efficient project management and a strong project team. Financial delivery has exceeded 90% in each of the four full years reported from 2015 through 2018. Country ownership was found to be good, with high level representation on the project board from national, RS and FBiH stakeholders, and active involvement in the project activities. A total of USD 64.8 million of cofinancing has materialized by 24 December 2019; this is nearly 13 times the value of the USD 5 million GEF project grant. And, nearly USD 0.8 million of cash

cofinancing has been contributed by 11 VRB municipalities for 20 non-structural measures completed between August 2017 and September 2019; this figure will increase before project closure as there are a few interventions that will be completed before project closure in March 2020.

The potential for upscaling is high, including through the proposed GCF project “Scaling up climate resilient flood risk management in Bosnia and Herzegovina”, which is expected to be submitted for approval in the first half of 2020. Moreover, the EU remains the main donor in BiH and the EUR 5 million IPA II “Support to Flood Protection and Flood Risk Management” program, running from 2014-2020, includes development of countrywide flood risk management plans, which is the last step in fulfilling requirements stipulated in the EU Flood Directive. The FRM plan developed for the VRB provides valuable guidance for replication across other river basins, and the socioeconomic vulnerability assessment methodology developed on the project will be applied under the GCF project. Other evidence of replication during the project implementation period include adoption of the specifications for hydrometeorological stations for other river basins, including the Bosna River.

EVALUATION RATINGS:

Evaluation ratings are summarized below in **Table 2**.

Table 2: Evaluation ratings

| Criteria | Rating | Comments |
|---|---------------------|---|
| 1. Monitoring and Evaluation (M&E) | | |
| M&E Design | Satisfactory | The M&E plan was developed using the standard UNDP template for GEF-financed projects. The indicative M&E budget was USD 105,000, or 2.1% of the USD 5,000,000 GEF project grant – which is lower than the 5-7% range currently recommended for GEF-7 projects. M&E results were documented in project implementation review (PIR) reports. The project board was an important platform for M&E, providing strategic feedback to issues raised through project reporting and discussions during the board meetings. The project inception report provided a comprehensive and updated summary of the project and provided details regarding proposed project interventions. The project results framework was not critically reviewed at the inception phase, and there was confusion on what tracking tool to assess as the GEF made changes throughout the project implementation timeframe. The project team has responded to the midterm review recommendations, with some issues still under development, e.g., sustainability strategy. |
| M&E Implementation | Satisfactory | |
| 2. Implementation and Execution | | |
| Quality of Implementation and Execution | Satisfactory | <p>Drawing from long-standing operations in BiH and strong institutional capacity in leading CCA and human development projects and programs, UNDP as the GEF implementation agency and executing entity, has successfully led the project from conceptualization to project development and throughout implementation. Country ownership has been good throughout, with high level representation on the project board, including the Minister of the Ministry of Spatial Planning, Construction and Ecology of RS as chair of the board, and involvement by national, state and local government level stakeholders. Substantial cofinancing was delivered by recipient government partners, including approximately USD 0.8 million of direct cash contributions by 11 VRB municipalities.</p> <p>The project board convened regularly (twice per year generally) and provided constructive guidance and supervision. Key issues and critical risks were captured in project reporting and discussed at the board meetings.</p> <p>The UNDP CO provided administrative and strategic guidance throughout the project development and implementation phase. Apart from USD 1.5 million of parallel grant cofinancing, UNDP provided more than USD 60,000 of in-kind cofinancing, which includes a share of the salaries of CO staff and costs for office premises and services. The UNDP regional technical advisor (RTA) has also been actively involved, providing strategic guidance to the project team. Moreover, the international Chief Technical Advisor (CTA) provided high-level guidance throughout the project, starting at conceptualization and continuing through the development and implementation phases.</p> |
| 3. Assessment of Outcomes | | |
| Overall Quality of Project Outcomes | Highly Satisfactory | The GEF funding addressed the key barriers highlighted in the project design, and the project has managed to highly satisfactorily achieve the intended project outcomes within the allocated budget and 5-year implementation timeframe. The |

| Criteria | Rating | Comments | |
|--|---------------------|---|---------------------|
| | | level of outcomes achieved exceeded expectations, through the developed water information system, the torrents susceptibility modeling, LiDAR surveys and strengthened regulatory framework, which is particularly noteworthy. | |
| Relevance | Highly Satisfactory | <p>The project was aligned with Objective CCA-3 of the Programming Strategy for the GEF SCCF for the period of 2010-2014: “Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology”. The project remains relevant to the SCCF priorities of the two subsequent SCCF programming strategies for 2014-2018 and 2018-2022.</p> <p>The project strategy is consistent with the priorities outlined in the countrywide 2013 Climate Change Adaptation and Low Emissions Development Strategy for BiH covering the period 2013 to 2025, and with the Environmental Approximation Strategy (EAS), adopted in May 2017. Climate change risk in the development of agriculture in BiH is recognized in the Strategic Plan for Rural Development of BiH (2018-2021) – Framework Document. In terms of civil protection, the project interventions on strengthening capacities of civil protection units are in line with the preparations for BiH in becoming a participating state of the Union Civil Protection Mechanism (UCPM).</p> <p>The development objectives of the project were aligned with United Nations Development Assistance Framework (UNDAF) and the UNDP Country Programme Document (CPD) for Bosnia and Herzegovina for the period of 2015-2019, specifically UNDAF Outcome 5, “By 2019, legal and strategic frameworks are enhanced and operationalized to ensure sustainable management of natural, cultural and energy resources, and CPD Output 2 under this outcome, “Subnational actors implement climate change adaptation (CCA) and mitigation measures, sustainable energy access solutions, and manage natural resources sustainably; and with UNDAF Outcome 3, “By 2019, there is effective management of war remnants and strengthened prevention and responsiveness for man-made and natural disasters, and CPD Output 2 under this outcome, “Legal and policy frameworks in place supporting implementation of disaster and climate risk management measures, including gender perspective”.</p> | |
| Effectiveness | Satisfactory | Outcome 1: Key relevant development strategies, policies, legislation integrate climate change-resilient flood management approaches | Satisfactory |
| | | Outcome 2: Climate resilient flood risk management is enabled by transferring modern technologies and strengthening institutional capacities | Highly Satisfactory |
| | | Outcome 3: New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in Vrbas River Basin | Satisfactory |
| Efficiency | Highly Satisfactory | The project has been cost-effective in generating adaptation benefits in the VRB. Financial delivery has exceeded 90% in each of the four years from 2015 through 2018. Total materialized cofinancing is USD 64.8 million, which is 84% of the amount committed at project entry but 9X the value of the GEF project grant and includes nearly USD 0.8 million of direct cash cofinancing from VRB municipalities through September 2019. | |
| 4. Sustainability | | | |
| Overall likelihood that benefits will continue to be delivered after project closure | Moderately Likely | <p>The strengthened enabling environment achieved through the project interventions increases the likelihood that results will be sustained after GEF funding ceases. In fact, three of the four sustainability dimensions have been applied the highest rating of “likely”. The overall likelihood that benefits generated on the project will be sustained after closure is rated as moderately likely, due to institutional framework and governance aspects.</p> <p>There is continued donor support for flood risk management, including long-standing funding from the EU and a GCF project that is expected to be submitted for approval in the first half of 2020. Transposing the EU Flood Directive in RS is a</p> | |

| Criteria | Rating | Comments |
|--|---------------------|--|
| Financial dimension | Likely | significant step towards institutionalizing flood risk management and sustained budgetary commitments. The flood risk management plan for the VRB provides an important guidance for VRB municipalities to allocate available resources and also provides a prioritized framework for domestic and international donors. The project facilitated improved coordination in the VRB among water sector stakeholders in FBiH and RS; however, the complex political and institutional arrangement in BiH diminish the likelihood for sustainability of project results. For instance, the VRB flood risk management plan was approved by the RS, but not by the FBiH. Effective flood risk management in the long-term will also require increased involvement by the energy (hydropower) and forestry sectors. In the FBiH, a proportion of the revenue collected from water tariffs is earmarked for the operation of hydrometeorological stations. Similar arrangements have been made in RS, through allocation of financing from the RS Fund for Environmental Protection and Energy Efficiency. Cash cofinancing contributions were delivered by the municipalities where non-structural measures were implemented; however, there are funding constraints among VRB local governments for sustaining regular maintenance of the completed non-structural measures, such as cleaning out stream channels and reinforcing embankments. Strengthened capacities of civil protection units enhance the likelihood that project results will be sustained. The project made substantive contributions towards the development of natural disaster insurance products and there is strong commitment among private sector insurance companies to carry on the process after project closure. Establishing the legal framework for the envisaged obligatory insurance product, however, will take time and sustained leadership by the governmental sector. |
| Socioeconomic dimension | Likely | |
| Institutional Framework and Governance dimension | Moderately Likely | |
| Environmental dimension | Likely | |
| 5. Overall Project Results | Satisfactory | |

RECOMMENDATIONS:

TE recommendations are presented below in **Table 3**.

Table 3: Recommendations table

| No. | Recommendation | Responsible Entities | Timeframe |
|--|--|-----------------------------|---------------------------|
| Corrective actions for the design, implementation, monitoring and evaluation of the project | | | |
| 1. | Finalize and initiate the implementation of a sustainability plan. One of the recommendations of the midterm review was to develop a sustainability strategy. It would be advisable to complete an action plan according to the strategy and initiate implementation before project closure, e.g., identifying roles and responsibilities, indicating costs and possible sources of funding, recommending champions for follow-up actions, etc. | Project team, project board | Before project closure |
| 2. | Carry out a terminal assessment using the CCA tracking tool for the SCCF programming period of 2018-2022. The suggested sections of the 2018-2022 CCA tracking tool that are relevant to the VRB project include: Core Indicators 1, 2, 3 and 4; Objective 1, Outcome 1.1, Output 1.1.1; and Objective 1, Outcome 1.1, Output 1.1.3. | Project team | Before project closure |
| 3. | Prepare a factsheet on the proposed natural disaster insurance product. A concise and informative factsheet would provide documentary support in advocating for the further development of the insurance coverage. | Project team | Before project closure |
| 4. | Liaise with the "EU 4 Civil Protection Project" regarding results achieved in strengthening capacities of civil protection units. It would be advisable to liaise with the EU 4 Civil Protection project, sharing lessons learned and approaches implemented, and explore possibilities for synergies with the proposed GCF project. | Project team | Before project closure |
| Actions to follow up or reinforce initial benefits from the project | | | |
| 5. | Carry out stock-taking and update the FRM plan for the VRB. It would be advisable to carry out a stock-taking exercise of the VRB FRM plan in the next 1-2 years, and update the plan | FRM stakeholders | Within the next 1-2 years |

| No. | Recommendation | Responsible Entities | Timeframe |
|--|--|---------------------------------|---------------------------|
| | according to any changed circumstances, e.g., completed structural and non-structural measures, and reevaluating the type and costs of short-term and long-term actions; reformulating “urgent” actions to “priority” actions; capturing the operationalized flood forecasting and early warning system; updating information regarding the hydropower sector within the basin; highlighting the importance of the forestry sector; etc. | | |
| 6. | Strengthen engagement with the hydropower and forestry sectors for integrated flood risk management. Hydropower and forestry are important sectors in the VRB and it is imperative to better engage these sectors regarding water regulation and land use practices. | FRM stakeholders | Within the next 1-2 years |
| 7. | Develop the requisite legal framework and implement a public information campaign for the proposed natural disaster insurance coverage. In order to realize the envisaged obligatory insurance coverage, developing the requisite legal framework is essential and communicating the concept and coverage to the public should be prioritized. | Multi-stakeholder working group | Within the next 1-2 years |
| Proposals for future directions underlining main objectives | | | |
| 8. | Integrate flood risk management with river basin management. Consistent with principles of the EU Flood Directive and the EU Water Framework Directive, flood risk management should be further integrated with river basin management, entailing closer coordination across administrative entities in BiH. | FRM stakeholders in BiH | Within the next 1-2 years |
| 9. | Promote integration of flood risk management priorities into the National Energy and Climate Plan (NECP) for the period of 2021-2030 in order to align with EU energy and climate policies. BiH has recently started working on the NECP and, therefore, the timing is opportune to integrate FRM issues in the early phases in the development of the plan. | FRM stakeholders in BiH | Within the next 1-2 years |
| 10. | Advocate for membership and participation in the Alliance for Hydromet Development¹, which brings together major international development, humanitarian and climate finance institutions, collectively committed to scale up and unite efforts to close the hydromet capacity gap by 2030. | Hydromet institutions, UNDP | Within the next 1-2 years |

A few examples of good practices and lessons learned regarding project design and implementation are presented below.

GOOD PRACTICES:

Coordination with other projects increases the likelihood that project results will be sustained. The project has done a good job at coordinating with other projects and initiatives, addressing opportunities during each of the project board meetings and facilitating direct cofinancing contributions.

Cash cofinancing from VRB municipalities enhances country ownership and increases the likelihood that project results will be sustained. Substantial cash cofinancing has been contributed by 11 VRB municipalities for cost-sharing in the implementation of non-structural measures. This direct interaction with local governments significantly enhances the level of country ownership on the project and increases the likelihood that project results will be sustained after GEF funding ceases.

Rotating the project board meeting strengthens coordination and collaboration across entities. Considering the VRB extends across the RS and FBiH, rotating the venue of the project board meetings has been a good practice at strengthening coordination and collaboration among entity level stakeholders.

Involvement of the private sector in the conceptualization of natural disaster insurance increases the marketability of the product and contributes towards the objectives of risk transfer. The constructive feedback and interest from the private insurance sector stakeholders has been instrumental in conceptualizing a viable product that has market potential in BiH. In fact, it would have been advisable to have had more in-depth consultation with the insurance sector during the project preparation phase.

LESSONS LEARNED:

The stakeholder involvement plan did not include specific approaches for engagement with the energy (hydropower), agricultural and forestry sectors. The project strategy contains specific objectives regarding the energy (hydropower) and agriculture sector, e.g., integrating climate change considerations in the sector strategies and

¹ The Alliance was launched at the COP25 climate conference on 10 December 2019.

policies; however, the stakeholder involvement plan did not contain specific approaches on engaging with these sectors, or with forestry sector, which is also an important stakeholder group in the VRB and throughout BiH.

The aim of increasing resilience of highly exposed rural poor, returnee and displaced persons communities in the VRB was not clearly reflected in the evaluation criteria of non-structural measures approved for implementation. The project developed a comprehensive evaluation matrix for assessing offers for non-structural measures. Flood risk is included among the criteria in the evaluation matrix, but there is not a specific criterion on the risks to highly exposed rural poor, returnee and displaced communities in the VRB – which is the underlying objective of the project.

Gender mainstreaming targets were not fully integrated into the project results framework and not regularly reported on. A gender assessment was included in the project document, but a detailed gender analysis and action plan were not prepared during the project preparation phase, and the project strategy did not fully meet the criteria for a GEN 2 marker characterization. A gender mainstreaming indicator framework was included in the project document; however, it would have been advisable to integrate these gender indicators into the project results framework and to focus the gender metrics on empowerment and equality.

Cost-sharing at the project level. The USD 1.5 million in cash cofinancing from UNDP committed at CEO endorsement was integrated into the total budget and work plan as cost-sharing at the project level. The actual cofinancing that was reported was parallel contributions from complementary projects, which is not cost-sharing at the project level.

It would have been advisable to develop a knowledge management strategy. The project has made important contributions to knowledge associated with flood risk management in the VRB and BiH in general. It would have been advisable to develop a knowledge management strategy, describing roles and responsibilities, cofinancing contributions, ownership of knowledge platforms and systems after GEF funding ceases, etc.

Cofinancing allocations should extend beyond project closure to cover follow-up actions. Allocation of cofinancing contributions should extend beyond the date of project closure, e.g., by 2-3 years, to cover the cost and oversight for follow-up actions.

Abbreviations and Acronyms

Exchange Rate, BAM:USD: **1.80064** (24 Mar 2015, at project start); **1.75794** (20 Dec 2019, at terminal evaluation)

| | |
|----------------|--|
| AFD | Agence Française de Développement |
| AWP | Annual Work Plan |
| BAM | Bosnia and Herzegovina Convertible Mark |
| BiH | Bosnia and Herzegovina |
| CB EWS | Community Based Early Warning System |
| CC | Climate Change |
| CCA | Climate Change Adaptation |
| CDR | Combined Delivery Report |
| CIS | Commonwealth of Independent States |
| CO | Country Office |
| CPD | Country Programme Document |
| CPU | Civil Protection Unit |
| CRFRM | Climate Resilient Flood Management |
| CTA | Chief Technical Advisor |
| DIM | Direct Implementation Modality |
| DRR | Disaster Risk Reduction |
| EAS | Environmental Approximation Strategy |
| EC | European Commission |
| EIB | European Investment Bank |
| EU | European Union |
| EWS | Early Warning System |
| FBiH | Federation of Bosnia and Herzegovina |
| FFEWS | Flood Forecasting and Early Warning System |
| FRM | Flood Risk Management |
| FUCZ | Federal Authority for Civil Protection FBiH |
| GCF | Green Climate Fund |
| GDP | Gross Domestic Product |
| GEF CCA | Global Environment Facility Climate Change Adaptation |
| GEF | Global Environment Facility |
| GEF OFP | Global Environment Facility Operational Focal Point |
| GIS | Geographic Information Systems |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH |
| ha | Hectare |
| INC | Initial National Communication |
| IPA | Instrument for Pre-Accession Assistance |
| LDCF | Least Developed Countries Fund |
| LiDAR | Light Detecting and Ranging |
| M&E | Monitoring and Evaluation |
| MoFTER | Ministry of Foreign Trade and Economic Relations |
| NAP | National Adaptation Plan |
| NDCs | Nationally Determined Contributions |
| NECP | National Energy and Climate Plan |
| NGOs | Non-Governmental Organizations |
| PAC | PAC Project Appraisal Committee |
| PGIS | Participatory Geographical Information Systems |
| PIF | Project Information Form |

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| | |
|------------------|---|
| PIMS | Project Information Management System |
| PIR | Project Implementation Review |
| PPG | Project Preparation Grant |
| RCPO | Regional Chief Procurement Officer |
| RS | Republika Srpska |
| RUCZ | Republic Authority for Civil Protection of RS |
| RTA | Regional Technical Advisor |
| SBAA | Standard Basic Assistance Agreement |
| SCCF | Special Climate Change Fund |
| SDG | Sustainable Development Goal |
| SECO | Swiss Secretariat for Economic Affairs |
| SEEC CRIF | Southeast Europe and the Caucasus Catastrophe Risk Insurance Facility |
| SMART | Smart, Measurable, Achievable, Relevant and Timebound |
| SNC | Second National Communication |
| TE | Terminal Evaluation |
| TNC | Third National Communication |
| TOR | Terms of Reference |
| UCPM | Union Civil Protection Mechanism |
| UNDAF | United Nations Development Assistance Framework |
| UNDP | United Nations Development Programme |
| UNEG | United Nations Evaluation Group |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNISDR | United Nations International Strategy for Disaster Reduction |
| USD | United States Dollar |
| VRB | Vrbas River Basin |
| WB | World Bank |
| WBIF | Western Balkans Investment Framework |
| WFD | Water Framework Directive |

1 Introduction

1.1 Purpose of Evaluation

The purpose of the terminal evaluation (TE) is to provide an impartial review of the project in terms of its relevance, effectiveness, efficiency, sustainability, progress towards impact and overall performance. The information, findings, lessons learned, and recommendations generated by the evaluation at this particular time will be used by the UNDP and the implementing partners to strengthen the remaining project implementation and inform prospects for eventual replication and sustainability of the intervention.

The objectives of the evaluation were to assess the achievement of project results, to draw lessons that can both improve the sustainability of benefits from this project and aid in the overall enhancement of UNDP programming. The broader purposes of evaluations of UNDP supported, GEF financed projects include the following:

- ✓ To promote accountability and transparency, and to assess and disclose the extent of project accomplishments
- ✓ To synthesize lessons that can help to improve the selection, design and implementation of future GEF financed UNDP activities
- ✓ To provide feedback on issues that are recurrent across the UNDP portfolio and need attention, and on improvements regarding previously identified issues
- ✓ To contribute to the overall assessment of results in achieving GEF strategic objectives aimed at global environmental benefit
- ✓ To gauge the extent of project convergence with other UN and UNDP priorities, including harmonization with other United Nations Development Assistance Framework (UNDAF) and UNDP Country Programme Document (CPD).

1.2 Evaluation Scope and Methodology

The overall approach and methodology of the evaluation follows the guidelines outlined in the following guidance documents:

- Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects, Approved by the GEF IEO Director on 11th of April 2017
- UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects, 2012

The terminal evaluation was an evidence-based assessment, relying on feedback from persons who have been involved in the design, implementation, and supervision of the project, and review of available documents and findings made during field visits.

The evaluation included following activities:

- ✓ The one-week TE mission was completed over the period 4-8 November 2019. The mission itinerary is compiled in **Annex 1**.
- ✓ As a data collection and analysis guidance tool, the evaluation matrix included as **Annex 2** was used to guide the evaluation. Evidence gathered during the evaluation was cross-checked between as many sources as practicable, to validate the findings.
- ✓ The TE Consultant interviewed key project stakeholders, including the project manager, representatives from participating government agencies and ministries, consultants, local beneficiaries, as well the UNDP Country Office (CO) environment and energy sector manager, and the UNDP Regional Technical Advisor. A list of interviewed people is included in **Annex 3**.
- ✓ A desk review was made of available reports and other documents, listed in **Annex 4**. Certain documentary evidence, including maps showing the built out hydrometeorological network and a summary of completed non-structural measures is compiled in **Annex 5**.
- ✓ The project results framework was used as an evaluation tool, in assessing attainment of the project objective and outcomes against indicators (see **Annex 6**).
- ✓ The TE Consultant reviewed information regarding cofinancing realized throughout the duration of the project; the filled in cofinancing table is compiled in **Annex 7**.

The project was approved under the 2010-2014 SCCF Programming Strategy and the 2010-2014 version of the CCA tracking tool was assessed at CEO endorsement (baseline). The 2014-2018 version of the CCA tracking tool was considered for the midterm assessment.

Evidence gathered during the fact-finding phase of the evaluation was cross-checked between as many sources as practicable, to validate the findings.

Structure of the TE report:

The TE report starts out with a description of the project, indicating the duration, main stakeholders, and the immediate and development objectives. The findings of the evaluation are broken down into the following five sections:

- Assessment of Project Design
- Assessment of Project Results
- Assessment of Monitoring & Evaluation Systems
- Assessment of Implementation and Execution
- Other Assessments

The assessment of project design focuses on how clear and practicable the project's objectives and components were formulated, and whether project outcomes were designed according to SMART criteria:

- **S: Specific:** Outcomes must use change language, describing a specific future condition
- **M: Measurable:** Results, whether quantitative or qualitative, must have measurable indicators, making it possible to assess whether they were achieved or not
- **A: Achievable:** Results must be within the capacity of the partners to achieve
- **R: Relevant:** Results must make contributions to selected priorities of the national development framework
- **T: Time-bound:** Results are never open-ended. There should be an expected date of accomplishment.

The project design assessment covers whether capacities of the implementation partners were sufficiently considered when designing the project, and if partnership arrangements were identified and negotiated prior to project approval. An assessment of how assumptions and risks were considered in the development phase is also included.

In GEF terms, project results include direct project outputs, short- to medium-term outcomes, and longer-term impact, including global environmental benefits, replication efforts, and local effects. Project results were evaluated and rated according to effectiveness, relevance, efficiency, sustainability and progress towards impacts. Effectiveness refers to the extent to which the project objective and outcomes have been achieved or how likely it is to be achieved by project closure. The assessment of relevance looks at the extent to which the activity is suited to local and national development priorities and organizational policies, including changes over time. Relevance also considers the extent to which the project is in line with GEF operational programs and strategic priorities under which the project was funded. Efficiency is a measure of the extent to which results have been delivered with the least costly resources possible; also called cost effectiveness or efficacy. The efficiency assessment also examines compliance with respect to the incremental cost concept, i.e., the GEF funds were allocated for activities not supported under baseline conditions, with the goal of generating global environmental benefits.

Assessment of the sustainability addresses the likelihood that project results will be sustained after GEF funding ceases, with respect to financial resources, institutional frameworks and governance, socioeconomic considerations and environmental factors. Progress towards impact is an assessment of the project theory of change, i.e., how project results will lead to long term impact, according to the assumptions made and estimated intermediate states.

The assessment of project monitoring & evaluation systems includes an evaluation of the appropriateness of the M&E plan, as well as a review of how the plan was implemented, e.g., compliance with progress and financial reporting requirements, how were adaptive measures taken in line with M&E findings, and management response to the recommendations from the midterm review.

The quality of project implementation and execution is evaluated and rated. This assessment considers whether there was adequate focus on results, looks at the level of support provided, quality of risk management, and the candor and realism represented in the annual reports.

Other assessments include the need for follow-up, materialization of cofinancing, environmental and social safeguards, gender concerns, and the effectiveness of partnerships and the degree of involvement of stakeholders.

The report concludes with a set of recommendations for reinforcing and following up on initial project benefits and a discussion of good practices and lessons learned which should be considered for development and implementation of other UNDP supported, GEF financed projects.

1.3 Ethics

The evaluation was conducted in accordance with the UNEG Ethical Guidelines for Evaluators, and the TE Consultant has signed the Evaluation Consultant Code of Conduct Agreement form (**Annex 8**).

1.4 Evaluation Ratings

The findings of the evaluation are compared against the targets set forth in the logical results framework and analyzed according to developments that occurred over the course of the project. The effectiveness and efficiency of project outcomes are rated according to the 6-point GEF scale, ranging from Highly Satisfactory (no shortcomings) to Highly Unsatisfactory (severe shortcomings). Monitoring & evaluation and execution of the implementing and executing agencies were also rated according to this scale. Relevance is evaluated to be either relevant or not relevant. Sustainability is rated according to a 4-point scale, ranging from Likely (negligible risks to the likelihood of continued benefits after the project ends) to Unlikely (severe risks that project outcomes will not be sustained). More detailed descriptions of the rating scales are compiled in **Annex 9**.

1.5 Audit Trail

As an “audit trail” of the evaluation process, review comments to the draft report will be compiled along with responses from the TE Consultant as an annex separate from the TE report. Relevant modifications to the report will be incorporated into the final version of the TE report.

1.6 Limitations

The evaluation was carried out over the period of September-December 2019; including preparatory activities, field mission, desk review, and completion of the evaluation report, according to the guidelines outlined in the Terms of Reference (**Annex 10**).

The project deliverables were available in English and Bosnian, with progress reports and work plans in English. Translations of documents requested by the TE Consultant were arranged by the project team, and an independent interpreter supported the TE Consultant in interviews held in Bosnian language.

Field visits were made to two municipalities where non-structural measures have been completed. Many of the non-structural measures consisted of similar types of interventions and the TE Consultant considers that the information obtained during the field visits is sufficiently representative of the project activities. Moreover, extensive documentary evidence of completed works was reviewed.

2 Project Description and Development Context

2.1 Project start and duration

Key project dates are listed below:

| | |
|--|---------------------|
| Preparation Grant Approved: | 05 February 2014 |
| Project approved for implementation by GEF Secretariat: | 09 February 2015 |
| Project start (project document signed by Government of BIH): | 24 March 2015 |
| Project inception workshop: | 29 April 2015 |
| Midterm review: | Nov 2017 – Jun 2018 |
| Terminal evaluation | Sep – Dec 2019 |
| Project completion (planned): | 31 March 2020 |

The project preparation grant was approved in February 2014, and the project was approved for implementation by the GEF Secretariat one year later on 09 February 2015. The Government of BIH signed the project document shortly after this date, on 24 March 2015, which marks the official start of the project. The project inception workshop was held on 29 April 2015. The midterm review started in November 2017 and continued to June 2018, with the final report approved in October 2018. The project completion date is set at 31 March 2020, consistent with the original closure date, 60 months following the start date.

2.2 Problems that the project sought to address

The situation analysis outlined in the project document explains how the slow rate of the post-war economic recovery of Bosnia and Herzegovina has been compounded by the negative impacts of climate change on key sectors such as agriculture, energy (hydropower), the environment and, in particular, the frequency and magnitude of flood disasters, which have tripled in frequency in the last decade².

The project target area, the Vrbas River Basin (VRB), is located in the northwestern part of the country, covering an area of 6,386 km², which is 12.5% of the total land area of BIH. The upstream reaches, approximately 37% of the VRB is situated in FBiH and the downstream section, covering 63% of the basin occurs in RS. The Vrbas River is a right tributary of the Sava River, one of the largest tributaries of the Danube River.

An updated analysis sponsored by the World Bank on water resource management of the Vrbas River Basin³, which concluded that the problem of the seasonality of discharge in VRB has increased in recent years due to an increase in extreme discharge values and decrease in minimal discharges. The study also reports that in the last ten years, floods and droughts have occurred on a scale not previously recorded.

With flood risks exacerbated by the impacts of climate change, it is imperative that BIH implement adaptation technologies and approaches to minimize the exposure of people and economic assets. Three key barriers were identified as hindering efforts under the baseline scenario for developing and implementing risk based flood management in the VRB.

Barrier #1: A lack of a comprehensive legislative and policy framework for strategic water and flood risk management, to respond to climate change risks; Fragmentation and gaps in policies and national regulations for long-term flood risk management under climate change.

Barrier #2: Lack of institutional capacities, technologies, equipment, data and tools for hazard, vulnerability, damages and loss assessments on which climate resilient flood risk management can be based.

Barrier #3: Lack of community level resilience technologies and adaptive strategies to minimize flood impact, including lack of a comprehensive and unified flood forecasting, early warning and response system to increase community resilience.

² Climate Changes and Water Management in Bosnia and Herzegovina with Special Focus on Flood Protection, Igor Palandzic, Sarajevo 2012, <http://www.scribd.com/doc/112546672/KLIMATSKE-PROMJENE-I-VODNI-RESURSI-U-BOSNI-I-HERCEGOVINI-Climate-Changes-and-Water-Resources-in-Bosnia-and-Herzegovina>

³ Update the Basis of the Water Resources Management of the Vrbas River Basin, World Bank, February 2012

2.3 Immediate and development objectives of the project

The project aims to support and enhance the flood risk management systems, capacities and understanding of enabling stakeholders and vulnerable communities. As outlined in the project document, the most damaging floods in BiH have had devastating impacts on the most vulnerable groups including the rural poor, war returnees and displaced persons.

The project strategy explains how direct consequences of the flooding in the Vrbas basin are multiple and include: damages to the housing stock, damages of infrastructure and lower economic output, especially in agriculture. These negative consequences have impacts on the livelihoods of the individual households and people of the VRB. The adverse effects on livelihoods are manifested through (i) the increased expenditures for individual households on repairs of damaged houses, agricultural buildings/facilities and infrastructure, and (ii) reduced incomes and savings from their agricultural production; or indirectly through the (iii) reduced availability of funding for social protection and welfare at the municipal/cantonal level due to the need to redirect the already scarce public budgets to cover the priority repairs of social buildings and infrastructure. Loss of commercial revenues and disruptions to business continuity can also have a direct impact on local GDP and more directly on livelihoods.

The development objectives of the project were aligned with United Nations Development Assistance Framework (UNDAF) and the UNDP Country Programme Document (CPD) for Bosnia and Herzegovina for the period of 2015-2019, specifically UNDAF Outcome 5, "By 2019, legal and strategic frameworks are enhanced and operationalized to ensure sustainable management of natural, cultural and energy resources, and CPD Output 2 under this outcome, "Subnational actors implement climate change adaptation (CCA) and mitigation measures, sustainable energy access solutions, and manage natural resources sustainably.

The contributions towards strengthening disaster and climate risk management capacities are also consistent with UNDAF Outcome 3, "By 2019, there is effective management of war remnants and strengthened prevention and responsiveness for man-made and natural disasters, and CPD Output 2 under this outcome, "Legal and policy frameworks in place supporting implementation of disaster and climate risk management measures, including gender perspective".

2.4 Baseline indicators established

Baseline indicators established include:

- Limited institutional capacity and technologies in use for strategic FRM in BiH.
- Hydrometric stations cover 50% of the area required for FFEWS for VRB
- No policy/regulatory framework for adaptation related technology transfer in place
- Very few professionals are aware of adaptation technologies
- Most of the socio-economic information required to assess flood damages, losses, exposure and vulnerability is not currently available and is not collected systematically and gender-disaggregation of data not systematically done
- Approach to FRM is structural flood protection measures
- FFEWS system disjointed and not fully electronically based

2.5 Main stakeholders

The main stakeholders relevant to the project were described in the project document, as listed below in **Table 4**.

Table 4: Project stakeholders (outlined in project document)

| Name of institutions /stakeholders consulted | Stakeholder interests, official position or mandate | Relevance to the Project / Reasons for inclusion | Modality of involvement |
|--|--|---|---|
| BiH Ministry of Foreign Trade and Economic Relations | State level Responsible for coordinating policies and measures in the field of the environment. | Location of GEF Operational Focal Point Coordination, advocating -Member of Project Board | Formal review of the Vrbas DRR project proposal Regular consultations, participation and active work in Vrbas DRR Project Board, Participation in preparation of sectoral policies and plans |

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| Name of institutions /stakeholders consulted | Stakeholder interests, official position or mandate | Relevance to the Project / Reasons for inclusion | Modality of involvement |
|---|---|---|---|
| RS Ministry of Spatial Planning, Construction, and Ecology | Entity level Responsible for environmental policies and measures in RS, including environmental measures that may mitigate CC. Responsible for integrative planning and spatial planning in RS. UNFCCC focal point. | UNFCCC focal point. Sectoral policies and plans will be updated in order to include CC modelling results- will be informed on project activities and results. -Member of Project Board | Formal review of the Vrbas DRR project proposal Regular consultations, participation and active work in Vrbas DRR Project Board, Participation in preparation of sectoral policies and plans |
| F BiH Ministry of Agriculture, Water-Management, and Forestry | Entity level Responsible for coordinating policies and measures in agriculture, water-management and forestry | Sectoral policies and plans will be updated in order to include CC modelling results- will be informed on project activities and results. -Member of Project Board | Formal review of the Vrbas DRR project proposal Regular consultations, participation and active work in Vrbas DRR Project Board, Participation in preparation of sectoral policies and plans |
| RS Ministry of Agriculture, Forestry, and Water Resources | Entity level Responsible for coordinating policies and measures in land use, forestry, and water resources | Sectoral policies and plans will be updated in order to include CC modelling results- will be informed on project activities and results. -Member of Project Board | Formal review of the Vrbas DRR project proposal Regular consultations, participation and active work in Vrbas DRR Project Board, Participation in preparation of sectoral policies and plans |
| Federal BiH Ministry of Environment and Tourism | Responsible for coordinating entity-level policies and measures in the environmental area (environmental conservation, preparation of environmental policies and strategies, monitoring of environmental factors) | Sectoral policies and plans will be updated in order to include CC modelling results- will be informed on project activities and results -Member of Project Board | Formal review of the Vrbas DRR project proposal Regular consultations, participation and active work in Vrbas DRR Project Board, Participation in preparation of sectoral policies and plans |
| Ministry of Security of BiH | State level. Responsible for implementation of international obligations and cooperation in matters relating to civil protection, coordination of activities of entity services for civil protection in BiH, and harmonization of their plans for cases of natural or other disasters striking BiH territories, as well as issuance of agenda for protection and rescue | State level coordination body for protection and rescue. Sectoral policies and plans will be updated in order to include CC modelling results- will be informed on project activities and results. | Participation in preparation of sectoral policies and plans, support to development coordination mechanisms for civil protection, support to preparation disaster preparedness and response plans, development of EWS |
| Sava River Basin Agency | Management of Sava river basin (within BiH), data collection and distribution, water monitoring (hydrology and quality), preparation of Water management plans and plans for prevention and reduction of harmful impacts (flood, drought, erosion), preparation of legislation and policies, projects implementation | Main management body of Sava river basin. Sectoral policies and plans will be updated, and hydrodynamic model will be improved in order to incorporate CC- will be informed on project activities and results | Data provider: responsible and accountable for technical inputs and providing data and analyses Participation in preparation of sectoral policies and plans |
| Public Institution Waters of Srpska | Management of water resources within RS Entity. Preparation of Water management plans and monitor their implementation | Main management body of RS water resources Sectoral policies and plans will be updated, and hydrodynamic model will be improved in order to incorporate CC- should be informed on project activities and results Institutional capacities will be strengthened on induced FRM, climate risk assessment, scenario based planning for water sector- should actively participate | Data provider: responsible and accountable for technical inputs and providing data and analyses Participation in preparation of sectoral policies and plans Beneficiary- raising institutional capacity |
| Hydro-meteorological Institute of RS | Entity body Collects climatic and hydrological data necessary for studying climate | Climatic and hydrological data are essential to the Vrbas DRR Data provider | Data provider: responsible and accountable for technical inputs and providing data and analyses |

| Name of institutions /stakeholders consulted | Stakeholder interests, official position or mandate | Relevance to the Project / Reasons for inclusion | Modality of involvement |
|--|---|---|---|
| | variability, for trend analysis, and for long-run modelling. Conducts modelling and participates in WMO research programs. | | Beneficiary- raising institutional and technical capacity Review and inputs in the Vrbas DRR project proposal development process |
| Hydro-meteorological Institute of F BiH | Entity body Collects climatic data necessary for studying climate variability, for trend analysis, and for long-run modelling. | Climatic and hydrological data are essential to the Vrbas DRR Data provider | Data provider: responsible and accountable for technical inputs and providing data and analyses Beneficiary- raising institutional and technical capacity Review and inputs in the Vrbas DRR project proposal development process |
| Local Governments | Municipal bodies Management of public functions/ activities within local communities Preparation of development plans and programmes Organization and management of civil protection Spatial planning Local economic development | Local development plans and policies will influence the findings of the Vrbas DRR in order to incorporate CC- will be informed on project activities and results Develop local spatial plans Organize and manage civil protection at local level Data provider | Active participation in project implementation: nomination of reference group, participatory risk assessment, participation in development of climate resilient adaptive measures, nomination of nonstructural measures for implementation, cofinancing of nonstructural measures in their jurisdictions, development of integrated flood risk management plan, raise capacities, raise community awareness and preparedness Beneficiaries: raising institutional and technical capacity |
| NGOs (environmental, social inclusion and protection organizations-for returnees and displaced persons, vulnerable groups, minorities, etc.) | NGOs Provide information, training, and awareness-raising | Can serve as a resource for public outreach related to the Vrbas DRR and to raising awareness among the public about climate change-related issues, Involvement of the most vulnerable groups, returnees, displaced people, minorities. | Active participation in project implementation: Raising awareness, delivering of adaptation activities and capacity development, provide trainings |
| Smallholder farmers, returnees and displaced persons | Innovators, Responsible Parties | Beneficiaries. Responsible for identification and delivering of adaptation activities; as well as project beneficiaries | Beneficiaries. Active participation in project implementation: participate in development and delivering adaptation measures, awareness raising, participatory risk assessment, participate in development of land use and flood risk management plan, participate at trainings on implementation and maintenance of flood resilient non-structural intervention measures |
| Private sector / Micro agricultural businesses | Financial services provider | Delivering of adaptation activities | Active participation in project implementation: development and implementation of adaptation measures |
| Faculties of Natural Sciences/Agriculture (Banja Luka and Sarajevo) | Universities, research institutions | The highest educational institutions in the field of ecology, physics, chemistry and Agriculture Data and technical service provider | Participation of students/individual experts in data collection and analysis for purposes of: "land use and flood risk management plan", data base for loss and damage assessment |

2.6 Project theory of change

The GEF alternative addresses the three key barriers identified in the situation analysis of the baseline scenario through three mutually supportive outcomes illustrated in the theory of change shown in **Figure 1** and listed below.

- Outcome 1: Key relevant development strategies/policies/legislation integrate climate change-resilient flood management approaches;
- Outcome 2: Climate resilient flood risk management is enabled by transferring modern technologies and strengthening institutional capacities; and
- Outcome 3: New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in Vrbas River Basin.

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A more detailed theory of change, analyzed at the output level, formed the basis of the interventions and activities included in the project strategy.



Figure 1: Project theory of change

3 Assessment of Project Design

3.1 Analysis of project results framework

The project was approved under the GEF Special Climate Change Fund (SCCF) and aligned to Objective CCA-3, “Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology”, Outcome 3.1, “Successful demonstration, deployment and transfer of relevant adaptation technology in targeted areas” and Outcome 3.2, “Enhanced enabling environment to support adaptation-related technology transfer”, (see **Table 5**), under the Revised Programming Strategy on Adaptation to Climate Change (GEF/LDCF.SCCF.9/4/Rev.1, October 19, 2010).

Table 5: SCCF outcomes and core outputs, 2010-2014 Programming Strategy

| Expected outcomes and indicators | Core outputs and indicators |
|---|--|
| Objective CCA -3 - Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology | |
| Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas Indicator 3.1.1 % of targeted groups adopting transferred adaptation technologies by technology type, disaggregated by gender (Score) | Output 3.1.1: Relevant adaptation technology transferred to targeted groups Indicator 3.1.1.1 Type and No. of adaptation technologies transferred to targeted groups (Type and No.) Indicator 3.1.1.2 Type and No. of adaptation technologies transferred from targeted areas (Type and No.) |
| Outcome 3.2: Enhanced enabling environment to support adaptation-related technology transfer Indicator 3.2.1 Policy environment and regulatory framework for adaptation-related technology transfer established or strengthened (Score) Indicator 3.2.2 Strengthened capacity to transfer appropriate adaptation technologies, disaggregated by gender (Score) | Output 3.2.1: Skills increased for relevant individuals in transfer of adaptation technology Indicator 3.2.1.1 Type and No. of relevant policies and frameworks developed or strengthened (Type and No.) Indicator 3.2.1.2 No. of individuals trained in adaptation-related technologies (Number) |

The three project components were designed to be mutually supportive:

Component 1: Enabling environment for climate risk sensitive water and flood management

Component 2: Technology and institutional capacity for transferring climate resilient flood management technologies and approaches

Component 3: Climate resilient flood management technologies for vulnerable communities in VRB

The project document contains a comprehensive situation analysis and description of baseline conditions in the VRB. Considerable guidance was provided in the project document in terms of hydrometeorological requirements and needs for flood mitigation measures in the basin.

As part of this terminal evaluation, the project results framework for the project was assessed against “SMART” criteria, to evaluate whether the indicators and targets were sufficiently specific, measurable, achievable, relevant, and time-bound. With respect to the time-bound criterion, all targets are assumed compliant, as they are set as end-of-project performance metrics.

The project results framework was found to be largely SMART-compliant, apart from a few issues discussed below.

Project Objective:

There are two indicators at the project objective level, with the first indicator taken from the GEF CCA tracking tool (SCCF 2010-2014 version) regarding the number and type of adaptation technologies transferred, and the second objective level indicator based on increased coverage of automatic hydrometric stations for improved flood forecasting and early warning. The SMART analysis of the objective level section of the project results framework is presented below in **Table 6**.

Table 6: SMART analysis of project results framework (project objective)

| Indicator | Baseline | End-of-Project target | MTR SMART analysis | | | | |
|---|------------------------------------|---|--------------------|---|---|---|---|
| | | | S | M | A | R | T |
| Objective: To transfer technologies for climate resilient flood management in order to increase resilience of highly exposed rural poor, returnee and displaced persons communities in Vrbas River Basin | | | | | | | |
| 1. Number of new technologies transferred to BiH as part of a methodology for strategic FRM. | Limited institutional capacity and | At least 5 new technologies introduced (hydrological and hydrodynamic modelling, state-of-the-art monitoring equipment, Flood | Y | Y | Y | Y | Y |

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Technology transfer for climate resilient flood management in Vrbas River Basin
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| Indicator | Baseline | End-of-Project target | MTR SMART analysis | | | | | |
|--|---|--|--------------------|---|---|---|---|---|
| | | | S | M | A | R | T | |
| AMAT indicator 3.1.1.1 Type of adaptation technologies transferred to the target groups | technologies in use for strategic FRM in BiH | forecasting and early warning systems, flood damages and losses modelling and vulnerability assessment, and a number of non-structural flood management technologies to BiH) | | | | | | |
| 2. VRB (12% of BiH territory) covered by an automated hydrometric monitoring network for effective Flood Forecasting and Early Warning | Hydrometric stations currently cover 50% of the area required for FFEWS for VRB | The VRB (i.e.12% of BiH) covered by a Hydrometric network that provides the optimal coverage required for FFEWS | Y | Y | Y | Y | Y | Y |
| SMART: Specific, Measurable, Achievable, Relevant, Time-Bound Green: SMART criteria compliant; Yellow: observation noted regarding SMART criteria; Red: not compliant with SMART criteria | | | | | | | | |

The definition of “optimal coverage”, stated in the end target for Indicator No. 2 regarding the hydrometric network in the VRB, is unclear. Different stakeholders likely have differing viewpoints regarding what is required to reach optimal coverage.

It would have been advisable to include a metric at the objective level on the number of direct beneficiaries from the improved climate information systems deployed to reduce climatic hazards/variability.

Outcome 1:

The first of the two indicators (Indicator No. 3) under Outcome 1 is a measure of improvements to the policy and regulatory framework related to adaptation related technology transfer, and the second indicator (Indicator No. 4) reflects the enabling environment for uptake of adaptation technological solutions. The SMART analysis of Outcome 1 indicators included in the project results framework is presented below in **Table 7**.

Table 7: SMART analysis of project results framework (Outcome 1)

| Indicator | Baseline | End-of-Project target | MTR SMART analysis | | | | | |
|--|---|---|--------------------|---|---|---|---|---|
| | | | S | M | A | R | T | |
| Outcome 1: Key relevant development strategies/policies/legislations integrate climate change resilient flood management approaches | | | | | | | | |
| 3. AMAT Indicator 3.2.1 Policy environment and regulatory framework for adaptation related technology transfer established or transferred | 1: No policy/regulatory framework for adaptation related technology transfer in place | 4: Policy/regulatory framework for adaptation related technology transfer have been formally adopted by the Government but have no enforcement mechanisms | Y | Y | Y | Y | Y | Y |
| 4. No. of Adaptation technology solutions for climate resilient flood management (CRFRM) enabled for implementation | 0: Document codifying standard methodologies and procedures for Climate resilient flood Risk Management (CRFRM) | At least 10 guidance documents produced on Climate Resilient Flood Risk Management topics | Y | Y | Y | Y | Y | Y |
| SMART: Specific, Measurable, Achievable, Relevant, Time-Bound Green: SMART criteria compliant; Yellow: observation noted regarding SMART criteria; Red: not compliant with SMART criteria | | | | | | | | |

Indicator No. 3 is taken from the GEF CCA tracking tool (SCCF 2010-2014 version) and is a measure of policy and regulatory frameworks for adaptation related technology transfer, whereas the phrasing of the outcome represents a broader policy framework on integrating climate change resilient flood management approaches.

The end target for Indicator No. 4 is more appropriate at the output level, i.e., the number of guidance documents produced, and is not a particularly relevant metric of how development strategies, policies or legislations integrate climate change resilient flood management approaches.

Outcome 2:

Indicator No. 5, the first of two indicators under Outcome 2, is taken from the GEF CCA tracking tool (SCCF 2010-2014 version) and is a measure of institutional capacity. Indicator No. 6 is also a reflection of institutional capacity, specifically the number of institutions enabled for updating risk management strategies in response to vulnerability assessments and hydrometric monitoring results. The SMART analysis of the Outcome 2 indicators included in the project results framework is presented below in **Table 8**.

Table 8: SMART analysis of project results framework (Outcome 2)

| Indicator | Baseline | End-of-Project target | MTR SMART analysis | | | | |
|--|---|---|--------------------|---|---|---|---|
| | | | S | M | A | R | T |
| Outcome 2: Climate resilient flood risk management is enabled by transferring modern technologies and strengthening institutional capacities | | | | | | | |
| 5. AMAT Indicator 3.2.2: Strengthened Capacity to transfer appropriate adaptation technologies | 1: Very few professionals are aware of adaptation technologies | 3: High Capacity achieved (>75%). Provision of models, information systems, tools and training in the use of these to professionals, on various aspects of climate adaptation technologies | Y | Y | Y | Y | Y |
| 6. No. of institutions enabled to modify risk management strategies based on introduced vulnerability, loss and damages assessment and improved hydrometric monitoring technologies | Most of the socio-economic information required to assess flood damages, losses, exposure and vulnerability is not currently available and is not collected systematically and gender-disaggregation of data not systematically done. | GIS-based flood damages, losses and vulnerability assessment tool developed for VRB and systematic socio-economic survey methods established and implemented for VRB and introduces sex-disaggregated data collection protocols and methods | Y | Y | Y | Y | Y |
| SMART: Specific, Measurable, Achievable, Relevant, Time-Bound Green: SMART criteria compliant; Yellow: observation noted regarding SMART criteria; Red: not compliant with SMART criteria | | | | | | | |

The end target for Indicator No. 5 is derived from the drop-down list in the tracking tool, regarding institutional capacity. The target of 75% (high capacity) is rather arbitrary and, therefore, the measurability of the achievement realized depends largely on how the results are assessed and by whom.

With respect to Indicator No. 6, the indicator is a measure of the number of institutions enabled to modify risk management strategies; however, the end target does not provide a number of institutions.

Outcome 3

There are three indicators under Outcome 3, which focuses on strengthening the resilience of vulnerable communities in the VRB through applying new flood risk management technologies and approaches.

Table 9: SMART analysis of project results framework (Outcome 3)

| Indicator | Baseline | End-of-Project target | MTR SMART analysis | | | | |
|--|--|--|--------------------|---|---|---|---|
| | | | S | M | A | R | T |
| Outcome 3: New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in VRB | | | | | | | |
| 7. No. of people in target basin benefitting from FRM adaptation technologies, tools, and adaptation strategies, and are less exposed to flood risk | Current approach limited of inclusion of local communities, and particularly the vulnerable groups | At least 5 technologies transferred to 13 communities in community-based adaptation measures | Y | Y | Y | Y | Y |
| 8. No. of innovative Non-structural measures introduced and implemented as part of climate adaptation strategies to provide improved resilience to communities (include agric.) | Current approach to FRM is structural flood protection measures | Non-structural measures designed and implemented in 13 municipalities by 2020 | Y | Y | Y | Y | Y |
| | | At least 4,200 hectares of agric. land protected by non-structural measures (e.g. floodplain agro-forestry to be implemented on at least 840 hectares) | Y | Y | Y | Y | Y |
| 9. No. of communities benefitting from introduced forecasting, early warning, response and recovery technologies to support local communities at risk of flooding | FFEWS system currently disjointed and not fully electronically based | Fully integrated Flood forecasting and Early warning system implemented in VRB | Y | Y | Y | Y | Y |
| SMART: Specific, Measurable, Achievable, Relevant, Time-Bound Green: SMART criteria compliant; Yellow: observation noted regarding SMART criteria; Red: not compliant with SMART criteria | | | | | | | |

Indicator No. 7 is a measure of the number of people in the basin benefitting from flood risk management technologies and approaches, whereas the end target states the number of communities. One of the approaches implemented for reducing vulnerabilities in at-risk communities was non-structural measures, which is reflected in Indicator No. 8. There is a lack of emphasis on vulnerable communities, e.g., highly exposed rural poor, returnee and displaced persons, in the metric established for the first sub-target for Indicator No. 8. As outlined in the description of the GEF alternative in the project document, the second sub-target for Indicator No. 8 is based on protecting 20% (840 ha) of the area of agricultural land damaged between 2004 and 2014 (4,200 ha). Agricultural land is clearly one of the types of land use at risk to flooding in the VRB, but the overall risks to property and life are based on a number of factors. In fact, the

selection of the non-structural measures implemented was based on several criteria, including flood risk, preparedness, co-financing, etc.

Indicator No. 9 is a measure of the number of communities benefitting from flood forecasting and early warning systems as well as other non-structural measures; however, the end target does not state a number of communities, rather the entire VRB is referred to.

3.2 Assumptions and risks

Twenty (20) project risks were identified in the project document, along with the potential consequence of each risk, prioritization of risk (low, medium and high) and proposed mitigation measures. Among the identified twenty risks, three were characterized as high priority, twelve as medium priority and five as low priority. The three high priority risks are listed below:

- Failure to reach agreement on new policy frameworks.
- Unforeseen delays in undertaking essential surveys due to weather/access issues etc.
- Adverse climatic conditions may also pose risks to workforce health and safety, or damage adaptation measures being implemented.

The first risk listed above, regarding the possible failure to reach agreement on new policy frameworks, did materialize during project implementation. The FRM plan developed for the RS section of the VRB; the FBiH stakeholders decided to wait for the IPA II EU-funded project, which will facilitate development of countrywide FRM plans. The proposed mitigation measures in response to this risk included ensuring the inter-agency working group has the right composition of stakeholders and also to ensure the Project Board was inclusive of key stakeholders.

The other two high priority risks did not materialize, but remain relevant for subsequent interventions.

Two additional high priority risks were introduced during the inception phase, both related to issues associated with data availability:

- Failure to identify key data sets. Delays in collecting essential data for the project. Risk of essential data not being available or to the quality or accuracy needed.
- Delays in availability of historical data, survey data leading to delays in starting the technical studies and modelling. Insufficient data and/or data of poor quality available to undertake sufficiently detailed and accurate modelling to support feasibility and design studies. Model not suitably detailed and accurate to undertake feasibility studies.

The project spent considerable time on gathering data, but the flood forecasting models and FRM plan were completed without prohibitive delays with respect to data availability.

Compliance with UNDP social and environmental safeguard policies was addressed in the project document; however, social and environmental risks were not assessed and characterized in terms of potential impact and probability of occurrence.

3.3 Lessons learned and linkages with other projects

The project was designed to build upon the general awareness-raising activities for key decision-makers and other trainings delivered by the disaster risk reduction (DRR) Initiative in BiH, including through adding climate risk management and flood risk management sessions in the trainings provided by the DRR project.

Potential linkages with other projects were described in the project design. The EUR 55 million loan from the European Investment Bank (EIB) for “Emergency Relief and Preventions Project”, is the largest value complementary intervention on flood management in the VRB and the largest cofinancing partner on the project. The EIB project, with an original timeframe of 2012-2017, included construction of hard engineering structures to safeguard agricultural, industrial and housing areas prone to flood impacts. The subject GEF-financed VRB project is adding value to the EIB loan interventions by facilitating climate resilient flood management strategic planning.

There has been significant technical and financial assistance disbursed by the European Union, including the Instrument for Pre-Accession Assistance (IPA) project “Support to Water Policy in BiH”, which was initiated in 2009 to support the Government of BiH in fulfilling the requirements under the EU Flood Directive (2007/60/EC), including carrying out preliminary flood risk assessments, developing flood hazard and risk maps, and preparing flood risk management plans. The IPA project has been implemented over a few phases, the flood hazard and risk maps for the country are expected

to be completed during the first half of 2020 and preparation of national level flood risk management plans is slated to start in June 2020.

The Western Balkans Investment Framework (WBIF) is another EU driven initiative, specifically a regional blending facility supporting EU enlargement and socioeconomic development in BiH, Albania, Kosovo^{*4}, Montenegro, North Macedonia and Serbia. The WBIF was established as a joint initiative of the European Commission, the Council of European Development Bank, the European Bank for Reconstruction and Development, the EIB and several bilateral donors. The World Bank Group, the KfW and the Agence Française de Développement (AFD) subsequently joined the framework. The WBIF funded Drina River Basin project has similar objectives and activities to the VRB project and implemented over a similar timeframe.

The USD 47 million World Bank funded irrigation development project is also listed as a complementary initiative in the project area. This World Bank project, which was started in 2012 and scheduled to close in March 2020, is focused on restoring or improving drainage, including rehabilitation with some construction, reconstruction, upgrading and modernization (only for the public/main and semi-public/secondary parts of the irrigation system, hence not on-farm), and also the introduction of new technologies that promote water use efficiency such as drip irrigation and low-pressure sprinklers. There is also a component on delivering support for the capacity strengthening of the Ministries and Water Agencies in RS and FBiH, and participating municipalities and cantons in addressing: the new sector policies, and establishing and strengthening Water User Associations (WUAs).

The project document also included mention of the World Bank, jointly with the UNISDR and the Swiss Secretariat for Economic Affairs (SECO), planning to address the problem of low catastrophe and weather risk insurance penetration in Southeastern Europe through the creation of the regional Catastrophe Risk Insurance Facility (SEEC CRIF), which has been recently incorporated as "Europa Reinsurance Facility Ltd" (Europa Re).

3.4 Planned stakeholder participation

Planned stakeholder participation was outlined in the Stakeholder Involvement Plan in the project document. The plan summarized the stakeholder consultations carried out during the project preparation phase and outlined the general approach for stakeholder involvement during project implementation. Some of the planned stakeholder involvement approaches included, but not limited to the following:

- Establishing an inter-agency working group for facilitating review and development of FRM policies and guidelines.
- Engaging with municipality officials on land use planning and designation of flood hazard zones.
- Consulting with relevant stakeholders on structural and non-structural flood management options.
- Undertaking community surveys to help characterize the socioeconomic conditions in the basin and better understand potential flood risks.
- Designing and implementing a public-facing website for disseminating information to the public.

Annex 5 to the project document contains a stakeholder involvement plan in tabular form, including a list of the key stakeholders, their interests or mandate, relevance to the project and modality of involvement. The types of involvement included formal review of the project proposal, participation on the project board, participation in preparation of sectoral policies and plans, provision of data, beneficiary in terms of strengthening institutional capacity, active participation in project implementation, etc.

There were a few shortcomings in the stakeholder involvement plan, including the lack of clearly articulated approaches and identification of key stakeholders in the agricultural, forestry and energy (hydropower) sectors.

3.5 Replication approach

The potential for replication was incorporated into the project design. By focusing on a complete river basin, the Vrbas River Basin, the approaches regarding flood risk management and the technologies and tools applied can be replicated in other river basins in the country. The river basin approach is fully consistent with the EU Water Framework Directive and the EU Flood Directive, both of which are transposed to varying degrees among the BiH governing entities.

⁴ This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence

Production of guidance documents on climate resilient flood risk management approaches under Component 1 of the project not only benefits the enabling stakeholders in the VRB but also provide practical information for replication in other river basins.

Proactive engagement with key water management sector stakeholders is another way in which the project design and implementation promoted replication. Stakeholder involvement included membership on the project board, direct involvement in the execution of project outputs and participation in trainings, workshops and other capacity building activities.

3.6 UNDP comparative advantage

The UNDP comparative advantage as the GEF agency was based on their extensive experience working in BiH, long-standing resident operations, their favorable standing among national stakeholders, and their institutional expertise in supporting CCA and disaster risk reduction projects. UNDP has delivered extensive and continuous in-country support to the BiH government and other partners in strengthening institutional and individual capacities and the multitude of aspects centered on human development, including gender and social inclusion.

The UNDP has provided technical assistance to the Government of BiH in the preparation and submittal of the INC and SNC to the UNFCCC, and has supported the government in preparing the Climate Change Adaptation and Low Emission Development Strategy. Moreover, the UNDP CO has successfully implemented water management projects in BiH and maintains a well-developed network among key institutional and civil society stakeholders in the water and climate change sectors.

The programme team at the UNDP Country Office has in-house specialists to support the project, and senior management in the CO provides resident strategic guidance. And, one of the four UNDP regional offices is located in the VRB. The UNDP Regional Technical Advisor based in Istanbul provides high level advisory services, e.g., through sharing best practices and lessons learned from the large portfolio of GEF projects supported by UNDP.

3.7 Management arrangements

The project was designed under a direct implementation modality (DIM), a modality that 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 BiH. Considering the complexity of BiH’s administrative arrangements, which includes two self-governing entities and multi-layered administrative procedures, the 2015-2019 United Nations Development Assistance Framework (UNDAF) stipulates that GEF-financed projects be implemented. The management arrangements are illustrated in the project organization structure copied below in **Figure 2**.

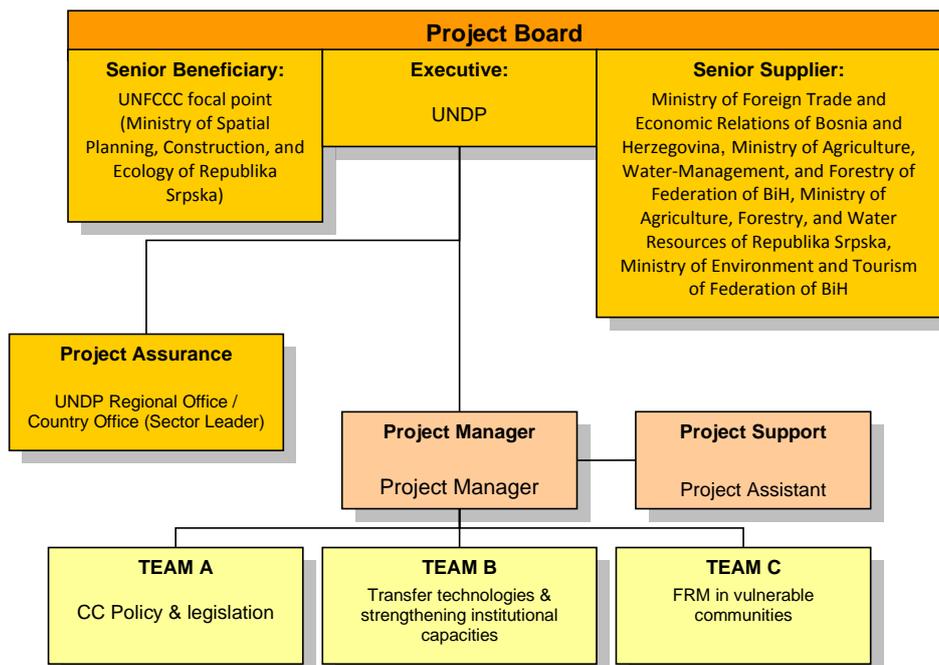


Figure 2: Project Organization Structure⁵

⁵ Copied from the project document.

The project board is chaired by the UNFCCC focal point, the RS Ministry of Spatial Planning, Construction, and Ecology of Republika Srpska. Other members of the board include the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, the Ministry of Agriculture, Water-Management, and Forestry of Federation of BiH, the Ministry of Agriculture, Forestry, and Water Resources of Republika Srpska, and the Ministry of Environment and Tourism of Federation of BiH.

The day-to-day management of the project is carried out by a Project Manager under the overall guidance of the project board. The core project team consists of project manager and administrative assistant, supported by senior chief technical advisor and project officers who divide their responsibilities among specified three main areas of work.

4 Assessment of Project Results

4.1 Outputs

COMPONENT 1: ENABLING ENVIRONMENT FOR CLIMATE RISK SENSITIVE WATER AND FLOOD MANAGEMENT

Outcome 1: Key relevant development strategies/policies/legislation integrate climate change-resilient flood management approaches

Output 1.1: At least two priority sectoral policies and plans (agriculture and hydropower) updated to include climate change modeling results

Key Achievements:

- Amendments to the Law on Waters (Republika Srpska), transposing EU flood directive have been adopted.
- Decree containing content and elements of flood risk management has been developed and adopted (RS Government Decree).
- Amendments to the Law on Spatial Planning to include flood maps and climate changes have been adopted (RS Government).
- Draft flood zoning policy, which includes flood zoning rules, has been developed.

Issues/Challenges:

- The policy related advances facilitated through the project were primarily in the Republika Srpska (RS). Legislative reviews were made for both entities, but the results delivered for RS were more substantive than for FBiH.
- The two sectors highlighted in the project design were agriculture and energy (hydropower). Extensive climate scenarios were assessed for the agricultural sector, technical guidelines and training delivered for agricultural stakeholders; however, sector level policies for agriculture and hydropower were not realized.

Output 1.2: Floodplain management and spatial planning regulations and policies updated to include climate change risks (revision of land use regulations, stricter policy on construction permits in the areas prone to flooding, etc.)

Key Achievements:

- Flood hazard and risk maps with associated building codes have been prepared and made public, available to citizens of the VRB municipalities.
- Methodologies developed for torrents cadaster and susceptibility model.

Output 1.3: Appropriate adaptation technology solutions for climate resilient flood management in BiH codified and disseminated

Key Achievements:

- The project has reported the development of the following guidance documents
 1. Flood risk modelling and mapping methodology has been developed and adopted by local institutions.
 2. Guidance for the development of a centralized flood forecasting and early warning system.
 3. Operational and maintenance plan for hydrometric stations.
 4. Guidance to use of the participatory GIS-based platform (PGIS) and geoportal.

5. Methodology for socio-economic survey to assess and quantify the value of property at the level of settlements within municipalities.
6. Guidance to develop flood depth/damage curve and loss/damage model.
7. Guidance documents for integration of flood risk and spatial plans at local level.
8. Draft guidance for the development of a community-based early warning system.
9. Report on future climate scenarios for the Vrbas River basin.
10. Methodology on socioeconomic vulnerability and risk assessment

Issues/Challenges:

- Some of the envisaged guidance documents listed in the project strategy have not been prepared, including:
 - A comprehensive report on future climate scenarios for the Vrbas River basin was prepared. The report does not specifically provide an assessment of climate change impacts on different sectors, at the basin scale and incorporation of CC impacts into sector policies.
 - Guidance for undertaking field surveys for river topographic surveys, river flow surveys, and landslide surveys. This was determined unnecessary, as there was best practice guidance in place.⁶

COMPONENT 2: TECHNICAL AND INSTITUTIONAL CAPACITY FOR TRANSFERRING CLIMATE RESILIENT FLOOD MANAGEMENT TECHNOLOGIES AND APPROACHES

Outcome 2: Climate resilient flood risk management enabled by transferring modern technologies and strengthening institutional capacities

Output 2.1: Improved hydrological and hydrodynamic model for the VRB incorporating climate change predictions developed to produce flood hazard inundation maps for spatial planning and emergency response planning, and for the long-term strategic flood risk management of the VRB

Key Achievements:

- Hydrological and hydrodynamics models (including 2D model for the whole basin) have been completed. Climate scenarios included in the hydrological modelling.
- Data for flood mapping and flood forecasting were reconciled through data digitalization, interpolation, verification, desk analysis and extensive ground-truthing in gathering existing and verification of historical data.

Output 2.2: GIS-based vulnerability, loss and damages assessment tool and database established and institutionalized to record, analyze, predict and assess hydro-meteorological and other hazard events and associated losses

Key Achievements:

- A GIS-based loss/damage model, based on flood depth /damage curve, has been developed for housing and business sectors. Damages have been estimated for each return periods (20, 100 and 500 year).
- GIS based loss/damage models for agriculture has also been completed. This model is more complex than the one for housing and business sectors, as factors such as flood duration and flood seasonality are also integrated in order to assess the damage level for different crops.

Output 2.3: Hydro-meteorological monitoring system in the VRB upgraded (increased from 11 to 25 gauging stations) and harmonized into a central hydrometric system

Key Achievements:

- Deployment and transfer of the following hydrometeorological equipment: twenty (20) precipitation stations, seven (7) hydrological stations and two (2) automatic meteorological stations (a list of the stations is presented below **Table 10**; and maps showing locations of the stations are compiled in **Annex 5**).

⁶ Information provided by the CTA in the comments to the draft version of the TE report.

Table 10: Hydrometeorological stations purchased with VRB project funds

| Location | Latitude | Longitude |
|---|---------------|---------------|
| Precipitation stations: | | |
| Managed by the RS Hydromet: | | |
| Šipovo | 44°17'3.15"N | 17° 5'15.92"E |
| Banja Luka PMF | 44°46'44.66"N | 17°11'56.34"E |
| Krupa na Vrbasu | 44°36'54.48"N | 17° 8'38.16"E |
| Majevac | 44°14'24.86"N | 17° 1'33.89"E |
| Manjača | 44°39'47.64"N | 17° 0'20.32"E |
| Kotor Varoš | 44°36'34.36"N | 17°23'19.13"E |
| Mrkonjić Grad | 44°24'40.14"N | 17° 5'0.63"E |
| Srbac | 45° 6'10.42"N | 17°30'52.49"E |
| Kneževo | 44°31'27.30"N | 17°19'5.81"E |
| Čelinac | 44°44'1.59"N | 17°20'50.32"E |
| Managed by the FBiH Hydromet: | | |
| Šeherdžik | 44°12'30.77" | 17°25'7.11" |
| Rovna | 44° 5'52.54" | 17°29'24.72" |
| Rat | 44° 2'39.17"N | 17°41'13.85"E |
| Gračanica | 44° 0'7.18"N | 17°29'42.71"E |
| Kupres | 43°59'23.04"N | 17°16'34.26"E |
| Voljice - Gaj | 43°55'7.52"N | 17°32'3.29"E |
| Pidriš | 43°53'31.57"N | 17°35'0.82"E |
| Borova Ravan | 43°51'22.04"N | 17°40'59.15"E |
| Divičani | 44°21'44.98"N | 17°19'39.86"E |
| Dobroštin | 43°53'49.07"N | 17°38'8.56"E |
| Hydrological station | | |
| Managed by RS Hydromet: | | |
| Delibašino selo | 44°48'2.20"N | 17°13'32.20"E |
| Volari | 44°17'31.75"N | 17° 6'54.90"E |
| Bočac | 44°34'13.30"N | 17° 7'57.46"E |
| Majevac | 44°14'20.62"N | 17° 1'29.05"E |
| Sarići | 44°16'28.54"N | 17° 5'23.27"E |
| Donji Obodnik | 44°33'31.62"N | 17°28'37.01"E |
| Klašnice | 44°52'48.95"N | 17°17'5.70"E |
| Automatic Meteorological station | | |
| Managed by the RS Hydromet: | | |
| Banja Luka | 44°47'37.79"N | 17°12'20.77"E |
| Managed by the FBiH Hydromet: | | |
| Gornji Vakuf-Uskoplje | 43°56'13.58"N | 17°34'48.35"E |

- A photograph of the automatic meteorological station at the RS hydromet institute is shown in **Figure 3**.



Figure 3: Automatic meteorological station, RS Hydromet, 05 Nov 2019

- Training delivered to hydrometric specialists in RS and FBiH on the use, operation and maintenance, and coordination and communication across agencies and entities.
- The project funded 4 years of maintenance of the expanded hydrometric network; there has been generally uninterrupted operation during this period, as shown below in Figure 4.

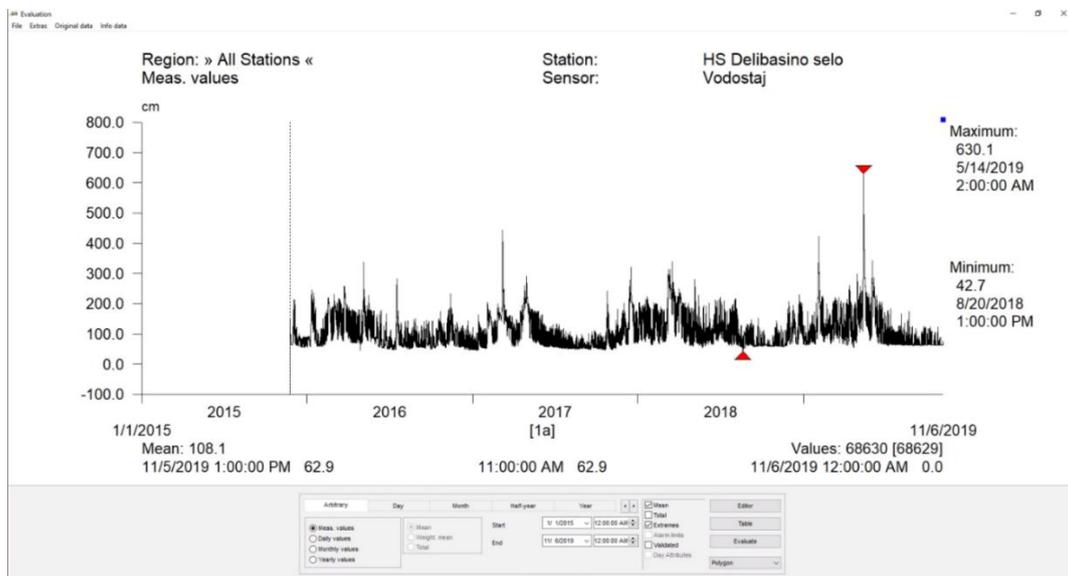


Figure 4: Mean values measured from all hydrological stations, RS Hydromet, 2015-2019⁷

Issues/Challenges:

- In the FBiH, a proportion of the revenue collected from water tariffs is earmarked for the operation of hydrometeorological stations. At the time of the TE mission in November 2019, these financing arrangements were not fully sorted out in RS. Over the timeframe of November 2019 and February 2020, arrangements have been made to finance the operation and maintenance of the hydromet network through allocations from the RS Fund for Environmental Protection and Energy Efficiency⁸.

⁷ Source: RS Hydromet Institute, Nov 2019

⁸ This information was shared by the project team in the review of the draft TE report.

Output 2.4: Institutional capacity strengthening plan developed and targeted training on climate -induced flood risk management provided to at least 100 relevant practitioners and decision makers (e.g. in Water agencies)

Key Achievements:

- The project has reported that more than 150 professionals have been trained in data management, use of water information system, hydrological and hydraulic modelling, torrents modelling, types of non-structural flood protection options and flood forecasting.
- Training of water agency professional staff were trained in the management of the upgraded Water Information System (<https://isvportal.voda.ba/>).

Issues/Challenges:

- The sustained management of the Water Information System will require committed funding from water agencies and regularly updated training delivered to responsible technicians.

COMPONENT 3: CLIMATE RESILIENT FLOOD MANAGEMENT TECHNOLOGIES FOR VULNERABLE COMMUNITIES IN VRB

Outcome 3: New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in VRB

Output 3.1: Integrated land use and flood risk management plan for the VRB developed and non-structural measures implemented by local communities (through Output 3.2.), government and/or private sector

Key Achievements:

- Four (4) trainings were delivered and 130 trainers from agricultural extension services and 133 farmers were trained on climate change impacts on agricultural land degradation and decrease in crop yields and measures which can be taken in agricultural practice to mitigate flood risks.
- Through open procurement announcements, 20 non-structural measures completed in 11 VRB municipalities between August 2017 and November 2019 (see **Table 11**). Interventions included regulation of torrential streams, cleaning of riverbeds, strengthening of embankments, bolstering riverbank protection with stone embankments and gabion systems, constructing stormwater drainage systems and reinforcing riverbanks with vegetation, including under an agroforestry management system.

Table 11: List of completed non-structural measures, Aug 2017 - Nov 2019

| Municipality | Length of intervention* (m) | Total cost (USD) | GEF funds (USD) |
|-----------------------|-----------------------------|------------------|------------------|
| Banja Luka | 950 | 93,555 | 42,418 |
| Banja Luka | 1,100 | 60,010 | 25,919 |
| Bugojno | 3,000 | 158,607 | 104,077 |
| Kotor Varoš | 150 | 81,798 | 56,888 |
| Laktasi | 850 | 127,362 | 83,550 |
| Gornji Vakuf-Uskoplje | 300 | 59,078 | 40,329 |
| Knezevo | 1,000 | 16,047 | 9,078 |
| Laktasi | 950 | 30,530 | 23,289 |
| Laktasi | 850 | 30,405 | 20,562 |
| Srbac | 1,000 | 38,761 | 26,872 |
| Banja Luka | 800 | 445,431 | 284,717 |
| Laktaši | 862 | 73,909 | 32,999 |
| Kotor Varoš | 130 | 52,991 | 35,941 |
| Gornji Vakuf-Uskoplje | 420 | 74,853 | 48,118 |
| Čelinac | 725 | 22,880 | 16,288 |
| Srbac | 1,850 | 39,189 | 30,039 |
| Jajce | 415 | 95,962 | 63,887 |
| Mrkonjić Grad | 315 | 47,885 | 17,789 |
| Gradiška | 1,488 | 611,745 | 348,144 |
| Srbac | 5,400 | 43,750 | 25,136 |
| | 22,555 | 2,204,748 | 1,336,042 |

* See further details in **Annex 5** to this TE report.

- A photograph of one of the non-structural measures, completed in Laktasi Municipality is shown below in **Figure 5**.

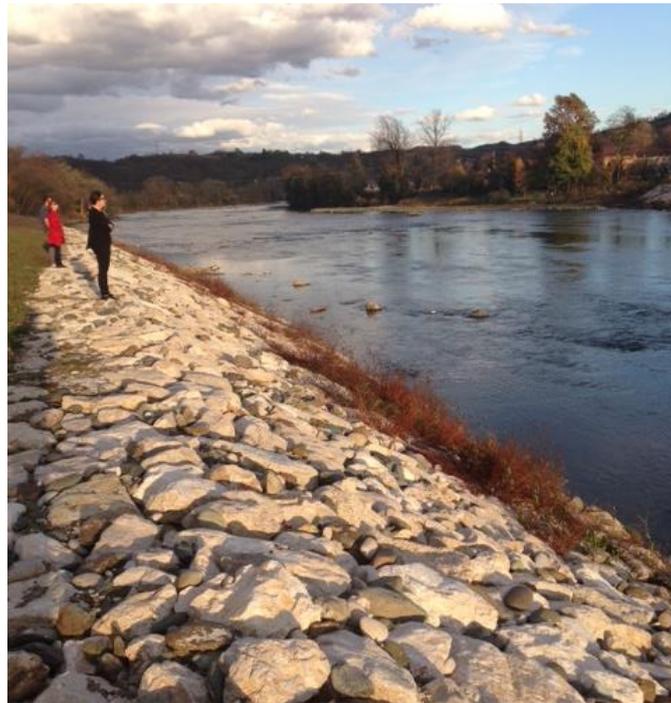


Figure 5: Stone-reinforced embankment on Vrbas River, Laktasi, 05 Nov 2019

- The locations of the municipalities where the non-structural measures have been completed are shown on the aerial photograph in **Figure 6** below.



Figure 6: Locations of municipalities where non-structural measures completed

- A comprehensive flood risk management (FRM) plan has developed for the RS section of the VRB.

- An index-based insurance product was conceptualized in the project strategy as a risk transfer mechanism. The project implementation team facilitated an in-depth analysis of market conditions, carried out a willingness to pay survey, and evaluated lessons from other countries having similar socioeconomic conditions. Based on roundtable discussions and consultations with private insurance sector stakeholders, a mandatory natural disaster insurance product for residential properties was determined to be the most viable approach in BiH, similar to a product that was issued in Romania in 2008. One of the reasons of considering a mandatory insurance product is that the premium would be affordable. The recommended annual premium for BAM 30,000 (approximately USD 17,000) of coverage would be BAM 30 (roughly USD 17).

Issues/Challenges:

- There are funding constraints among VRB local governments for sustaining regular maintenance of the completed non-structural measures, such as cleaning out stream channels and reinforcing embankments.
- FBiH governmental stakeholders decided to wait on developing the FRM plan for the FBiH section of the VRB until countrywide FRM plans are developed under the IPA II project.
- The costed action plan in the FRM plan is broken down into urgent (BAM 92 million), short-term (BAM 35.6 million) and long-term (BAM 35 million) actions. It would be advisable to rephrase or reconsider the “urgent” actions to “priority” measures, carry out a stock taking of circumstances after 1-2 years after project closure and update the FRM plan accordingly.
- The project has spent considerable time exploring possibilities for implementing agroforestry management systems as part of the non-structural measures; this was one of the options indicated in the project strategy. Agroforestry is not commonly practiced in the VRB and the options considered were generally very costly. A viable option was reached in late 2019, on municipality owned agricultural land. The integrated nonstructural measure included planting trees along a 5,400 m stretch of riparian area and cleaning and regulating 3,300 m of watercourses. The total area covered is approximately 1,325 ha.
- In order to make genuine progress towards introducing a mandatory natural disaster insurance product in BiH, the legal framework needs to be developed.

Output 3.2: Participatory community-based adaptation strategies, technologies and practices implemented in priority flood risk areas

Key Achievements:

- A participatory GIS platform (PGIS) was developed for sharing community-based flood risk management and early warning system functions to VRB municipalities. Extensive trainings were delivered to municipality staff. A screenshot of the PGIS is shown below in **Figure 7**.

| id | Foto | ID | Opština | Naselje | Kategorija | Opis | Datum | Status | Mapa | Uredi | Komentari |
|-----|------|-----------|---------------|---------------|-----------------|--|------------|-------------------|------|-------|-----------|
| 186 | | LCF459500 | Mrkonjić Grad | PODORUGLA | Poplave | Potrebno čišćenje oko samog ispusta-propusta ispod puta E761 slika od 1MB | 02.03.2018 | Nije verifikovano | | | |
| 181 | | TKS388279 | Mrkonjić Grad | MRKONJIC GRAD | Poplave | Potrebno čišćenje propusta od nanosa | 26.02.2018 | Nije verifikovano | | | |
| 180 | | VCP82215 | Mrkonjić Grad | MRKONJIC GRAD | Ostalo | Potrebno čišćenje, nanosa prije odvodni cjevi ispod ulice. | 26.02.2018 | Nije verifikovano | | | |
| 179 | | MWS912448 | Mrkonjić Grad | MRKONJIC GRAD | Ostalo | Korito potoka potrebno čišćenja | 21.02.2018 | Nije verifikovano | | | |
| 174 | | EHG145685 | Mrkonjić Grad | MRKONJIC GRAD | Ostalo | Oštećenja na betonskom dijelu nadvožnjaka na magistralno putu R412 | 21.02.2018 | Nije verifikovano | | | |
| 173 | | FHC42484 | Mrkonjić Grad | PODORUGLA | Ekološki rizici | vodozahvat Gornja Skela. Zarastao u žbunje i travu. Snimljeno 23.06.2017 u 12:25h | 06.12.2017 | Nije verifikovano | | | |
| 172 | | FSP89794 | Mrkonjić Grad | BRDO | Ekološki rizici | Vodozahvat zarastao u travu i žbunje. | 06.12.2017 | Nije verifikovano | | | |
| 171 | | ITX186171 | Mrkonjić Grad | MRKONJIC GRAD | Ostalo | Ispod Puta | 06.12.2017 | Nije verifikovano | | | |
| 170 | | SBO418331 | Mrkonjić Grad | MRKONJIC GRAD | Ostalo | Regulacija potoka vilenjak AB korito koje je ne očišćeno i zaraslo u travu. Snimljeno 06.07.2017. u 09:40h | 06.12.2017 | Nije verifikovano | | | |

Figure 7: Screenshot of Participatory GIS platform (PGIS)

- Flood intervention plans have been developed for 13 municipalities in the VRB. The plans include flood risk and flood hazard maps, evacuation protocols with routes and muster areas, and emergency communication and awareness procedures.

Issues/Challenges:

- The PGIS requires regular updating and maintenance, and the flood intervention plans should be updated regularly to reflect any changed circumstances, lessons learned, etc.

Output 3.3: Local communities (particularly women and refugees) trained to implement and maintain flood resilient non-structural intervention measures, including agricultural practices such as agro-forestry, to improve livelihoods of 13 communities in the VRB, and community-based flood early warning systems

Key Achievements:

- A Community Based Early Warning System (CB EWS) has been introduced in three pilot municipalities: Celinac, Bugojno and Kotor Varos. Criteria for selection of these municipalities were: a) local situation: streams and torrents with local flooding effect, but not covered by FFEWS (full FFEWS is covering Vrbas and two main tributaries: Pliva and Vrbanja) and b) strong interest and commitment of the local community. Additional equipment i.e. staff gauges have been purchased and installed at locations where water levels are easily monitored. And local water monitoring plans were developed.
- The project procured emergency response and communication equipment and delivered training to 14 VRB municipalities, the Bosna Canton, and the FBiH and RS civil protection authorities (see **Table 12**).

Table 12: Equipment delivered to Civil Protection Units

| Municipality/Institution | | Siren/pcs. | Mobile radio stations/pcs. | | Portable radio station/pcs. |
|--|-----------------------|--|----------------------------|---------------------|-----------------------------|
| | | | Car mobile station | Fixed radio station | |
| FUCZ (Federal authority for civil protection, FBiH) | | | | | 10 |
| RUCZ (Republic authority for civil protection of RS) | | Radio relay 2 pcs (location: Mrakovica 1pcs., Lisina 1pcs.) | - | - | 20 |
| SBK CZ (Civil protection of Central Bosna Canton) | | Radio relay 1 pcs (location: Gornji Vakuf-Uskoplje) | - | - | 5 |
| 1. | Gradiška | - | - | 1 | 5 |
| 2. | Srbac | 1 | 1 | 1 | 10 |
| 3. | Laktaši | 2 | 1 | 1 | 10 |
| 4. | Čelinac | 2 | 2 | 1 | 10 |
| 5. | Kotor Varoš | 1 | 1 | 1 | 5 |
| 6. | Banjaluka | - | 2 | 1 | 5 |
| 7. | Kneževo | - | 1 | 1 | 5 |
| 8. | Mrkonjić Grad | - | 1 | 1 | 5 |
| 9. | Jezero | - | - | 1 | 5 |
| 10. | Šipovo | - | 1 | 1 | 5 |
| 11. | Jajce | 1 | 1 | 1 | 10 |
| 12. | Donji Vakuf | - | 1 | 1 | 10 |
| 13. | Bugojno | 1 | 1 | 1 | 10 |
| 14. | Gornji Vakuf-Uskoplje | - | 1 | 1 | 10 |
| TOTAL: | | 8 | 14 | 14 | 140 |

- The locations of the municipalities where civil protection units were strengthened are shown on the aerial photograph shown below in **Figure 8**.
- Sirens were also installed at hydropower plants and linked to the FE EWS; the hydropower plants provided cofinancing for these units.



Figure 8: Locations of municipalities where civil protection units were strengthened

Issues/Challenges:

- Local champions are important stakeholders in ensuring community based early warning systems and civil protection units are sustained and expanded to other municipalities in the VRB.

Output 3.4: Early warning system in VRB modified to include the new hydrometric monitoring network as part of a fully-integrated flood forecasting system (comprised of centrally-based and community-based early warning systems). Municipal-level flood response and preparedness plans prepared and implemented.

Key Achievements:

- The project facilitated the establishment of the first flood forecasting and early warning system (FFEWS) in BiH. The platform for the FFEWS has been placed in the RS and FBiH water agencies and will be operationalized following the testing phase being implemented during the second half of 2019.
- The FFEWS for the VRB provides a valuable prototype for other basins to replicate across BiH.

Issues/Challenges:

- It will be important that involvement of the energy (hydropower) sector is sustained in the VRB, including coordination across the RS and FBiH entities.

4.2 Outcomes

4.2.1 Effectiveness

Effectiveness was evaluated by assessing achievement of the project objective and outcomes according to the agreed performance metrics included in the project results framework. A self-assessment made by the project team of achievement towards achievement of end targets of objective and outcome level indicators is compiled in **Annex 6** to this TE report, and TE assessments and ratings are summarized below.

Objective: To transfer technologies for climate resilient flood management in order to increase resilience of highly exposed rural poor, returnee and displaced persons communities in Vrbas River Basin

Achievement of the project objective is rated as: Satisfactory

The rating of satisfactory for the project objective is supported by the successful achievement of the two objective-level indicators, as presented below.

| Indicator No. 1: Number of new technologies transferred to BiH as part of a methodology for strategic FRM (AMAT indicator 3.1.1.1 Type of adaptation technologies transferred to the target groups) | | | | |
|--|---|--|---|-----------------|
| | Baseline | End Target | Status at TE | TE Assessment |
| Value: | Limited institutional capacity and technologies in use for strategic FRM in BiH | At least 5 new technologies introduced (hydrological and hydrodynamic modelling, state-of-the-art monitoring equipment, Flood forecasting and early warning systems, flood damages and losses modelling and vulnerability assessment, and a number of non-structural flood management technologies to BiH) | The project has successfully achieved the end target of introducing at least 5 new technologies for strategic flood risk management. | Achieved |
| Date: | 2013 | Mar 2020 | Nov 2019 | |
| Indicator No. 2: VRB (12% of BiH territory) covered by an automated hydrometric monitoring network for effective Flood Forecasting and Early Warning | | | | |
| | Baseline | End Target | Status at TE | TE Assessment |
| Value: | Hydrometric stations currently cover 50% of the area required for FFEWS for VRB | The VRB (i.e.12% of BiH) covered by a Hydrometric network that provides the optimal coverage required for FFEWS | The VRB hydrometric network has been expanded and the hydromet institutes in the two entities FBiH and RS are coordinating in data transfer and flood risk communication. | Achieved |
| Date: | 2013 | Mar 2020 | Nov 2019 | |

Outcome 1: Key relevant development strategies/policies/legislations integrate climate change resilient flood management approaches

Achievement of Outcome 1 is rated as: Satisfactory

Achievement of Outcome 1 is rated as satisfactory. The project made substantive contributions towards strengthening the policy and regulatory frameworks associated with flood risk management, albeit primarily in RS.

| Indicator No. 3: AMAT Indicator 3.2.1 Policy environment and regulatory framework for adaptation related technology transfer established or strengthened | | | | |
|---|---|---|---|------------------------|
| | Baseline | End Target | Status at TE | TE Assessment |
| Value: | 1: No policy/regulatory framework for adaptation related technology transfer in place | 4: Policy/regulatory framework for adaptation related technology transfer have been formally adopted by the Government but have no enforcement mechanisms | The project has facilitated substantive advances in policy and regulatory frameworks, primarily in RS. Further progress expected under the ongoing EU-funded flood risk management program and the GCF project currently under development. | Mostly Achieved |
| Date: | 2013 | Mar 2020 | Nov 2019 | |
| Indicator No. 4: No. of Adaptation technology solutions for climate resilient flood management (CRFRM) enabled for implementation | | | | |
| | Baseline | End Target | Status at TE | TE Assessment |
| Value: | 0: Document codifying standard methodologies and procedures for Climate | At least 10 guidance documents produced on Climate Resilient Flood Risk Management topics | The end target has been achieved, with guidance documents disseminated and institutionalized (e.g., flood forecasting and early warning system). | Achieved |

| | | | | |
|-------|---|----------|----------|--|
| | resilient flood Risk Management (CRFRM) | | | |
| Date: | 2013 | Mar 2020 | Nov 2019 | |

Outcome 2: Climate resilient flood risk management is enabled by transferring modern technologies and strengthening institutional capacities

Achievement of Outcome 2 is rated as: Highly Satisfactory

Achievement of Outcome 2 is rated as highly satisfactory.

Indicator No. 5: AMAT Indicator 3.2.2: Strengthened Capacity to transfer appropriate adaptation technologies

| | Baseline | End Target | Status at TE | TE Assessment |
|--------|---|--|---|-----------------|
| Value: | 1: Very few professional are aware of adaptation technologies | 3: High Capacity achieved (>75%). Provision of models, information systems, tools and training in the use of these to professionals, on various aspects of climate adaptation technologies | Capacity building has been a significant strength of the project, with extensive trainings delivered to water management sector and civil protection sector stakeholders. | Achieved |
| Date: | 2013 | Mar 2020 | Nov 2019 | |

Indicator No. 6: No. of institutions enabled to modify risk management strategies based on introduced vulnerability, loss and damages assessment and improved hydrometric monitoring technologies

| | Baseline | End Target | Status at TE | TE Assessment |
|--------|--|---|---|-----------------|
| Value: | Most of the socio-economic information required to assess flood damages, losses, exposure and vulnerability is not currently available and is not collected systematically and gender-disaggregation of data not systematically done | GIS-based flood damages, losses and vulnerability assessment tool developed for VRB and systematic socio-economic survey methods established and implemented for VRB and introduces sex-disaggregated data collection protocols and methods | GIS-based tools have been developed and successfully disseminated and made available to municipalities and other users. | Achieved |
| Date: | 2013 | Mar 2020 | Nov 2019 | |

Outcome 3: New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in VRB

Achievement of Outcome 3 is rated as: Satisfactory

Achievement of Outcome 3 is rated as satisfactory.

Indicator No. 7: No. of people in target basin benefitting from FRM adaptation technologies, tools, and adaptation strategies, and are less exposed to flood risk

| | Baseline | End Target | Status at TE | TE Assessment |
|--------|--|--|--|-----------------|
| Value: | Current approach limited of inclusion of local communities, and particularly the vulnerable groups | At least 5 technologies transferred to 13 communities in community-based adaptation measures | The end target of transferring at least 5 technologies to 13 municipalities has been achieved. | Achieved |
| Date: | 2013 | Mar 2020 | Nov 2019 | |

Indicator No. 8: No. of innovative Non-structural measures introduced and implemented as part of climate adaptation strategies to provide improved resilience to communities (include agric.)

| | Baseline | End Target | Status at TE | TE Assessment |
|--------|---|---|---|-----------------|
| Value: | Current approach to FRM is structural flood protection measures | Non-structural measures designed and implemented in 13 municipalities by 2020 | Non-structural measures have reduced vulnerabilities in 13 municipalities, with substantial cofinancing from local governments. | Achieved |

| | | | | |
|--|--|--|--|----------------------|
| | | At least 4,200 hectares of agric. land protected by non-structural measures (e.g. floodplain agro-forestry to be implemented on at least 840 hectares) | One of the non-structural measures entails protecting riverbank ecosystems with an agroforestry management system. Implementation was underway at the time of the TE mission in early November and completed later that month. | Mostly Achieved |
| Date: | 2013 | Mar 2020 | Nov 2019 | |
| Indicator No. 9: No. of communities benefitting from introduced forecasting, early warning, response and recovery technologies to support local communities at risk of flooding | | | | |
| | Baseline | End Target | Status at TE | TE Assessment |
| Value: | FFEWS system currently disjointed and not fully electronically based | Fully integrated Flood forecasting and Early warning system implemented in VRB | The FFEWS has been set up and protocols were under development at the time of the TE mission in November 2019. The protocols were operationalized in Feb 2020. ⁹ Adaptive management will be required in the implementation of the system, making adjustments as experience is gained and new information is generated. | Achieved |
| Date: | 2013 | Mar 2020 | Nov 2019 | |

4.2.2 Relevance

Relevance is rated as: Highly Satisfactory

The project was aligned with Objective CCA-3 of the Programming Strategy for the GEF SCCF for the period of 2010-2014: “Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology”. The project remains relevant to the SCCF priorities, as the two subsequent SCCF programming strategies, for 2014-2018 and 2018-2022, contain similar technology transfer oriented objectives.

The project strategy is consistent with the priorities outlined in the countrywide 2013 Climate Change Adaptation and Low Emissions Development Strategy for BiH covering the period 2013 to 2025, and with the Environmental Approximation Strategy (EAS), adopted in May 2017. The main objective of the BiH EAS is to ensure strategic planning of the EU environmental acquis approximation with ultimate goal to improve state of the environment and ensure sustainable development. The project is relevant to the current development of the National Adaptation Plan (NAP) which is identifying resources and timelines for implementing climate change-related policies and strategies, aligning with the climate *acquis*¹⁰ and on building institutional capacities.

Climate change risk in the development of agriculture in BiH is recognized in the Strategic Plan for Rural Development of BiH (2018-2021) – Framework Document, including the increase in extreme weather conditions that have resulted in more frequent flooding and unpredictable seasonal conditions for some crops.

In terms of civil protection, the project interventions on strengthening capacities of civil protection units are in line with the preparations for BiH in becoming a participating state of the Union Civil Protection Mechanism (UCPM). The UCPM helped coordinate interventions in BiH during the 2014 floods, as BiH could request assistance in case of emergency to protect citizens, property, the environment and cultural heritage of the country. And, there is an ongoing EU-funded project on capacity building to prepare for full membership in the UCPM¹¹.

The development objectives of the project were aligned with United Nations Development Assistance Framework (UNDAF) and the UNDP Country Programme Document (CPD) for Bosnia and Herzegovina for the period of 2015-2019, specifically UNDAF Outcome 5, “By 2019, legal and strategic frameworks are enhanced and operationalized to ensure

⁹ Documentary evidence of operationalization of the FE EWS: agreement dated 11 February 2020 signed by the Director of the Sava River Watershed Agency in Sarajevo, the Director of Vode Srpske in Bijeljina, the Director of the Federal Hydrometeorological Institute in Sarajevo and the Director of the Hydrometeorological Institute of Republika Srpska in Banja Luka.

¹⁰ The climate *acquis* refers to EU legislation on greenhouse gas monitoring and reporting, EU emissions trading system, effort sharing decision, carbon capture and storage, transport/fuels, ozone layer protection, fluorinated gases and forests and agriculture.

¹¹ EU for Better Civil Protection, a EUR 1.5 million project initiated in March 2019. Delegation of the EU to BiH, europa.ba

sustainable management of natural, cultural and energy resources, and CPD Output 2 under this outcome, “Subnational actors implement climate change adaptation (CCA) and mitigation measures, sustainable energy access solutions, and manage natural resources sustainably. The project contributions towards strengthening disaster and climate risk management capacities are also consistent with UNDAF Outcome 3, “By 2019, there is effective management of war remnants and strengthened prevention and responsiveness for man-made and natural disasters, and CPD Output 2 under this outcome, “Legal and policy frameworks in place supporting implementation of disaster and climate risk management measures, including gender perspective”.

4.2.3 Efficiency

Efficiency is rated as: **Highly Satisfactory**

Supporting Evidence:

- ✦ The GEF funding addressed the key barriers highlighted in the project design.
- ✦ The project has managed to satisfactorily achieve the intended project outcomes within the allocated budget and 5-year implementation timeframe.
- ✦ Financial delivery exceeded 90% in each of the four years reported.
- ✦ Direct cash cofinancing from 11 VRB municipalities totaling USD 791,566 through September 2019.
- ✦ Total materialized cofinancing nearly 13 times the value of the GEF project grant.
- ✖ Financial audits or spot checks have not been made.

Expenditures:

As of 30 September 2019, total project expenditures incurred were USD 5,404,848, which includes USD 4,513,282 accounted towards the USD 5,000,000 GEF grant and USD 791,566 of direct cash cofinancing contributed by the Government of BiH, as broken down below in **Table 13**.

Table 13: Actual expenditures broken down by project component, 2015-Sep 2019

| Outcome | Funding Source | Actual Expenditures, 2015 through September 2019 (USD) | | | | | | Indicative Prodoc Budget |
|---------------------|----------------|--|----------------|------------------|------------------|----------------|------------------|--------------------------|
| | | 2015 | 2016 | 2017 | 2018 | 2019* | Total | |
| Component 1 | GEF | 77,555 | 172,507 | 240,761 | 113,709 | 21,040 | 625,573 | 655,000 |
| | UNDP | 0 | 0 | 0 | 0 | 0 | 0 | 277,000 |
| Component 2 | GEF | 354,811 | 497,455 | 235,761 | 135,194 | 42,600 | 1,265,821 | 1,315,000 |
| | UNDP | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Component 3 | GEF | 22,020 | 219,121 | 529,388 | 1,044,605 | 598,561 | 2,413,694 | 2,780,000 |
| | UNDP | 0 | 0 | 0 | 0 | 0 | 0 | 1,223,000 |
| Project Management | GEF | 32,273 | 49,744 | 49,701 | 45,378 | 31,097 | 208,194 | 250,000 |
| | UNDP | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sub-total, GEF | GEF | 486,659 | 938,827 | 1,055,611 | 1,338,887 | 693,298 | 4,513,282 | 5,000,000 |
| Sub-total, UNDP | UNDP | 0 | 0 | 0 | 0 | 0 | 0 | 1,500,000 |
| Cost sharing, Govt. | BiH | 0 | 0 | 107,518 | 446,110 | 237,938 | 791,566 | 0 |
| Total | GEF | 486,659 | 938,827 | 1,163,129 | 1,784,996 | 931,236 | 5,304,848 | 6,500,000 |

Figures in USD

Source of budget figures: approved Project Document

Source of expenditures: Combined Delivery Reports (CDR), provided by UNDP

*2019 expenditures reported through September

Spending across the three project components have largely been consistent with the indicative sums outlined in the project document, with actual component-level expenditures lower by 5-10% of the budgeted figures for the full 5-year implementation timeframe.

Financial delivery has been very good, exceeding 90% in each of the four years reported between 2015 and 2018 (see **Figure 9**).

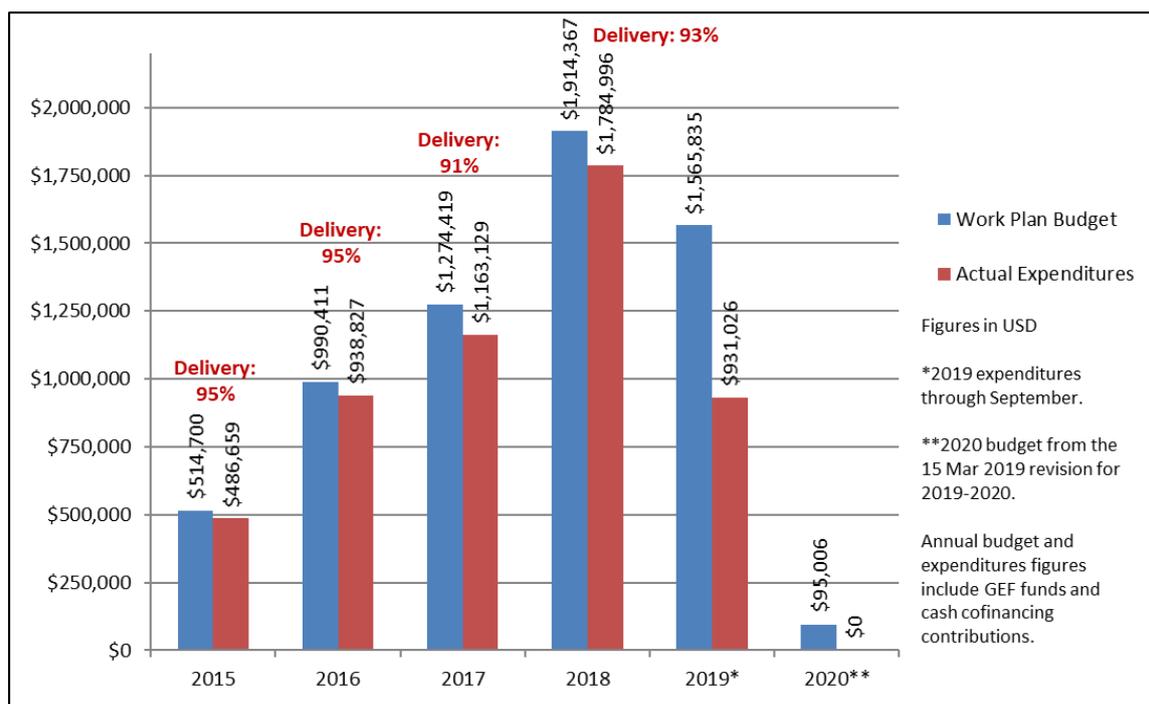


Figure 9: Planned annual budgets and actual expenditures, 2015-2019

Financial audits or spot checks have not been made of the project implementation. With more than USD 1 million expended annual in 2017 and 2018, and >USD 900,000 in 2016, it would have been prudent to carry out at least one financial audit. (lesson learned)

The TE is not a substitute for a financial audit, but there was documentary evidence available indicating satisfactory due diligence in the management of project funds. For example, procurements of project activities were publicly advertised, including the non-structural measures completed under Component 3. The 20 non-structural measures completed in 11 municipalities from Aug 2017 to November 2019 had a cumulative value of USD 2,205 million, with approx. USD 1.336 million contributed from the VRB project funds, which is 27% of the GEF project grant. An evaluation committee reviewed the submitted proposals and reached decisions regarding the selected contractor. The evaluation committee, which consisted of members of the UNDP project team, could have had broader representation, including from the government sector. (lesson learned)

The largest value non-structural measure, involving storm water drainage in the municipality of Gradiška, was USD 611,745.32, with USD 348,143.51 from GEF funds and USD 263,601.82 in cofinancing. Considering there was only one bidder in this 2019 procurement, a case report was prepared for review and approval by the UNDP Regional Chief Procurement Officer (RCPO). The report provided a value-for-money analysis and an explanation regarding why there was only one bidder, e.g., specialized construction techniques required, tight labor market, inability or reluctance to issue a bid security deposit and remoteness of the location. The RCPO approved the decision based upon the detailed back-up information provided.

Asset management:

With respect to asset management, the project team provided an inventory report dated September 2015 that included four laptop computers having a combined value of USD 10,180.

The titles of the assets purchased for the project beneficiary agencies have reportedly been transferred to the beneficiaries by the UNDP. The following transfer of title documents were provided to the TE Consultant for review:

- Hydrometeorological equipment to the Federal Hydrometeorological Institute of FBiH, Feb 2016.
- Hydrometeorological equipment to the Republic Hydro-Meteorological Institute of RS, Feb 2016.
- Automatic hydromet equipment to the Republic Hydro-Meteorological Institute of RS, Feb 2017.
- Equipment to municipal civil protection units in 14 municipalities in the VRB, May 2017.
- Non-expendable supplies and equipment to the Cantonal Civil Protection Administration of Central Bosnia Canton, Jan 2019.

- Non-expendable supplies and equipment to the Republic Administration of Civil Protection of the RS, Jan 2019.

Materialization of cofinancing:

The cumulative amount of cofinancing confirmed at project entry was USD 77,260,000, committed from the Ministry of Agriculture, Forestry and Water Management of RS, the Sava River Watershed Agency of FBiH and the UNDP (see **Annex 7**). According to inputs from the project team and information contained in the midterm review report, the amount of cofinancing materialized by 24 December 2019 is USD 64,831,910, or 84% of the total confirmed at project entry (see **Table 14**).

Table 14: Summary of materialized cofinancing

| Sources of Cofinancing | Name of Cofinancer | Type of Cofinancing | Cofinancing Amount (USD) | |
|------------------------|--|---------------------|----------------------------|--------------------|
| | | | Confirmed at project entry | Materialized by TE |
| GEF Agency | United Nations Development Programme (UNDP) | Cash | 1,500,000 | 1,500,731 |
| | | In-kind | 60,000 | 60,000 |
| Recipient Government | Ministry of Agriculture, Forestry and Water Management of RS | Cash | 75,000,000 | 61,668,856 |
| Recipient Government | Sava River Watershed Agency of FBiH | Cash | 700,000 | 763,408 |
| Recipient Government | Vode Srpske | Cash | 0 | 47,348 |
| Recipient Government | Municipalities within the VRB | Cash | 0 | 791,566 |
| Total | | | 77,260,000 | 64,831,910 |

Confirmed cofinancing values obtained from signed cofinancing letters annexed to the approved project document.

The USD 1,500,000 of cash cofinancing from the UNDP was integrated into the total budget and work plan (TBWP) in the project document, implying cost-sharing at the project level. The materialized cofinancing reported in the letter issued by UNDP on 22 June 2018 indicates contributions from three projects: UN Recovery from floods (Project ID 00090943, UN Response to BIH floods (Project ID 00090579) and EU Flood recovery programme (Project ID 00091517). There has reportedly been no further cash cofinancing from UNDP from the period of June 2018 to the time of the TE. The complementary activities completed on the three listed projects represents parallel cofinancing for the VRB project, not cost-sharing at the project level. The USD 1,500,000 cash cofinancing should not have been integrated into the TBWP. (lesson learned)

The 22 June 2018 letter from UNDP also indicates that more than USD 60,000 of in-kind cofinancing contributions have materialized, attributed to 25% of the costs of the salaries of the Energy and Environment Sector Leader and Sector Associate, as well as rent of premises and services costs.

The largest proportion of the project cofinancing was committed by the Ministry of Agriculture, Forestry and Water Management of RS in relation to the EUR 75 million loan issued in 2014 for emergency reconstruction of flood protection facilities along the Sava River and its tributaries. As part of the midterm review of the project, the ministry issued a cofinancing letter report on 19 April 2018, indicating a cumulative investment of BAM 67,913,932.19 (est. USD 42,952,781, based on an exchange rate of 1.58113 on 19 April 2019) for 39 projects completed under the EIB loan during the period of 2014-2017. A separate letter report dated 24 December 2019 (see **Annex 5**) documents an additional 11 interventions completed over the period of 2017-2019 for a cumulative sum of BAM 33,022,266.35 (est. USD 18,716,073.83, based on an exchange rate of 1.76438 on 24 December 2019).

The Sava River Watershed Agency is another cofinancing partner, with USD 700,000 in grant cofinancing committed at CEO ER. The agency submitted a letter on 16 April 2018, as part of the project midterm review, indicating that BAM 1,142,443.12 (est. USD 717,953.26, based on an exchange rate of 1.59125 on that day) for complementary activities completed during the period of 2014-2017. An additional USD 45,455 has been contributed by the Sava Watershed Agency, in support to the cost for the VRB flood forecasting and early warning system (FFEWS). The Vode Srpske also supported the cost of the FFEWS with a contribution of USD 47,348.

There has also been cash cofinancing from twelve (12) VRB municipalities as part of the completed non-structural measures. Based on combined delivery reports (CDRs) from 2017, 2018 and 2019 (Jan-Sep), a cumulative amount of USD 791,566 have been contributed by 12 VRB municipalities. These contributions have materialized during project implementation, i.e., they were not identified in the CEO ER.

4.3 Sustainability

Sustainability is generally considered to be the likelihood of continued benefits after the GEF funding ends. Under GEF criteria each sustainability dimension is critical, and the overall ranking, therefore, cannot be higher than the lowest one.

Overall:

Likelihood that benefits will continue to be delivered after project closure: Moderately Likely

Supporting Evidence:

- + Continued donor funding towards flood risk management, including ongoing EU funding and a GCF project that will be submitted for approval in the first half of 2020.
- + Transposing the EU Flood Directive in RS is a significant step towards institutionalizing flood risk management.
- + VRB flood risk management plan provides a practical framework for prioritizing investment from domestic and international sources for further reducing flood risks.
- + A proportion of revenue collected from water tariffs in FBiH are earmarked for operation and maintenance of hydrometeorological stations. Similar arrangements have been made through allocation of finances from the RS Fund for Environmental Protection and Energy Efficiency.
- + Strong commitment from private insurance sector partners in continuing the development of an affordable natural disaster insurance product.
- Constraints in realizing an approved flood risk management plan across the entire VRB due to the complex institutional arrangements in FBiH and RS.
- VRB local governments have limited funds for carrying out regular maintenance of cleaned out stream channels, reinforced embankments and other non-structural measures completed.
- Challenges in aligning with the EU environmental *acquis*.

Financial Dimension:

Likelihood that benefits will continue to be delivered after project closure: Likely

With respect to the financial resources dimension of sustainability, a rating of “likely” has been applied.

There is continued donor support for flood risk management, including but not limited to the following:

- Long-standing funding from the EU, including the EUR 5 million IPA II “Support to Flood Protection and Flood Risk Management” program
- The proposed USD 14 million GCF project “Scaling up climate resilient flood risk management in Bosnia and Herzegovina” that is expected to be submitted for approval in the first half of 2020.
- The GEF-World Bank West Balkans Drina River Basin Management (WBDRBM) Project for South Eastern Europe and Balkans is to improve mechanisms and capacity of the project countries to plan and manage the trans boundary Drina River Basin (DRB), incorporating climate change adaptation, running from 2017-2021.
- GCF-funded project on advancing the National Adaptation Plan (NAP) process for medium-term investment planning in climate sensitive sectors in Bosnia-Herzegovina (2018-2021).
- “EU 4 Better Protection – Capacity Building and Preparation of Bosnia and Herzegovina for the Union Civil Protection Mechanism”, in the amount EUR 1.5 million, implemented by the end of 2021.

The financial sustainability of the operation and maintenance of the expanded hydrometeorological network realized under the project is variable. In the FBiH, a proportion of the revenue collected from water tariffs is earmarked for the operation of hydrometeorological stations. At the time of the TE mission in November 2019, these financing arrangements were not fully sorted out in RS. Over the timeframe of November 2019 and February 2020, arrangements have been made to finance the operation and maintenance of the hydromet network through allocations from the RS Fund for Environmental Protection and Energy Efficiency.

There are funding constraints among VRB local governments for sustaining regular maintenance of the completed non-structural measures, such as cleaning out stream channels and reinforcing embankments. For instance, during the TE field mission in November 2019, one of the stream channels cleaned out in 2017-2018 under a non-structural measure

completed in the Laktasi Municipality was overgrown with vegetation. The official from the municipality accompanying the field visit indicated that maintenance of stream channels is organized roughly every 2-3 years, due to operating budget limitations.



Figure 10: Overgrown vegetation in cleaned out stream channel, Laktasi Municipality, 05 Nov 2019

From a macro level, gross domestic product (GDP) has steadily increased over the past 5 years, averaging approximately 3% year-on-year, as shown below in **Figure 11**, but there remain constraints in public financing across the country.

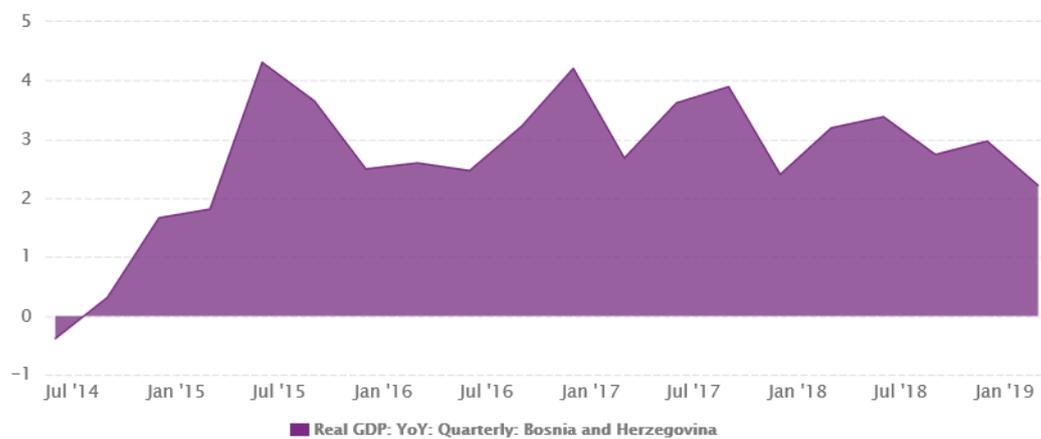


Figure 11. Real GDP for Bosnia and Herzegovina, Jun 2014 to Jan 2019

Socio-Economic Dimension:

Likelihood that benefits will continue to be delivered after project closure: Likely

With respect to the financial resources dimension of sustainability, a rating of “likely” has been applied.

The project has made substantive contributions towards reducing vulnerabilities to increase flood risks due to climate change in the VRB, through development of an improved flood forecasting and early warning system, enabling more timely response and mitigation; strengthening the capacities of civil protection units among VRM municipalities; development of flood risk and flood hazard maps, enabling municipality level officials to make more informed decisions with respect to spatial planning; implementation of 20 non-structural measures in 11 VRB municipalities, providing protection to at-risk communities; and preliminary development of natural disaster insurance coverage, particularly for residential stakeholders.

With respect to the natural disaster insurance coverage, based on feedback from stakeholder interviews during the TE mission, there is strong commitment among the private insurance sector to continue developing and advocating for the establishment of the envisaged obligatory coverage. And, the proposed GCF project would support further advancement of the envisaged insurance. The preliminary analyses have estimated that a penetration rate of 25% would be required for the mandatory insurance in order for it to be viable. The Romanian mandatory insurance product also has a target of 25% penetration rate. In approximately 10 years since the coverage was introduced in Romania, from 2008 to the end of 2018, there were 1,704,634 policies written, representing a penetration rate of 18.99% (see **Figure 12**).



Figure 12: Penetration rate of natural disaster insurance in Romania, 2010-2018¹²

The Romanian policy covers floods, earthquakes and landslides. The insurance working group on the VRB project have considered that if storm damage is added to the policy, it would be easier to market the product and achieve at least 25% penetration.

Institutional Framework and Governance Dimension:

Likelihood that benefits will continue to be delivered after project closure: Moderately Likely

With respect to the institutional framework and governance dimension of sustainability, a rating of “moderately likely” has been applied.

The institutional strengthening achieved on the VRB project through delivery of capacity building and transfer adaptation technologies and approaches has substantively contributed to improvements in the institutional framework regarding flood risk management in the VRB. And, flood risk governance has been improved in the VRB, with increased coordination and collaboration among hydromet institutions and water agencies in the two entities.

There are a few factors that diminish the likelihood that project results will be sustained. Firstly, the limited harmonization across entities. For instance, the VRB flood risk management plan was approved by the RS, but not by the FBiH. Inconsistent harmonization is not restricted to flood risk management. The Analytical Report¹³ accompanying the document on communication from the Commission to the European Parliament and the Council, Commission Opinion on Bosnia and Herzegovina’s application for membership of the European Union, contains the following entries:

- “Due to the complex political and institutional set-up, lack of political consensus and awareness, understaffing and scarce financial resources, progress with legal and policy measures requires considerably greater efforts and much more time than in other countries. This has created a considerable backlog in aligning with the EU *acquis* in this area (environment).”
- “Bosnia and Herzegovina has no state-level law on environmental protection and no state-level authority exclusively dealing with the environment. The alignment of legislation with the *acquis* has been undertaken so far without a National Programme for the Adoption of the Acquis (NPAA) in place or a vertically coordinated approach.”
- “A countrywide environment approximation strategy was adopted in 2017, and supplemented by more specific environmental approximation programmes for the entities and Brčko District. There are few sub-sector strategies at state and entity level in place. These are mostly not harmonised between the entities for the respective areas covered.”

¹² Source: presentation by the CEO of PAID (N. Radu) entitled “Mandatory home insurance in Romania”.

¹³ Reference: {COM(2019) 261 final}, Brussels, 29.5.2019, SWD(2019) 222 final.

Environmental Dimension:**Likelihood that benefits will continue to be delivered after project closure: Likely**

With respect to the environmental dimension of sustainability, a rating of “likely” has been applied.

The project strategy emphasizes increasing the resilience of vulnerability communities to risks of floods, but there are inherent environmental benefits as well. The flood risk management plan developed for the VRB provides a framework for improved management of both natural resources and the built-up environment. Implementing improved management of upland regions in the basin, for example, will enhance soil and water conservation, which will in turn maintain ecosystem functions and services and enhance habitat integrity. Encouraging the implementation of non-structural measures to control the risks of floods also have benefits to the environment, e.g., protecting habitats within floodplains and conserving riverine species of plants and animals.

Achieving long-term environmental sustainability in the VRB will require improved stakeholder engagement, particularly with the energy (hydropower) and forestry sectors. Regulation of hydraulic regimes in the basin is important in terms of flood risk management, but also for ensuring optimal ecological flows. Forest governance and management practices need to be strengthened to minimize forest loss, maintain ecosystem integrity and ensure sustained socioeconomic co-benefits.

4.4 Progress towards impact

Strengthened resilience:

The 638,600 ha Vrbas River Basin (VRB), with 213,740 inhabitants as direct beneficiaries of which 52.2% are women, is under improved management for climate resilience through development of a flood forecasting and early warning system (FFEWS), which included deployment and transfer of the following hydrometeorological equipment: twenty (20) precipitation stations, seven (7) hydrological stations and two (2) automatic meteorological stations; coordinated online data management and communication protocols; and is supported by a comprehensive, flood risk management (FRM) plan.

Contributions to Changes in Policy/Legal/Regulatory Enabling Frameworks:

The project has been substantive contributions to enabling legal and regulatory frameworks.

- Amendments to the Law on Waters, Republika Srpska, effectively transposing EU Flood Directive (Gov. Gazette No. 74/17, 07 August 2017)
- RS Decree on the elements of a flood risk management plan (Gov. Gazette No. 115/17, 23 December 2017)
- Flood risk management plan for the RS sections of the VRB
- Amendments to Law on Spatial Planning to include flood maps and climate changes have been adopted by the National Assembly in Official Gazette No. 84/19, 10 October 2019.
- Flood hazard and risk maps together with building codes have been made public and are available to citizens of VRB municipalities.
- Draft flood zoning policy for floodplains, together with of guidance documents for integration of flood risk in spatial plans at local level has been developed.

Arrangements to Facilitate Follow-up Actions:

The project has a strong emphasis on institutional strengthening, enabling relevant stakeholders to operate the improved flood forecasting and early warning systems. The strengthened coordination between the RS and FBiH hydromet institutes and water agencies are essential for facilitating follow-up actions. Roles and responsibilities will be clarified through operationalizing the flood forecasting and early warning system (FFEWS).

The participatory GIS geoportal (PGIS) is an interactive platform for facilitating information sharing information on spatial infrastructure for hydrometeorological data for municipalities and public citizens.

UNDP resident operations in BiH contribute important arrangements for facilitating follow-up actions, including implementing complementary projects, such as the GCF project under development, providing advocacy and mediation support to advance policy and legal reform, such as what is required to move forward with the conceptualized natural disaster insurance coverage.

Follow-up actions are also facilitated through existing institutions, such as the Sava River Watershed Agency, and teams leading complementary projects (WBIF, IPA, World Bank, GIZ, etc.).

Replication:

There is evidence of replication occurring during the implementation phase of the project, including the following:

- The flood risk management planning methodology developed for the VRB project has been replicated for application for the following basins¹⁴:
 - Flood Risk Management Plan for the Sava River Basin in FBiH
 - Flood Risk Management Plan for Watershed of Adriatic Sea in the FBiH
 - Flood Risk Management Plan for district Sava River Basin in Republika Srpska,
 - Flood Risk Management Plan for district Trebišnjica River Basin in Republika Srpska
 - Flood Risk Management Plan for the Brčko District BiH
 - The Roof Report – Framework Plan for Flood Risk Management in BiH, which contains key foundations for inter-basin cooperation and coordination, pertaining to efficient monitoring and integrated implementation of flood risk management, with a special reference to transboundary watercourses in BiH.
- Water agencies have agreed to use the FFEWS platform developed by the project for three basins with similar geographical features: Bosna, Una-Sana and Drina.¹⁵
- The International Sava River Basin Commission adopted the Vrbas River model for the regional EWS.
- Procurement of the same type of hydrometric stations for the projects on the Bosna and Drina rivers.¹⁶
- Implementation of non-structural measures, following completion of the ones constructed under the project.¹⁷
- Vulnerability assessment methodology developed for the VRB is planned to be applied for the GCF project that is currently under development.

5 Assessment of Monitoring & Evaluation Systems

5.1 M&E Design

Monitoring and Evaluation design at entry is rated as: Satisfactory

The M&E plan was developed using the standard UNDP template for GEF-financed projects. The indicative budget for the M&E plan was USD 105,000 (excluding PIU and UNDP staff time and travel expenses), which is 2.1% of the USD 5,000,000 GEF project grant. The M&E budget was broken down into only four items: USD 10,000 for the inception workshop and report, USD 40,000 for the midterm review, USD 40,000 for the terminal evaluation, and USD 15,000 for financial audits. The level of resources allocated for M&E is considered by the TE Consultant to be low. According to the UNDP template for GEF-7 projects, the M&E budget should be 5-7% of the value of the total GEF grant.

Many of the M&E responsibilities, as indicated in the M&E plan, were assigned to the project manager and project team. The terms of reference (TOR) for the project manager includes responsibility for preparing progress reports and delivery of project outcomes; however, other M&E tasks, such as verification of project results, were not clearly articulated in the TOR's for the project manager and team members. (lesson learned)

5.2 M&E implementation

Implementation of Monitoring and Evaluation Plan is rated as: Satisfactory

The quality of implementation of the M&E plan was found to be satisfactory. M&E results were documented in project implementation review (PIR) review reports. The project board was an important platform for M&E, providing strategic feedback to issues raised through project reporting and discussions during the board meetings.

¹⁴ Source: Terms of reference for Flood Risk Management Plans developed in Bosnia and Herzegovina, Sarajevo, November 2018.

¹⁵ Source: Terms of reference for development of the hydrological flood forecasting system for Sava River Basin (Phase 1. Bosna River), 15 January 2016.

¹⁶ Source: Specifications for the hydrometeorological stations set up for the Bosna River, 2019

¹⁷ Source: Testimonial evidence provided by interviewed municipality officials during the TE mission, November 2019.

The project inception report, issued in January 2016 and covering the 6-month inception period from March-September 2015, provides a comprehensive summary of the project, an update of project risks and details on several of the key technical interventions. The project results framework was not critically reviewed during the project inception workshop or during the project inception. For instance, the updated GEF Programming Strategy on Adaptation to Climate Change for the LDCF and SCCF was issued in October 2014, prior to the start of the project. The indicators in the project results framework that were linked to the earlier CCA programming strategy could have been adjusted during project inception. (lesson learned)

Tracking tools:

The baseline assessment was made with the 2010-2014 version of the CCA tracking tool. The 2014-2018 version, introduced in October 2014, was used for the midterm assessment. Starting in the GEF-6 replenishment cycle, the GEF has made significant changes to how tracking tools are used for GEF Trust Fund projects. Climate change adaptation is only funded through the LDCF and SCCF and the most recent CCA tracking tool was released in October 2019 for the 2018-2022 programming strategy. The relevant indicators to the VRB project are similar to those in the 2014-2018 tracking tool, including the following:

- Core Indicator 1: Total number of direct beneficiaries (male, female).
- Core Indicator 2: Area of land managed for climate resilience (ha).
- Core Indicator 3: Total number of policies/plans that will mainstream climate resilience.
- Total number of people trained (male, female).
- Objective 1: Technologies and innovative solutions piloted or deployed to reduce climate-related risks and/or enhance resilience.
 - Output 1.1.1. Physical and natural assets made more resilient to climate variability and change
 - Output 1.1.3. New/improved climate information systems deployed to reduce vulnerability to climate hazards/variability.

The TE Consultant recommends carrying out a terminal assessment using the 2018-2022 CCA tracking tool, for the relevant sections listed above.

Responses to midterm review recommendations:

The recommendations from the midterm review have been satisfactorily addressed by the project during the second half of the implementation timeframe, as summarized below in **Table 15**.

Table 15: Summary of management responses to MTR recommendations

| Midterm review recommendation | Status at terminal evaluation |
|--|--|
| 1. Repeating exposure through on-the-job training is necessary to ensure long term sustainability of the new technologies | The project has continued to provide trainings on a variety of topics, including flood forecasting and early warning, hydrological and hydraulic modelling, etc. |
| 2. More emphasis, capacity building and knowledge transfer regarding "making room for water" and/or "living with floods" concepts to beneficiaries would be highly beneficial in order to enable these beneficiaries to further develop means for holistic flood management in their jurisdictions. | The VRB flood risk management plan contains a mix of non-structural and structural measures. Further capacity building will be required moving forward, as many water management sector officials have deep-seated opinions on the use of structural measures to control flood risks. |
| 3. The government of BiH as well as entities and municipalities will need to find ways and conduct the necessary legal adjustments to collect and/or allocate the necessary funds to ensure long term sustainability of the flood protection, adaptation and warning interventions. It is expected that capital intensive maintenance and replacement works will become necessary in the future that will need respective financing. Financing will need to cover both capital costs and staffing costs. The project is to develop a sustainability strategy with as exact as possible financial projections in cooperation with the respective stakeholders . | With continued donor support, e.g., from the EU, GEF and the proposed GCF project, there remains a predominant project-based approach towards funding certain systems, such as information management systems. The FBiH Hydromet Institute receives funding for operation and maintenance of hydrometeorological stations from a proportion of revenue collected through water tariffs. These funding arrangements are not in place in RS. And, there remain shortcomings among municipality operating budgets to keep up with the required maintenance of flood control measures. |
| 4. Guidelines for potential upscaling including lessons learnt should be produced. Upscaling of project methodologies and results should be done through concrete project proposals covering other flood prone river basins in Bosnia and Herzegovina. | Many of the best practices under the VRB project were considered in the development of the proposed GCF project, as well is for the ongoing EU-funding on flood risk management. |

| Midterm review recommendation | Status at terminal evaluation |
|--|--|
| 5. Explore implementation of agro-forestry measures with direct involvement of beneficiaries e.g. project to provide seedlings and municipality or farmers to provide labor for planting. | One of the non-structural measures under the project entails reinforcement of embankments and floodplains through implementation of an agroforestry management system. This can be considered as a demonstration intervention; it will take time to convince farmers and other stakeholders to consider implementing agroforestry based systems, as there is limited practice locally. |
| 6. The project should support development of by-laws that will regulate the development of the flood risk management plan and continue with the development of the Vrbas river basin flood risk management plan as a pilot for the rest of BiH. | The EU Flood Directive has been transposed and the VRB flood risk management plan has been adopted in the RS; however, not in the FBiH, where officials are waiting for the development of countrywide flood risk management plans that are slated to be completed under the ongoing EU-funded project. |
| 7. Insurance models with applicable tariffs to be developed and discussed with stakeholders. Simulation of the model can be initiated in pilot municipalities. In order to ensure necessary insurance take-up, the 'solidarity' approach for financing should be explored. | Considerable progress has been made since the midterm review on further investigating and conceptualizing natural disaster insurance in BiH. The developments have occurred in FBiH, less so in RS. The insurance working group reached the conclusion that a mandatory natural disaster insurance product is most viable for BiH, similar to coverage introduced in Romania in 2008. The proposed GCF project includes an activity on further advancing development of natural disaster insurance in BiH. |

6 Assessment of Implementation and Execution

Quality of Implementation and Execution is rated as: Satisfactory

The project was run under a direct implementation modality (DIM), with UNDP as the implementing partner and executing agency. Implementation support was provided by the Ministry of Spatial Planning, Construction and Ecology of RS – which is the UNFCCC focal point for BiH – and the Ministry of Foreign Trade and Economic Relations (MoFTER) – which is responsible for coordination of activities and harmonization of plans of entity bodies and institutions in the fields of environmental protection, development and use of natural resources, and tourism.

The project team was based in the UNDP offices in Banja Luka and Sarajevo, working closely with the UNDP CO in Sarajevo and coordinating with governmental partners in RS and FBiH. The project benefited from effective and consistent project management, led by the Project Manager, who is also managing the National Adaptation Plan (NAP) project, and supported by highly qualified project officers and administrative support staff who are also working on other projects in the UNDP energy and environment portfolio. These arrangements provide a higher level of continuity, saves considerable time in recruiting a separate project team for each new project, and facilitates synergies across projects in the portfolio.

The UNDP CO provided administrative and strategic guidance throughout the project development and implementation phase. Apart from USD 1.5 million of parallel grant cofinancing, UNDP provided more than USD 60,000 of in-kind cofinancing, which includes a share of the salaries of CO staff and costs for office premises and services.

The UNDP regional technical advisor (RTA) has also been actively involved, providing overall guidance during the project preparation phase. Project progress reports provided candid accounts of issues, and these were followed up during project board meetings. Moreover, the international Chief Technical Advisor (CTA) provided consistent strategic guidance from project conceptualization, project development and throughout project implementation.

There have been nine (9) project board meetings, convened approximately twice per year over the period of 16 October 2015 until 16 May 2019 (see **Table 16**).

Table 16: Project board participation, Oct 2015 to May 2019

| Member | 16 Oct 2015 | 19 Jan 2016 | 09 Jun 2016 | 23 Sep 2016 | 20 Feb 2017 | 20 Sep 2017 | 02 Feb 2018 | 18 Oct 2018 | 16 May 2019 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Chair, Minister, Ministry of Spatial Planning, Construction and Ecology of RS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Member, Head of Water Resources Department, Ministry of Foreign Trade and Economic Relations of BiH | ✓ | ✓ | ✓ | | | ✓ | | ✓ | ✓ |
| Member, Expert Advisor, Ministry of Agriculture, Water Management and Forestry of FBiH | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Member, Senior Associate, Ministry of Agriculture, Forestry and Water Management, RS | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Member, Head of UNDP Energy and Environment Sector | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

The board has high level representation, with the Minister of the Ministry of Spatial Planning, Construction and Ecology of RS, as the chair, who has led each of the nine board meetings, the Head of the Water Resources Department of the MoFTER, Expert Advisor of the Ministry of Agriculture, Water Management and Forestry of FBiH, Senior Associate of the Ministry of Agriculture, Forestry and Water Management of RS, and the Head of the UNDP Energy and Environment Sector. Rotated between Banja Luka and Sarajevo.

The board meetings have rotated between Banja Luka and Sarajevo – the rotation of the meeting venue is a good practice in promoting coordination and collaboration across entities. Based on review of the minutes of the board meetings, participation has been high throughout, there is a consistent mention of coordination with other projects (good practice), project results and plans are presented and discussed efficiently and follow-up actions are addressed in subsequent meetings.

A few lessons learned and room for improvement regarding project implementation and execution include:

- Expand upon the level of country ownership on the project by including the annual work plans and PIR reports into the agendas for the project board meetings, and involving governmental sector stakeholders onto the review committees evaluating project procurement results.
- Consistent with the project objective, include a criterion addressing highly exposed rural poor, returnee and displaced persons in the evaluation matrix for the non-structural measures.
- Provide additional details on resource allocation in the annual work plans.

7 Other Assessments

7.1 Need for follow-up

There are a few issues that should be followed up after project closure, including:

- Implement the action plan under the sustainability strategy for the project, one of the recommendations of the midterm review, and including securing financing for long-term operation and maintenance of hydrometeorological stations.
- Operationalizing the flood forecasting and early warning system for the VRB.
- Developing a flood risk management plan for the section of the VRB in FBiH.
- Continuing to advance the natural disaster insurance coverage, including development of the requisite legal framework.

7.2 Contributions towards achievement of Sustainable Development Goals (SDGs)

The project has made substantive contributions toward achievement of SDGs, as outlined below in **Table 17**.

Table 17: Project contributions towards achievement of SDGs

| | SDG target | Project contribution |
|---|--|--|
|  | Goal 13. Take urgent action to combat climate change and its impacts | |
| | Target 13.1. Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. | The 638,600 ha Vrbas River Basin is under improved management for climate resilience. Transfer of adaptation technology focused on the 13 municipalities (out of a total of 28 in the VRB) that are most susceptible to flooding; the cumulative number of inhabitants, project direct beneficiaries, in these 13 municipalities is 213,470, of which 52.2% are women. |
| | Target 13.2. Integrate climate change measures into national policies, strategies and planning. | Climate change measures integrated into the VRB flood risk management plan, and the VRB flood forecasting and early warning system. |
| | Target 13.3. Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. | Coping capacities of central (RS and FBiH), canton and municipality level civil protection units (CPUs) strengthened through technical training delivered to 571 CPU personnel and municipal officials (including 113 women), information disseminated to the public through radio, television, internet and print media. |

Secondary contributions have been made to SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), SDG 5 (Achieve gender equality and empower all women and girls), SDG 6 (Ensure availability and sustainable management of water and sanitation for all), SDG 11 (Make cities and human settlements inclusive, safe, resilient and sustainable), and SDG 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss).

7.3 Environmental and social safeguards

Environmental and social risks were screened at the project preparation phase and recommendations for implementing safeguards for each project component developed.

Considering that the overall objective of the project was to increase resilience of vulnerable communities in the VRB, environmental and social safeguards were intrinsically included in the project strategy. The vulnerability methodology and the vulnerability assessments completed addressed environmental and social risks, including those related to marginalized groups, such as highly exposed rural poor, returnee and displaced persons. The flood risk and flood hazard maps and the flood risk management plan took into account the results of the vulnerability assessments.

Marginalized groups were also emphasized in conceptualizing the most appropriate natural disaster insurance coverage. The originally envisaged index-based approach was concluded to be more relevant for agricultural lands, and the mandatory product that was ultimately recommended focused on the residential sector and particularly those homeowners who are most vulnerable, not only in terms of their physical location in the basin but also on affordability.

The non-structural measures implemented in 11 VRB municipalities (through September 2019) also contributed to reductions in vulnerabilities of at-risk communities. The evaluation criteria, however, did not specifically consider marginalized groups. (lesson learned)

7.4 Gender concerns

Gender mainstreaming results were achieved on the project, including generating gender disaggregated data through the socioeconomic surveys completed as part of the vulnerability assessments; incorporating gender disaggregated data into community-driven flood intervention plans for the VRB municipalities; training women on reducing flood risks, e.g., protection of health and property, and preparedness for coping with flood events; and women were actively involved in leadership roles in the implementation of the project.

A gender marker of GEN 2 was applied for the project, which means that outputs have gender equality as a “significant” objective.¹⁸ One of the project outputs contain reference to gender: Output 3.3, “Local communities (particularly women and refugees) trained to implement and maintain flood resilient non-structural intervention measures, including agricultural practices such as agroforestry, to improve livelihoods of 13 communities in the VRB, and community-based flood early warning systems”. Targeting the number of women to train does not fully meet the criteria for a GEN 2 marker output. UNDP guidance¹⁹ on gender-related investments states the following:

“Ratings 3 and 2 require a focus on gender equality and women’s empowerment as an objective for the expected output, rather than on having women and girls as a target group. This is because some outputs and related activities that target primarily women may not contribute to gender equality.”

The project document includes a section on “gender and vulnerable groups” and a gender indicator matrix (copied below in **Table 18**); however, these metrics were not integrated into the project results framework and not all of the targets were monitored and evaluated during project implementation.

Table 18: Gender baseline assessment and targets to be achieved through each output (from project document)

| Expected Outcomes | Baseline | Target Indicator |
|---|--|--|
| 1. Key relevant development strategies/policies/legislation integrate climate change-resilient flood management approaches | No existing sectoral plans or policies include a gender responsive approach. Low gender balance in flood risk management | At least two priority sectoral policies and plans (e.g. agriculture, hydropower, water resources) to include gender disaggregated data, and use gender analysis in their design and included gender indicators for implementation. |
| 2. Climate resilient flood risk management is enabled by transferring modern technologies and strengthening institutional capacities | Currently no sex-disaggregated data collected in VRB. Loss and damages assessment do not include gender-specific tangible and intangible losses | Introduction of sex-disaggregated data collection protocols and methods. Introduction of GIS-based vulnerability, loss and damages which incorporate gender specific vulnerability, loss and damages calculation methods (e.g. ECLAC method) |
| 3. New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in VRB | Community-based adaptation strategies, technologies and practices do not secure participation of women, nor include them in trainings and communication circles. | Secured minimum of 40% of women in participatory community-based adaptation strategies, technologies and practices implemented in priority flood risk areas |
| | Early warning systems and Municipal-level flood response and preparedness plans are gender blind. | Early warning system in VRB and Municipal-level flood response and preparedness plans are fully engendered. |

A gender assessment for each of the three project outcomes was presented in the project document, along with target indicators. However, a gender analysis and action plan were not prepared during the project preparation phase. The gender analysis and action plan referenced in the PIR report is the document prepared in 2019 for Flood Risk Management in Bosnia and Herzegovina – this document was developed to support the proposed GCF project, which would upscale many of the FRM approaches developed and implemented on the Vrbas project.

7.5 Stakeholder engagement

Stakeholder consultations during the project preparation phase and involvement during implementation were primarily among state and entity level water management sector partners, including ministries responsible for water management, water agencies, hydro meteorological institutes, climate change focal point in BiH (Ministry of Spatial Planning, Construction, and Ecology of Republika Srpska), as well as municipalities, including spatial planning and civil protection units.

The stakeholder involvement plan contained in the project document did not include specific strategies or identification of key stakeholders in the agricultural and energy (hydropower) sectors. Output 1, for instance, called for “at least two priority sectoral policies and plans (agriculture and hydropower) updated to include climate change modeling results”. There was some involvement by the agricultural sector, e.g., delivery of training on farming in the floodplains of the VRB, and hydropower sector stakeholders were engaged in developing the protocols for the FFEWS. However, there was no clear strategy regarding stakeholder engagement for achieving the envisaged results under Output 1.1, i.e., “robust sector policy frameworks incorporating climate change developed for at least 2 sectors”.

There are also opportunities for improvement with respect to engaging with the forestry sector. During the development of the VRB flood risk management plan, the importance of the ecosystem functions delivered by forests in the basin was highlighted.

¹⁸ Financing for Gender Equality and Tracking Systems, Background Note, September 2013, United Nations Development Group (UNDG)

¹⁹ BDP, UNDP Gender Team (2009). Guidance Note: Tracking Gender-Related Investments and Expenditures in Atlas

The project has facilitated meaningful engagement with the private insurance sector, regarding conceptualizing natural disaster insurance coverage. It might have been prudent to have carried out additional consultations during the project preparation phase, e.g., to critically review the originally proposed index-based approach to risk transfer. (lesson learned)

8 Conclusion, Recommendations and Lessons

CONCLUSIONS

The relevance of the project was substantiated in 2014 when extensive areas in BiH were devastated by record-setting flood events; the project concept was submitted in January of that year, before the flood events. The GEF funds have provided important incremental benefits to the flood risk management (FRM) efforts in BiH, specifically in the Vrbas River Basin (VRB). Shortly after the 2014 floods many donor partners and financial institutions disbursed technical and financial assistance, including the European Investment Bank (EIB) which extended a EUR 55 million loan in 2014 for reconstruction of emergency flood protection structures in the Sava River Basin. The activities completed under the EIB loan comprised the largest proportion of cofinancing for the project. The GEF grant has funded a series of complementary non-structural measures, including development of flood forecasting and decision support systems, delivery of communication systems and strengthening flood warning systems, development of a participatory GIS-based flood risk management information system for the public and local governments, advanced planning for flood risks through overlaying flood risk and flood hazard maps to land use plans, assessment of socioeconomic vulnerabilities, constructing field interventions such as river channel cleaning and reinforcement of embankments to reduce vulnerabilities of at-risk communities, and preliminary development of natural disaster insurance primarily for residential stakeholders, as a risk transfer mechanism.

The project was aligned with Objective CCA-3 of the Programming Strategy for the GEF SCCF (2010-2014): “Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology”. The project remains relevant to the SCCF priorities, as the two subsequent SCCF programming strategies, for 2014-2018 and 2018-2022, contain similar technology transfer oriented objectives. The adaptation technology deployed and transferred on the project has provided flood management stakeholders with improved tools to make more informed and timely decisions, enabled more effective coordination across entities and enhanced knowledge of flood risks and hazards and the potential impacts of climate change.

Considering the primary objective of the project was technology transfer, there were commendable advances with respect to policy development, including transposing the EU Flood Directive in the RS. The VRB flood risk management (FRM) plan is another important achievement in terms of a policy tool and planning framework. The government of RS has approved the FRM plan, but the FBiH has elected to wait for the IPA II, EU-funded project to develop flood risk management plans countrywide. Although the VRB is considered an internal river in BiH, it extends across the RS and FBiH entities, and approvals of policies and management plans are handled separately at the entity level. This modality is an administrative reality that is factored into planning and decision making throughout BiH.

The project has contributed towards improved stakeholder involvement among the hydrometeorological institutes and water agencies in the two entities. The project strategy emphasized engagement with the agricultural and energy (hydropower) sectors, which are important stakeholders in the VRB and with respect to water resources management in general in the country. Several climate scenarios were modeled for the agricultural sector and extensive trainings were delivered to VRB extension officials and farmers on agricultural production in the floodplains of the VRB. And, hydropower sector stakeholders have been involved in the development communication protocols for improved flood risk management. The extent of engagement with the hydropower sector will need to increase as the protocols for the FFEWS are further developed and rolled out. As confirmed in the development of the FRM plan, the forestry sector is also an important stakeholder, e.g., due to forest loss in some of the upstream stretches in the VRB, discharges of some of the Vrbas River tributaries are on an increasing trajectory. In fact, the discharge from the Vrbanja Stream has been greater than the main channel of the Vrbas River on some occasions. Forest loss has also led to increased torrential flooding with significant sediment load in the flows due to exposed soils on steep slopes during intense rainfall events. The project made important contributions in the understanding and management of torrential floods, through torrent susceptibility modeling and development of torrent flood risk maps. Considering mountainous nature of many sections of river basins in BiH, these outputs are particularly valuable for flood risk management within the VRB and elsewhere in the country.

Regarding the risk transfer instruments included under Component 3, the project made substantive progress in assessing the local market conditions, surveying willingness to pay and evaluating viable products for BiH. The index-based products envisaged in the project strategy were determined unviable under current socioeconomic circumstances and more pertinent to the agricultural sector than for residential property, which was found to be the

most appropriate segment to focus on. Based on experiences from a natural disaster insurance product introduced in Romania in 2008, a similar, mandatory product is proposed for BiH. The insurance sector, primarily in RS, has been actively engaged in the preparatory work facilitated under the project and remain committed to continue after project closure. Developing the requisite legal framework for the envisaged obligatory natural disaster insurance product will be a key step towards making genuine progress moving forward. The UNDP could provide an important and influential role in the process, bridging the governmental and private sectors and representing the needs of marginalized communities in at-risk areas.

The project has benefited from experienced and efficient project management and a strong project team. Financial delivery has exceeded 90% in each of the four full years reported from 2015 through 2018. Country ownership was found to be good, with high level representation on the project board from national, RS and FBiH stakeholders, and active involvement in the project activities. A total of USD 64.8 million of cofinancing has materialized by 24 December 2019; this is nearly 13 times the value of the USD 5 million GEF project grant. And, nearly USD 0.8 million of cash cofinancing has been contributed by 11 VRB municipalities for 20 non-structural measures completed between August 2017 and September 2019; this figure will increase before project closure as there are a few interventions that will be completed before project closure in March 2020.

The potential for upscaling is high, including through the proposed USD 14 million GCF project “Scaling up climate resilient flood risk management in Bosnia and Herzegovina”, which is expected to be submitted for approval in the first half of 2020. Moreover, the EU remains the main donor in BiH and the EUR 5 million IPA II “Support to Flood Protection and Flood Risk Management” program, running from 2014-2020, includes development of countrywide flood risk management plans, which is the last step in fulfilling requirements stipulated in the EU Flood Directive. The FRM plan developed for the VRB provides valuable guidance for replication across other river basins, and the socioeconomic vulnerability assessment methodology developed on the project will be applied under the GCF project. Other evidence of replication during the project implementation period include adoption of the specifications for hydrometeorological stations for other river basins, including the Bosna River.

RECOMMENDATIONS:

The following recommendations have been formulated based upon the findings of the TE.

| No. | Recommendation | Responsible Entities | Timeframe |
|--|---|-----------------------------|---------------------------|
| Corrective actions for the design, implementation, monitoring and evaluation of the project | | | |
| 1. | Finalize and initiate the implementation of a sustainability plan. One of the recommendations of the midterm review was to develop a sustainability strategy. It would be advisable to complete an action plan according to the strategy and initiate implementation before project closure, e.g., identifying roles and responsibilities, indicating costs and possible sources of funding, recommending champions for follow-up actions, etc. | Project team, project board | Before project closure |
| 2. | Carry out a terminal assessment using the CCA tracking tool for the SCCF programming period of 2018-2022. The suggested sections of the 2018-2022 CCA tracking tool that are relevant to the VRB project include: Core Indicators 1, 2, 3 and 4; Objective 1, Outcome 1.1, Output 1.1.1; and Objective 1, Outcome 1.1, Output 1.1.3. | Project team | Before project closure |
| 3. | Prepare a factsheet on the proposed natural disaster insurance product. A concise and informative factsheet would provide documentary support in advocating for the further development of the insurance coverage. | Project team | Before project closure |
| 4. | Liaise with the “EU 4 Civil Protection Project” regarding results achieved in strengthening capacities of civil protection units. It would be advisable to liaise with the EU 4 Civil Protection project, sharing lessons learned and approaches implemented, and explore possibilities for synergies with the proposed GCF project. | Project team | Before project closure |
| Actions to follow up or reinforce initial benefits from the project | | | |
| 5. | Carry out stock-taking and update the FRM plan for the VRB. It would be advisable to carry out a stock-taking exercise of the VRB FRM plan in the next 1-2 years, and update the plan according to any changed circumstances, e.g., completed structural and non-structural measures, and reevaluating the type and costs of short-term and long-term actions; reformulating “urgent” actions to “priority” actions; capturing the operationalized flood forecasting and early warning system; updating information regarding the hydropower sector within the basin; highlighting the importance of the forestry sector; etc. | FRM stakeholders | Within the next 1-2 years |

| No. | Recommendation | Responsible Entities | Timeframe |
|--|---|---------------------------------|---------------------------|
| 6. | Strengthen engagement with the hydropower and forestry sectors for integrated flood risk management. Hydropower and forestry are important sectors in the VRB and it is imperative to better engage these sectors regarding water regulation and land use practices. | FRM stakeholders | Within the next 1-2 years |
| 7. | Develop the requisite legal framework and implement a public information campaign for the proposed natural disaster insurance coverage. In order to realize the envisaged obligatory insurance coverage, developing the requisite legal framework is essential and communicating the concept and coverage to the public should be prioritized. | Multi-stakeholder working group | Within the next 1-2 years |
| Proposals for future directions underlining main objectives | | | |
| 8. | Integrate flood risk management with river basin management. Consistent with principles of the EU Flood Directive and the EU Water Framework Directive, flood risk management should be further integrated with river basin management, entailing closer coordination across administrative entities in BiH. | FRM stakeholders in BiH | Within the next 1-2 years |
| 9. | Promote integration of flood risk management priorities into the National Energy and Climate Plan (NECP) for the period of 2021-2030 in order to align with EU energy and climate policies. BiH has recently started working on the NECP and, therefore, the timing is opportune to integrate FRM issues in the early phases in the development of the plan. | FRM stakeholders in BiH | Within the next 1-2 years |
| 10. | Advocate for membership and participation in the Alliance for Hydromet Development²⁰, which brings together major international development, humanitarian and climate finance institutions, collectively committed to scale up and unite efforts to close the hydromet capacity gap by 2030. | Hydromet institutions, UNDP | Within the next 1-2 years |

A few examples of good practices and lessons learned regarding project design and implementation are presented below.

GOOD PRACTICES:

Coordination with other projects increases the likelihood that project results will be sustained. The project has done a good job at coordinating with other projects and initiatives, addressing opportunities during each of the project board meetings and facilitating direct cofinancing contributions.

Cash cofinancing from VRB municipalities enhances country ownership and increases the likelihood that project results will be sustained. Substantial cash cofinancing has been contributed by 11 VRB municipalities for cost-sharing in the implementation of non-structural measures. This direct interaction with local governments significantly enhances the level of country ownership on the project and increases the likelihood that project results will be sustained after GEF funding ceases.

Rotating the project board meeting strengthens coordination and collaboration across entities. Considering the VRB extends across the RS and FBiH, rotating the venue of the project board meetings has been a good practice at strengthening coordination and collaboration among entity level stakeholders.

Involvement of the private sector in the conceptualization of natural disaster insurance increases the marketability of the product and contributes towards the objectives of risk transfer. The constructive feedback and interest from the private insurance sector stakeholders has been instrumental in conceptualizing a viable product that has market potential in BiH. In fact, it would have been advisable to have had more in-depth consultation with the insurance sector during the project preparation phase.

LESSONS LEARNED:

The stakeholder involvement plan did not include specific approaches for engagement with the energy (hydropower), agricultural and forestry sectors. The project strategy contains specific objectives regarding the energy (hydropower) and agriculture sector, e.g., integrating climate change considerations in the sector strategies and policies; however, the stakeholder involvement plan did not contain specific approaches on engaging with these sectors, or with forestry sector, which is also an important stakeholder group in the VRB and throughout BiH.

The aim of increasing resilience of highly exposed rural poor, returnee and displaced persons communities in the VRB was not clearly reflected in the evaluation criteria of non-structural measures approved for implementation. The

²⁰ The Alliance was launched at the COP25 climate conference on 10 December 2019.

project developed a comprehensive evaluation matrix for assessing offers for non-structural measures. Flood risk is included among the criteria in the evaluation matrix, but there is not a specific criterion on the risks to highly exposed rural poor, returnee and displaced communities in the VRB – which is the underlying objective of the project.

Gender mainstreaming targets were not fully integrated into the project results framework and not regularly reported on. A gender assessment was included in the project document, but a detailed gender analysis and action plan were not prepared during the project preparation phase, and the project strategy did not fully meet the criteria for a GEN 2 marker characterization. A gender mainstreaming indicator framework was included in the project document; however, it would have been advisable to integrate these gender indicators into the project results framework and to focus the gender metrics on empowerment and equality.

Cost-sharing at the project level. The USD 1.5 million in cash cofinancing from UNDP committed at CEO endorsement was integrated into the total budget and work plan as cost-sharing at the project level. The actual cofinancing that was reported was parallel contributions from complementary projects, which is not cost-sharing at the project level.

It would have been advisable to develop a knowledge management strategy. The project has made important contributions to knowledge associated with flood risk management in the VRB and BiH in general. It would have been advisable to develop a knowledge management strategy, describing roles and responsibilities, cofinancing contributions, ownership of knowledge platforms and systems after GEF funding ceases, etc.

Cofinancing allocations should extend beyond project closure to cover follow-up actions. Allocation of cofinancing contributions should extend beyond the date of project closure, e.g., by 2-3 years, to cover the cost and oversight for follow-up actions.

Annex 1: TE Mission Itinerary

| Date | Activity |
|-----------------------------|---|
| Monday, 04 November 2019 | TE Consultant arrives to Sarajevo |
| | 13:30 Meeting with UNDP, Project manager |
| | 15:00 Meeting with UNDP Country office, Sector leader |
| | 15:30 Meeting with Bosko Kenjic, Head of Water Resources Department, Ministry of Foreign Trade and Economic Relations, BiH, Project board member |
| | 16:30 Meeting with Senad Oprasic, GEF focal point |
| | Depart for Banja Luka |
| Tuesday, 05 November | 09:00 Meeting with Republika Srpska Hydro-meteo Institute, hydrology department |
| | 11:15 Meeting with Republika Srpska Ministry of Spatial Planning, Civil Engineering and Ecology, UNFCCC focal point, Head of Project Board |
| | 12:00 Marinko Vranic, Republika Srpska Ministry of Agriculture, Forestry and Water Management, Project board member |
| | 13:30 Banja Luka City, Sanja Toljevic, department for communal issues |
| | 14:15, Banja Luka City, Civil Protection field visit, non-structural measures in Banja Luka and Laktasi |
| Wednesday, 06 November | 11:00 Meeting with Nedeljko Sudar, Director, Water Institute |
| | 12:15 Meeting with Ozren Djuric, Vode Srpske |
| | Depart to Tuzla |
| | 15:00 Meeting with CRP, NGO in Tuzla |
| | 15:30 Meeting with prof Kozarevic ref insurance Depart for Sarajevo |
| Thursday 07 November | 09:00 Meeting with Bosna Reinsurance |
| | 10:00 Meeting with Suad Skejovic, senior associate for protection from waters, Federal Ministry of Agriculture, Water Management and Forestry, Project board member |
| | Depart for Bugojno municipality – civil protection |
| | Return to Sarajevo |
| Friday, 08 November | 09:00 Skype with RTA Nataly Olofinskaya |
| | 10:00 Meeting with Project Manager |
| | 11:00 TE debriefing, presentation of initial findings |
| | TE Consultant departs Sarajevo |

Annex 2: Evaluation Matrix

| Evaluation Criteria Questions | Indicators | Sources | Methodology |
|--|---|--|---|
| Relevance: Is the project relevant with respect to the environmental and development priorities at the local, regional and national levels? | | | |
| To what extent is the principle of the project in line with national priorities? | Level of participation of the concerned agencies in project activities. Consistency with relevant strategies and policies. | Minutes of meetings, Project progress reports, national and regional strategy and policy documents | Desk review, interviews |
| To what extent is the project aligned to the main objectives of the GEF focal area? | Consistency with GEF strategic objectives | GEF Strategy documents, PIRs, Tracking Tools | Desk review, interview with UNDP-GEF RTA |
| To what extent is the project aligned to the strategic objectives of UNDP? | Consistency with UNDP strategic objectives | UNDP Strategic Plan, Country Programme Document | Desk review, interview |
| Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved? | | | |
| Assessment of progress made toward achieving the indicator targets agreed upon in the logical results framework | | | |
| Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results? | | | |
| What evidence is available showing sufficient funding has been secured to sustain project results? | Financial risks | Progress reports, sectoral plans, budget allocation reports, testimonial evidence | Desk review, interviews |
| How have individual and institutional capacities been strengthened, and are governance structures capacitated and in place to sustain project results? | Institutional and individual capacities | Progress reports, testimonial evidence, training records | Desk review, interviews |
| What social or political risks threaten the sustainability of project results? | Socio-economic risks | Socio-economic studies, macroeconomic information | Desk review, interviews |
| Which ongoing circumstances and/or activities pose threats to the sustainability of project results? | Risks to sustainability | Sectoral plans, progress reports, macroeconomic information | Desk review, interviews, field visits |
| Have delays affected project outcomes and/or sustainability, and, if so, in what ways and through what causal linkages? | Impact of project delays | Progress reports | Desk review, interviews |
| Impact: Are there indications that the project has contributed to, or enabled progress toward long lasting desired changes? | | | |
| What verifiable environmental improvements have been made? | Verifiable environmental improvements | Progress reports, sectoral plans, municipal development plans | Desk review, interviews, theory of change analysis |
| What verifiable reductions in stress on environmental systems have been made? | Verifiable reductions in stress on environmental systems | Progress reports, sectoral plans, municipal development plans | Desk review, interviews, theory of change analysis |
| How has the project demonstrated progress towards these impact achievements? | Progress toward impact achievements | Progress reports, sectoral plans, municipal development plans | Desk review, interviews, theory of change analysis |
| Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards? | | | |
| How was the project efficient with respect to incremental cost criteria? | Incremental cost | National strategies and plans, progress reports | Desk review, interviews |

Terminal Evaluation Report

Technology transfer for climate resilient flood management in Vrbas River Basin

GEF Project ID: 5604; UNDP PIMS: 5241

| Evaluation Criteria Questions | Indicators | Sources | Methodology |
|---|--|--|---------------------------------------|
| To what extent were the project objective and outcomes realized according to the proposed budget and timeline? | Efficient utilization of project resources | Progress reports, financial records | Desk review, interviews |
| Country Ownership: | | | |
| How are project results contributing to national and subnational development plans and priorities? | Development planning | Government approved plans and policies | Desk review, interviews |
| Which governments policies or regulatory frameworks were approved in line with the project objective? | Policy reform | Government approved plans and policies | Desk review, interviews |
| How have governmental and other cofinancing partners maintained their financial commitment to the project? | Committed cofinancing realized | Audit reports, project accounting records | Desk review, interviews |
| Stakeholder Involvement and Partnership Arrangements: | | | |
| How has the project consulted with and made use of the skills, experience, and knowledge of the appropriate government entities, NGOs, community groups, private sector entities, local governments, and academic institutions? | Effective stakeholder involvement | Meeting minutes, reports, interview records | Desk review, interviews, field visits |
| How were partnership arrangements properly identified and roles and responsibilities negotiated prior to project approval? | Partnership arrangements | Memorandums of understanding, agreements | Desk review, interviews |
| How have partnerships influenced the effectiveness and efficiency of project implementation? | Effective partnerships | Progress reports, interview records | Desk review, interviews, field visits |
| How have relevant vulnerable groups and powerful supporters and opponents of the processes been properly involved? | Inclusive stakeholder involvement | Meeting minutes, reports, interview records | Desk review, interviews, field visits |
| How has the project sought participation from stakeholders in (1) project design, (2) implementation, and (3) monitoring & evaluation? | Stakeholder involvement | Plans, reports | Desk review, interviews, field visits |
| Catalytic Role: | | | |
| How has the project had a catalytic or replication effect in the country? | Catalytic effect | Interview records, municipal development plans | Desk review, interviews |
| Synergy with Other Projects/Programs | | | |
| How were synergies with other projects/programs incorporated in the design and/or implementation of the project? | Collaboration with other projects/programs | Plans, reports, meeting minutes | Desk review, interviews |
| Preparation and Readiness | | | |
| Were project objective and components clear, practicable, and feasible within its time frame? | Project coherence | Logical results framework | Desk review, interviews |

Terminal Evaluation Report

Technology transfer for climate resilient flood management in Vrbas River Basin

GEF Project ID: 5604; UNDP PIMS: 5241

| Evaluation Criteria Questions | Indicators | Sources | Methodology |
|--|---|---|---------------------------------------|
| How were the capacities of the executing institution(s) and its counterparts properly considered when the project was designed? | Execution capacity | Progress reports, audit results | Desk review, interviews |
| Were counterpart resources, enabling legislation, and adequate project management arrangements in place at Project entry? | Readiness | Interview records, progress reports | Desk review, interviews, field visits |
| Financial Planning | | | |
| Did the project have the appropriate financial controls, including reporting and planning, that allowed management to make informed decisions regarding the budget and allowed for timely flow of funds? | Financial control | Audit reports, project accounting records | Desk review, interviews |
| Has there been due diligence in the management of funds and financial audits? | Financial management | Audit reports, project accounting records | Desk review, interviews, field visits |
| Has promised cofinancing materialized? | Realization of cofinancing | Audit reports, project accounting records | Desk review, interviews |
| Supervision and Backstopping | | | |
| How have GEF agency staff members identified problems in a timely fashion and accurately estimate their seriousness? | Supervision effectiveness | Progress reports | Desk review, interviews |
| How have GEF agency staff members provided quality support, approved modifications in time, and restructured the project when needed? | Project oversight | Progress reports | Desk review, interviews |
| How has the implementing agency provided the right staffing levels, continuity, skill mix, and frequency of field visits for the project? | Project backstopping | Progress reports, back-to-office reports, internal appraisals | Desk review, interviews, field visits |
| Monitoring & Evaluation | | | |
| Were intended results (outputs, outcomes) adequately defined, appropriate and stated in measurable terms, and were the results verifiable? | Monitoring and evaluation plan at entry | Project document, inception report | Desk review, interviews |
| How has the project monitoring & evaluation plan been implemented? | Effective monitoring and evaluation | Progress reports, monitoring reports | Desk review, interviews |
| How has there been focus on results-based management? | Results based management | Progress reports, monitoring reports | Desk review, interviews |
| Mainstreaming | | | |
| How were gender issues integrated in project design and implementation? | Greater consideration of gender aspects. | Project document, progress reports, monitoring reports | Desk review, interviews, field visits |
| How were effects on local populations considered in project design and implementation? | Positive or negative effects of the project on local populations. | Project document, progress reports, monitoring reports | Desk review, interviews, field visits |

Annex 3: List of People Interviewed

| Name | Position | Organization |
|--------------------|---|--|
| Senad Oprasic | GEF Focal Operational Point | Ministry of Foreign Trade and Economic Relations |
| Marinko Vranic | Project board member | Republika Srpska Ministry of Spatial Planning, Construction and Ecology |
| Bosko Kenjic | Head of Water Resources Department, project board member | Head of Water Resources Department, Ministry of Foreign Trade and Economic Relations, BiH |
| Darko Borojević | Head of Department of Hydrology, project board member | Republic Hydrometeorological Institute, Ministry of Agriculture, Forestry and Water Management, Republika Srpska |
| Suad Skejovic | Senior associate for protection from waters, project board member | Federal Ministry of Agriculture, Water Management and Forestry |
| Mladen Antonic | Senior Associate for the management of water resources | Ministry of Agriculture, Forestry and Water Management, Republika Srpska |
| Sanja Toljevic | Department for Communal Issues | Banja Luka Municipality |
| | Civil Protection Unit | Banja Luka City |
| Nedeljko Sudar | Manager | Institute for Water Management Ltd. |
| Vujadin Blagojević | Technical Manager | Institute for Water Management Ltd. |
| Ozren Djuric | | Vode Srpska |
| | | Laktasi Municipality |
| | Civil Protection Unit | Bugojno Municipality |
| Adi Tanović | Project Officer | CRP |
| Safet Kozarević | Professor, project consultant (insurance) | University of Tuzla |
| Anis Hadžialijagić | Reinsurance Director | Bosna Reinsurance Company Limited |
| Bakir Pilav | Member of Management and CFO | Bosna Reinsurance Company Limited |
| Sanjin Avdić | Sector Leader, Energy and Environment | UNDP Bosnia and Herzegovina |
| Nataly Olofinskaya | Regional Technical Advisor | UNDP Regional |
| Raduška Cupac | Project Manager | UNDP Bosnia and Herzegovina |
| Margaretta Ayoung | Chief Technical Advisor | International Consultant |
| Sladjana Bundalo | Project Officer | UNDP Bosnia and Herzegovina |
| Goran Bosankic | Project Officer/Engineer | UNDP Bosnia and Herzegovina |
| Jovanka Cetkovic | Project Officer | UNDP Bosnia and Herzegovina |
| Nemanja Jungić | Field Associate | UNDP Bosnia and Herzegovina |

Annex 4: List of Information Reviewed

1. Project documents

- 1) GEF Project Identification Form (PIF)
- 2) GEF Secretariat Review Sheet, STAP Review Sheet
- 3) UNDP Project Document
- 4) GEF CEO Endorsement Request
- 5) UNDP Environmental and Social Screening results
- 6) Project Inception report
- 7) Project Implementation Review (PIR) reports for each year of implementation
- 8) GEF focal area Tracking Tools – AMAT, including baseline and midterm assessments
- 9) Minutes of Project Board meetings
- 10) Midterm review (MTR) and other relevant evaluations and assessments
- 11) Management response to midterm review recommendations
- 12) Annual Work Plans and Budgets
- 13) Financial expenditure reports (Combined Delivery Reports - CDRs) for each year of implementation, broken down by project outcome and project management
- 14) Cofinancing letters reported at midterm and TE
- 15) Cofinancing confirmation letter from Srbac Municipality, 02 July 2019
- 16) List of early warning stations purchased (precipitation stations, hydrological stations)
- 17) Development of Flood Hazard and Flood Risk Maps for the Vrbas River Basin in B&H, March 2017
- 18) Flood hazard and flood risk maps for VRB municipalities
- 19) Flood Risk Management Plan for VRB, expert discussion in English, 21 March 2019
- 20) Summary of completed non-structural measures
- 21) Public call for selection of non-structural projects to reduce the risk of floods in 14 municipalities in the VRB, 13 April 2017
- 22) Minutes of Evaluation of the Project Proposals related to Call for Project Proposals (on non-structural measures), June 2017
- 23) List of communication/warning equipment purchase for Civil Protection Units of VRB municipalities
- 24) Maps showing locations of project interventions
- 25) Minutes of the Meetings of the Insurance Committee
- 26) Conclusions and recommendations from insurance rounds tables held on 21-22 February 2019
- 27) Agro-Forestry Study, VRB, May 2017
- 28) Project training records on agricultural production in the floodplains of the Vrbas River
- 29) Analysis of the vulnerability of women to floods in the VRB, March 2017
- 30) Gender analysis and action plan, flood risk management in Bosnia and Herzegovina, draft 2019

2. UNDP documents

- 31) One United Nations Programme and Common Budgetary Framework, Bosnia Herzegovina, 2015-2019, United Nations Development Assistance Framework (UNDAF)
- 32) Country Programme Document (CPD), 2015-2019

- 33) National adaptation plans in focus: lessons from Bosnia and Herzegovina, February 2018
- 34) UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects, 2012

3. GEF documents

- 35) Revised Programming Strategy on Adaptation to Climate Change (GEF/LDCF.SCCF.9/4/Rev.1, October 19, 2010)
- 36) Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects, Approved by the GEF IEO Director on 11th of April 2017

4. Other documents

- 37) Economic Reform Program for 2019-2021 (ERP BiH 2019-2021), January 2019
- 38) Climate Change Adaptation and Low Emission Development Strategy for Bosnia and Herzegovina, June 2013
- 39) Third National Communication (TNC) and Second Biennial Update Report on Greenhouse Gas Emissions of Bosnia and Herzegovina, under the UNFCCC, July 2016
- 40) Strategic Plan for Rural Development of Bosnia and Herzegovina (2018-2021) – Framework Document (unofficial translation)
- 41) Readiness and Preparatory Support Proposal, Green Climate Fund, Advance the National Adaptation Plan (NAP) process for medium-term investment planning in climate sensitive sectors in Bosnia-Herzegovina (B&H), August 2017
- 42) Annex to the Commission Implementing Commission, amending Commission Decision C(2014) 9495 of 15.12.2014 adopting the Indicative Strategy Paper for Bosnia and Herzegovina for the period 2014-2020, European Commission, 3.8.2018
- 43) Tošić, R. et al., 2018. Assessment of Torrential Flood Susceptibility using GIS Matrix Method: Case Study – Vrbas River Basin (B&H), Carpathian Journal of Earth and Environmental Sciences, Vol. 13, No. 2, p. 369-382.

Annex 5: Miscellaneous supporting documentation

Cofinancing letter for the period 2017-2019 issued by Ministry of Agriculture, Forestry and Water Management RS



РЕПУБЛИКА СРПСКА

МИНИСТАРСТВО ПОЉОПРИВРЕДЕ, ШУМАРСТВА И ВОДОПРИВРЕДЕ

Трг Републике Српске 1, Бања Лука, тел:051/338-415, факс: 051/338-865, 338-866, Е-mail: mps@mps.vladars.net

Број: 12.07-337-578/19

Датум, 28-12-2019

United Nations Development Programme
Representation Office Banja luka
Трг Републике Српске 1/Ц1
78000 Бања Лука

ПРЕДМЕТ: Информација о реализованим улагањима у општине из кредита ЕИБ „Хитне мјере заштите од поплава у РС“, у периоду 2017-2019, доставља се

Поштовани,

Достављамо ва информацију о имплементираним средствима из кредита Европске инвестиционе банке, за период 2017-2019. године.

| Ред. Бр. | Пројекат | Општина | Вриједност (КМ) |
|----------------------------|---|-----------------|-----------------|
| 1 | Заштита ријеке Саве - Дубичка Раван | Козарска Дубица | 154.314,99 |
| 2 | Надвишење савског насипа - Домуз скела | Бијељина | 102.876,66 |
| 3 | Надвишење савског насипа | Козарска Дубица | 6.728.523,46 |
| 4 | Изградња мјера заштите од поплава - Усора | Теслић | 1.500.000,00 |
| 5 | Устава Рача | Бијељина | 351.891,88 |
| 6 | Изградња мјера заштите од поплава | Градишка | 7.749.256,10 |
| 7 | Реконструкција канала Дашница | Бијељина | 4.627.002,46 |
| 8 | Реконструкција канала МОК | Бијељина | 6.410.507,48 |
| 9 | Изградња мјера заштите од поплава 1 | Србац | 637.013,83 |
| 10 | Изградња мјера заштите од поплава 2 | Србац | 2.411.313,10 |
| 11 | Изградња мјера заштите од поплава | Брод | 2.349.566,39 |
| УКУПНА ВРИЈЕДНОСТ ПРОЈЕКТА | | | 33.022.266,35 |

С поштовањем,

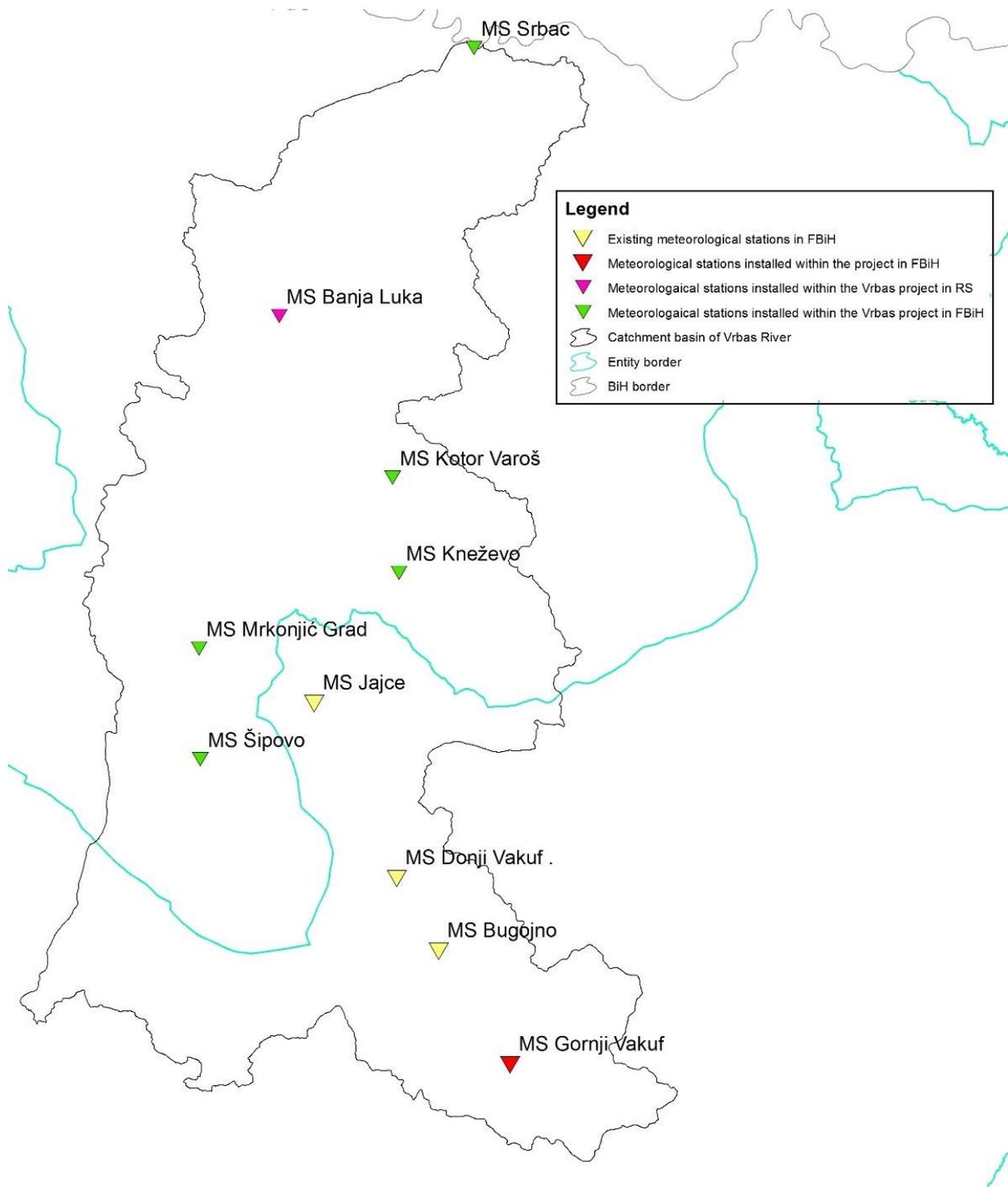
Достављено:

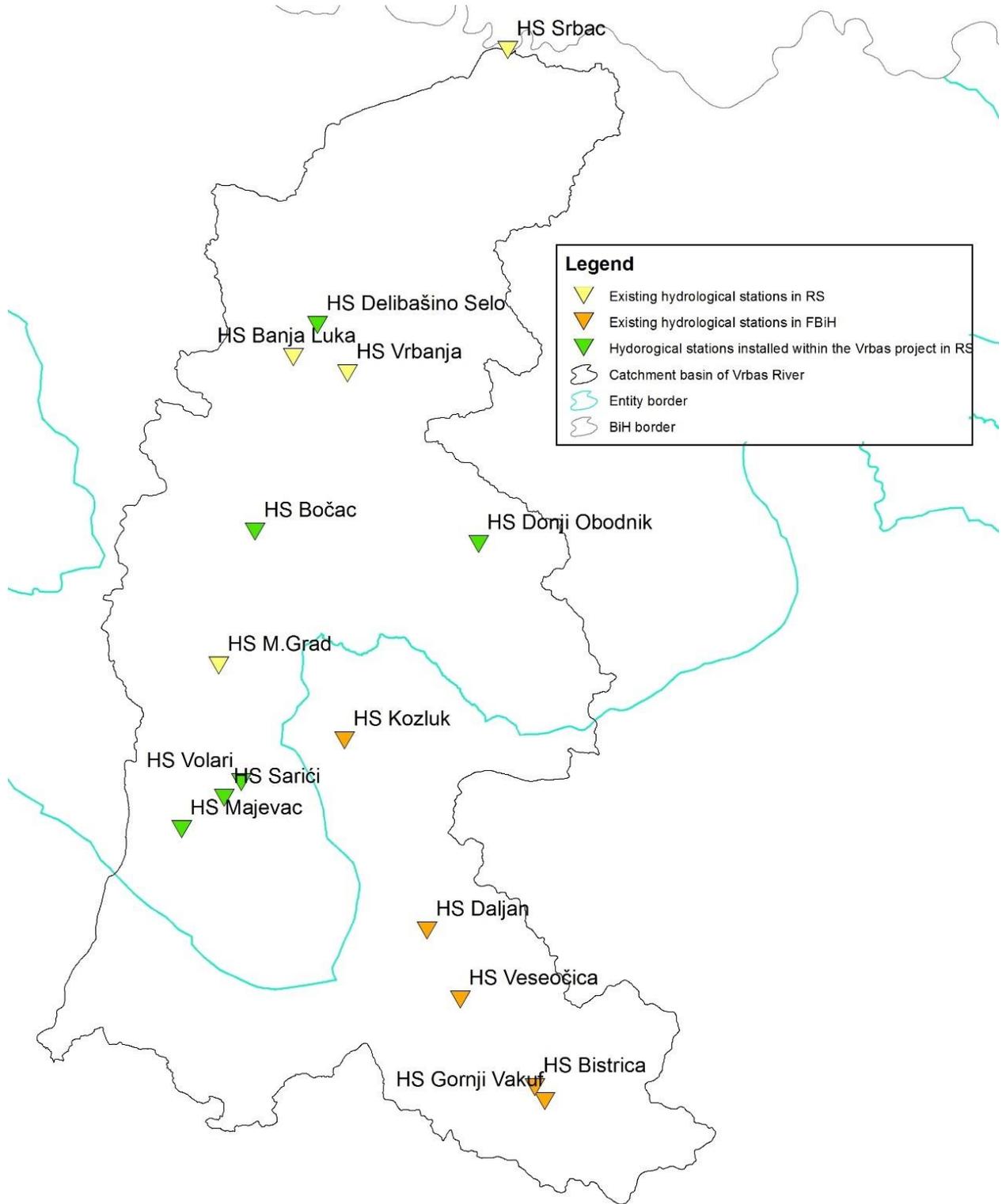
1. Наслову,
2. а/а

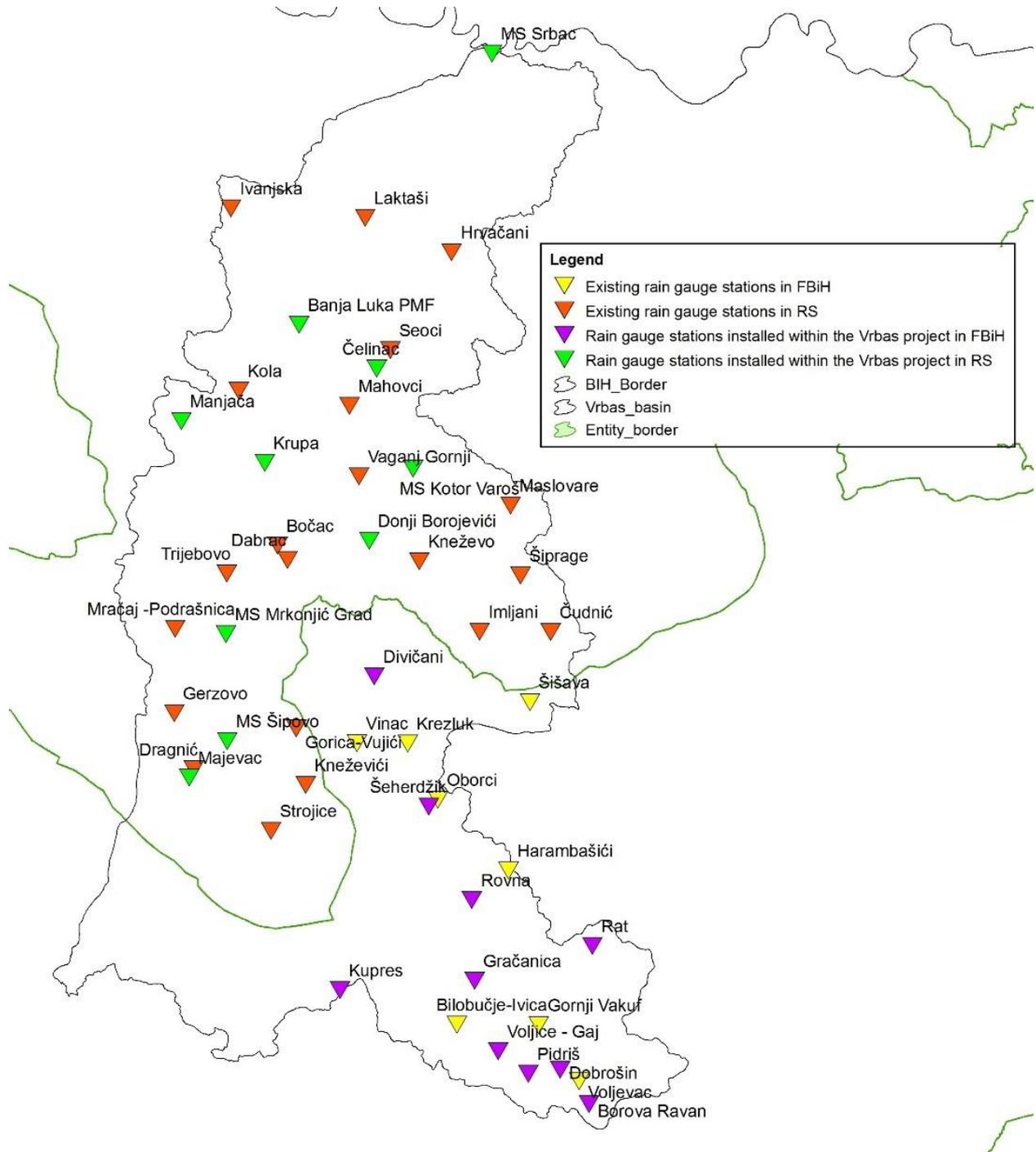
МИНИСТАР
др Борис Пашалић

Hydrometeorological stations purchased with VRB project funds

| Location | Latitude | Longitude |
|---|---------------|---------------|
| Precipitation stations: | | |
| Managed by the RS Hydromet: | | |
| Šipovo | 44°17'3.15"N | 17° 5'15.92"E |
| Banja Luka PMF | 44°46'44.66"N | 17°11'56.34"E |
| Krupa na Vrbasu | 44°36'54.48"N | 17° 8'38.16"E |
| Majevac | 44°14'24.86"N | 17° 1'33.89"E |
| Manjača | 44°39'47.64"N | 17° 0'20.32"E |
| Kotor Varoš | 44°36'34.36"N | 17°23'19.13"E |
| Mrkonjić Grad | 44°24'40.14"N | 17° 5'0.63"E |
| Srbac | 45° 6'10.42"N | 17°30'52.49"E |
| Kneževo | 44°31'27.30"N | 17°19'5.81"E |
| Čelinac | 44°44'1.59"N | 17°20'50.32"E |
| Managed by the FBiH Hydromet: | | |
| Šeherdžik | 44°12'30.77" | 17°25'7.11" |
| Rovna | 44° 5'52.54" | 17°29'24.72" |
| Rat | 44° 2'39.17"N | 17°41'13.85"E |
| Gračanica | 44° 0'7.18"N | 17°29'42.71"E |
| Kupres | 43°59'23.04"N | 17°16'34.26"E |
| Voljice - Gaj | 43°55'7.52"N | 17°32'3.29"E |
| Pidriš | 43°53'31.57"N | 17°35'0.82"E |
| Borova Ravan | 43°51'22.04"N | 17°40'59.15"E |
| Divičani | 44°21'44.98"N | 17°19'39.86"E |
| Dobrošin | 43°53'49.07"N | 17°38'8.56"E |
| Hydrological station | | |
| Managed by RS Hydromet: | | |
| Delibašino selo | 44°48'2.20"N | 17°13'32.20"E |
| Volari | 44°17'31.75"N | 17° 6'54.90"E |
| Bočac | 44°34'13.30"N | 17° 7'57.46"E |
| Majevac | 44°14'20.62"N | 17° 1'29.05"E |
| Sarići | 44°16'28.54"N | 17° 5'23.27"E |
| Donji Obodnik | 44°33'31.62"N | 17°28'37.01"E |
| Klašnice | 44°52'48.95"N | 17°17'5.70"E |
| Automatic Meteorological station | | |
| Managed by the RS Hydromet: | | |
| Banja Luka | 44°47'37.79"N | 17°12'20.77"E |
| Managed by the FBiH Hydromet: | | |
| Gornji Vakuf-Uskoplje | 43°56'13.58"N | 17°34'48.35"E |







Terminal Evaluation Report

Technology transfer for climate resilient flood management in Vrbas River Basin

GEF Project ID: 5604; UNDP PIMS: 5241

Annex 6: Matrix of Rating Achievement of Project Objective and Outcomes

| Indicator | Baseline | End of Project target | Self-assessment by project team | TE Comments | TE Assessment |
|---|---|--|---|---|------------------------|
| Objective: To transfer technologies for climate resilient flood management in order to increase resilience of highly exposed rural poor, returnee and displaced persons communities in Vrbas River Basin | | | | Rating: Satisfactory | |
| 1. Number of new technologies transferred to BiH as part of a methodology for strategic FRM AMAT indicator 3.1.1.1 Type of adaptation technologies transferred to the target groups | Limited institutional capacity and technologies in use for strategic FRM in BiH | At least 5 new technologies introduced (hydrological and hydrodynamic modelling, state-of-the-art monitoring equipment, Flood forecasting and early warning systems, flood damages and losses modelling and vulnerability assessment, and a number of non-structural flood management technologies to BiH) | The Project has introduced 7 new technologies, as follows: 1. Hydro-meteorological network consisting of 7 hydrological, 2 meteorological and 20 rain gauges is operational. 2. Climate change model for Vrbas River Basin has been developed. 3. Hydrological and hydrodynamics models (including 2D model for the whole basin) have been completed. Hydrological modelling included climate change scenarios. 4. Hydrological and hydraulic models for flood forecasting have been completed. Flood forecasting and early warning system has been set with its testing phase starting 01 Aug 2019 5. Vulnerability assessment, including gender segregated data, has been completed. 6. GIS based loss/damage model has been developed for housing, business and agricultural sectors. 7. The first two sets of 21 non-structural measures in 13 municipalities, have been implemented. Currently there are 2 measures which are being implemented (including agro-forestry one). | The project has successfully achieved the end target of introducing at least 5 new technologies for strategic flood risk management. | Achieved |
| 2. VRB (12% of BiH territory) covered by an automated hydrometric monitoring network for effective Flood Forecasting and Early Warning | Hydrometric stations currently cover 50% of the area required for FFEWS for VRB | The VRB (i.e.12% of BiH) covered by a Hydrometric network that provides the optimal coverage required for FFEWS | This target has been fully met. Automated hydrometric monitoring network has been established in Vrbas River Basin, which makes it the first river basin in Bosnia and Herzegovina with a sufficient hydro-meteorological network coverage. Data collection and processing has been centralized and is taking place in hydro-meteorological institutes. | The VRB hydrometric network has been expanded and the hydromet institutes in the two entities FBiH and RS are coordinating in data transfer and flood risk communication. | Achieved |
| Outcome 1: Key relevant development strategies/policies/legislations integrate climate change resilient flood management approaches | | | | Rating: Satisfactory | |
| 3. AMAT Indicator 3.2.1 Policy environment and regulatory framework for adaptation related technology transfer established or strengthened | 1: No policy/regulatory framework for adaptation related technology transfer in place | 4: Policy/regulatory framework for adaptation related technology transfer have been formally adopted by the Government but have no enforcement mechanisms | The Project has reviewed existing legislation, policies strategies and plans and identified all sectors of relevance to flood risk. Entry points in the main legislations (law on waters, water management strategies, law on agricultural land, law on spatial planning) for introducing Climate Change considerations have been identified. Amendments to the Law on Waters, transposing EU flood directive have been adopted. Decree containing content and elements of flood risk management has been developed and adopted. Amendments to the Law on Spatial Planning to include flood maps and climate changes have been adopted. Draft flood zoning policy, which includes flood zoning rules, has been developed. | The project has facilitated substantive advances in policy and regulatory frameworks, primarily in RS. Further progress expected under the ongoing EU-funded flood risk management program and the GCF project currently under development. | Mostly Achieved |
| 4. No. of Adaptation technology solutions for climate resilient flood | 0: Document codifying standard methodologies and | At least 10 guidance documents produced on | Six guidance documents have been developed: 1. Flood risk modelling and mapping methodology has been developed | The end target has been achieved, with guidance | Achieved |

Terminal Evaluation Report

Technology transfer for climate resilient flood management in Vrbas River Basin

GEF Project ID: 5604; UNDP PIMS: 5241

| Indicator | Baseline | End of Project target | Self-assessment by project team | TE Comments | TE Assessment |
|---|---|---|--|---|-----------------|
| management (CRFRM) enabled for implementation | procedures for Climate resilient flood Risk Management (CRFRM) | Climate Resilient Flood Risk Management topics | and adopted by local institutions. 2. Guidance for the development of a centralized flood forecasting and early warning system has been drafted. 3. Draft operational and maintenance plan for hydrometric stations has been completed. 4. Guidance to use PGIS and geoportal has been developed. 5. Methodology for socio-economic survey to assess and quantify the value of property at the level of settlements within municipalities has been developed. 6. Guidance to develop flood depth/damage curve and loss/damage model have been developed | documents disseminated and institutionalized (e.g., flood forecasting and early warning system). | |
| Outcome 2: Climate resilient flood risk management is enabled by transferring modern technologies and strengthening institutional capacities | | | | Rating: Highly Satisfactory | |
| 5. AMAT Indicator 3.2.2: Strengthened Capacity to transfer appropriate adaptation technologies ... | 1: Very few professional are aware of adaptation technologies | 3: High Capacity achieved (>75%). Provision of models, information systems, tools and training in the use of these to professionals, on various aspects of climate adaptation technologies | In addition to initial trainings, professionals from hydro-meteorological institutes and water agencies are undergoing regular on-the-job training in hydrological and hydraulic modelling, water information system, torrents modelling, types of non-structural flood protection options etc. in order to ensure sustainability of the new technologies. Initial trainings in flood forecasting for professionals from hydro-meteorological institutes and water agencies is ongoing. Professionals in hydro-meteorological institutes and water agencies have received trainings on hydrometric monitoring. Geodetic experts have been involved and trained in interpretation of LiDAR survey. Professionals from relevant ministries have been receiving continuous training in water information system (data entry, analysis etc.). Members of civil protection units have been trained on how to use early warning system equipment. So far, more than 150 professionals have been trained in data management, use of water information system, hydrological and hydraulic modelling, torrents modelling, types of non-structural flood protection options and flood forecasting. | Capacity building has been a significant strength of the project, with extensive trainings delivered to water management sector and civil protection sector stakeholders. | Achieved |
| 6. No. of institutions enabled to modify risk management strategies based on introduced vulnerability, loss and damages assessment and improved hydrometric monitoring technologies | Most of the socio-economic information required to assess flood damages, losses, exposure and vulnerability is not currently available and is not collected systematically and gender-disaggregation of data not systematically done. | GIS-based flood damages, losses and vulnerability assessment tool developed for VRB and systematic socio-economic survey methods established and implemented for VRB and introduces sex-disaggregated data collection protocols and methods | End-of-project targets have been met. However, in order for GIS-based tools to become a practice and sustainable in institutions, especially in municipalities, further project engagement with municipal staff is necessary in order for GIS based tools to become an every-day practice. Project Spatial Data infrastructure, in line with the EU INSPIRE directive has been developed. Available data have been collected and digitized. Lidar geodetic survey of flood risk areas, as identified in preliminary flood risk assessment, have been completed. Completed flood hazard and risk maps have been entered in project geoportal. Socio-economic survey in the Vrbas River Basin has been completed with gender disaggregated data and it includes vulnerability assessment for women in flood risk areas in VRB. Torrents susceptibility | GIS-based tools have been developed and successfully disseminated and made available to municipalities and other users. | Achieved |

Terminal Evaluation Report

Technology transfer for climate resilient flood management in Vrbas River Basin

GEF Project ID: 5604; UNDP PIMS: 5241

| Indicator | Baseline | End of Project target | Self-assessment by project team | TE Comments | TE Assessment |
|--|--|--|---|--|-----------------|
| | | | model has been developed for Vrbas river basin. GIS based loss/damage model has been developed for housing, business and agricultural sectors. | | |
| Outcome 3: New technologies and approaches for enhanced flood risk management applied to increase resilience of vulnerable communities in VRB | | | | Rating: Satisfactory | |
| 7. No. of people in target basin benefitting from FRM adaptation technologies, tools, and adaptation strategies, and are less exposed to flood risk | Current approach limited of inclusion of local communities, and particularly the vulnerable groups | At least 5 technologies transferred to 13 communities in community-based adaptation measures | Five technologies have been transferred to all 13 municipalities in VRB to facilitate implementation of community-based adaptation measures: participatory GIS, flood maps, torrents register, vulnerability assessment, loss/damage curves, while hydrological and hydraulic model, as well as management of water information system has been handed over to hydro-meteorological institutes and water agencies, in line with their legal responsibilities. Implementation of non-structural measures has been completed/ is on-going in 13 municipalities. Participatory GIS, as a means of integrating local community information into the assessments of flood risk, has been developed as part the GIS-based socio-economic tool and introduced to all municipalities in Vrbas river basin. Hydrological and hydraulic (1D and 2D) models for the whole basin have been developed for the purpose of flood mapping. Hydrological models, with climate modelling included, have been transferred to and are being operated by Hydro-meteorological institutes and hydraulic models are handed over to water agencies. Flood hazard and risk maps have been handed over to water agencies and municipalities. Torrents susceptibility model, which includes torrents register and erosion map, has been developed for Vrbas river basin. Hydrological and 1D hydraulic models have been adjusted for the purpose of flood forecasting and early warning system. Flood depth-damage curve has been developed and GIS based loss/damage model has been developed. Water information system restructuring has been completed and a platform for exchange of data among water agencies is functional. Community intervention plans, whose purpose is to improve local preparedness and ability to respond on flood events, have been completed for 13 municipalities in Vrbas river basin. | The end target of transferring at least 5 technologies to 13 municipalities has been achieved. | Achieved |

Terminal Evaluation Report

Technology transfer for climate resilient flood management in Vrbas River Basin

GEF Project ID: 5604; UNDP PIMS: 5241

| Indicator | Baseline | End of Project target | Self-assessment by project team | TE Comments | TE Assessment |
|---|--|--|---|---|------------------------|
| 8. No. of innovative Non-structural measures introduced and implemented as part of climate adaptation strategies to provide improved resilience to communities (include agric.) | Current approach to FRM is structural flood protection measures | Non-structural measures designed and implemented in 13 municipalities by 2020 | The 21 non-structural measures in 13 municipalities have been identified, of which 18 have been completed and 3 will be finalized by Oct 2019. These measures, which benefited app 60,000 people, treated more than 46 km of river banks and protected app 3,200 ha of agricultural land, included channel cleaning, re-meandering, gabion installation, riverbed cladding, torrential streams management etc. Identification and selection of measures has been based on flood hazard and risk maps and municipal participation. Total value of these investments was 5.12 mil BAM (app USD 2,9 mil) with app 34% co-financing from municipalities. The third set of additional 2 measures focusing on agro-forestry has been identified following the same principle. Agro-forestation scheme which provides concrete solutions for agro-forestry measures in the basin has been completed. | Non-structural measures have reduced vulnerabilities in 13 municipalities, with substantial cofinancing from local governments. | Achieved |
| | | At least 4,200 hectares of agric. land protected by non-structural measures (e.g. floodplain agro-forestry to be implemented on at least 840 hectares) | | One of the non-structural measures entails protecting riverbank ecosystems with an agroforestry management system. Implementation was underway at the time of the TE mission in early November and completed later that month. | Mostly Achieved |
| 9. No. of communities benefitting from introduced forecasting, early warning, response and recovery technologies to support local communities at risk of flooding | FFEWS system currently disjointed and not fully electronically based | Fully integrated Flood forecasting and Early warning system implemented in VRB | This target has almost been met. Set up for FF EWS has been completed. Hydro-meteorological network in Vrbas River Basin has been established and real-time data transfer is enabled. Hydrological and hydraulic model for flood forecasting have been completed. Platform for flood forecasting and early warning system has been finalized. Flood forecasting has also included spatial component i.e. potential flood borders. Development of the FF EWS has been co-financed by two water agencies in the amount of BAM 150.000 (app USD 90,000 i.e. 35% of the total value). FF EWS test phase is to start on 01 Aug 2019. Development of Protocol on data flow and issuance of warning information is in progress. Water agencies have agreed to use that platform for other three basins with similar geographical features: Bosna, Una-Sana and Drina. | The FFEWS has been set up and protocols were under development at the time of the TE mission in November 2019. The protocols were operationalized in Feb 2020. Adaptive management will be required in the implementation of the system, making adjustments as experience is gained and new information is generated. | Achieved |

Terminal Evaluation Report

Technology transfer for climate resilient flood management in Vrbas River Basin

GEF Project ID: 5604; UNDP PIMS: 5241

Annex 7: Cofinancing Table

| Note | Cofinancing Source | Type | GEF Agency (USD) | | Government (USD) | | Other (USD) | | Total Cofinancing (USD) | |
|--------------------|--|---------|------------------|------------------|-------------------|-------------------|-------------|--------|-------------------------|-------------------|
| | | | Planned | Actual | Planned | Actual | Planned | Actual | Planned | Actual |
| GEF Agency: | | | | | | | | | | |
| 1 | United Nations Development Programme | Cash | 1,500,000 | 1,500,731 | | | | | 1,500,000 | 1,500,731 |
| 2 | United Nations Development Programme | In-kind | 60,000 | 60,000 | | | | | 60,000 | 60,000 |
| | Sub-total, UNDP | | 1,560,000 | 1,560,731 | | | | | 1,560,000 | 1,560,731 |
| Government: | | | | | | | | | | |
| 3 | National Government (Ministry of Agriculture, Forestry and Water Management of RS) | Cash | | | 75,000,000 | 61,668,856 | | | 75,000,000 | 61,668,856 |
| 4 | Sava River Watershed Agency of FBiH (investments 2014-2017) | Cash | | | 700,000 | 717,953 | | | 700,000 | 717,953 |
| 5 | Sava River Watershed Agency of FBiH (FFEWS) | Cash | | | 0 | 45,455 | | | 0 | 45,455 |
| 6 | Vode Srpske (FFEWS) | Cash | | | 0 | 47,348 | | | 0 | 47,348 |
| 7 | Subnational Government (VRB Municipalities) | Cash | | | 0 | 791,566 | | | 0 | 791,566 |
| | Sub-total, Government | | | | 75,700,000 | 63,271,178 | | | 75,700,000 | 63,271,178 |
| Other | | | | | | | | | | |
| | | | | | | | | | | |
| | Sub-total, Other: | | | | | | | | | |
| | Total cofinancing for project implementation: | | 1,560,000 | 1,560,731 | 75,700,000 | 63,271,178 | | | 77,260,000 | 64,831,910 |
| Note: | | | | | | | | | | |
| 1 | Information included in letter issued by UNDP on 22 June 2018, as part of the midterm review (MTR). | | | | | | | | | |
| 2 | Information included in letter issued by UNDP on 22 June 2018, as part of the midterm review (MTR). | | | | | | | | | |
| 3 | Information included in letter issued by Ministry of Agriculture, Forestry and Water Management RS on 19 April 2018, as part of the midterm review. Cofinancing contributions from investments in VRB municipalities from the EIB facility Emergency Flood Relief and Prevention RS in the period 2014-2017. Cumulative investments: BAM 67,913,932.19 (approx. USD 42,952,782; exch. 1.58113) over the period of 2014-2017, and BAM 33,022,266.35 (approx. USD 18,716,073.83; exch. 1.76438 over the period of 2017-2019. | | | | | | | | | |
| 4 | Information included in letter issued by the Sava River Watershed Agency on 16 April 2018, as part of the midterm review. Cofinancing contributions reflect investments in 2014-2017. | | | | | | | | | |
| 5 | Additional cofinancing from Sava River Watershed Agency, specifically as a contribution towards cost of Flood Forecasting and Early Warning System (FFEWS). | | | | | | | | | |
| 6 | Cofinancing from Vode Srpske, specifically as a contribution towards cost of Flood Forecasting and Early Warning System (FFEWS). | | | | | | | | | |
| 7 | Direct cofinancing contributions from VRB municipalities for the implemented non-structural measures in 2017, 2018 and 2019 (Jan-Sep). Source: UNDP combined delivery reports (CDRs). | | | | | | | | | |

Annex 8: Evaluation Consultant Code of Conduct Agreement Form

Evaluators / Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and: respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/ or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

TE Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant: James Lenoci

We confirm that we have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signature:

Budapest, 17 September 2019



James Lenoci, TE Consultant

Annex 9: Rating Scales

Outcome Ratings

The overall ratings on the outcomes of the project are based on performance on the following criteria:

- a. Relevance
- b. Effectiveness
- c. Efficiency

Project outcomes are rated based on the extent to which project objectives were achieved. A six-point rating scale is used to assess overall outcomes:

- Highly satisfactory (HS): Level of outcomes achieved clearly exceeds expectations and/or there were no short comings.
- Satisfactory (S): Level of outcomes achieved was as expected and/or there were no or minor short comings.
- Moderately Satisfactory (MS): Level of outcomes achieved more or less as expected and/or there were moderate short comings.
- Moderately Unsatisfactory (MU): Level of outcomes achieved somewhat lower than expected and/or there were significant shortcomings.
- Unsatisfactory (U): Level of outcomes achieved substantially lower than expected and/or there were major short comings.
- Highly Unsatisfactory (HU): Only a negligible level of outcomes achieved and/or there were severe short comings.
- Unable to Assess (UA): The available information does not allow an assessment of the level of outcome achievements.

The calculation of the overall outcomes rating of projects considers all the three criteria, of which relevance and effectiveness are critical. The rating on relevance determines whether the overall outcome rating will be in the unsatisfactory range (MU to HU = unsatisfactory range). If the relevance rating is in the unsatisfactory range then the overall outcome is in the unsatisfactory range as well. However, where the relevance rating is in the satisfactory range (HS to MS), the overall outcome rating could, depending on its effectiveness and efficiency rating, be either in the satisfactory range or in the unsatisfactory range.

The second constraint applied is that the overall outcome achievement rating may not be higher than the effectiveness rating.

During project implementation, the results framework of some projects may have been modified. In cases where modifications in the project impact, outcomes and outputs have not scaled down their overall scope, the evaluator should assess outcome achievements based on the revised results framework. In instances where the scope of the project objectives and outcomes has been scaled down, the magnitude of and necessity for downscaling is taken into account and despite achievement of results as per the revised results framework, where appropriate, a lower outcome effectiveness rating may be given.

Sustainability Ratings

The sustainability is assessed taking into account the risks related to financial, sociopolitical, institutional, and environmental sustainability of project outcomes. The evaluator may also take other risks into account that may affect sustainability. The overall sustainability is assessed using a four-point scale.

- Likely (L). There is little or no risks to sustainability.
- Moderately Likely (ML). There are moderate risks to sustainability.
- Moderately Unlikely (MU). There are significant risks to sustainability.
- Unlikely (U). There are severe risks to sustainability.
- Unable to Assess (UA). Unable to assess the expected incidence and magnitude of risks to sustainability.

Project M&E Ratings

Quality of project M&E is assessed in terms of:

- Design
- Implementation

Quality of M&E on these two dimensions is assessed on a six point scale:

- Highly satisfactory (HS): There were no short comings and quality of M&E design / implementation exceeded expectations.
- Satisfactory (S): There were no or minor short comings and quality of M&E design / implementation meets expectations.
- Moderately Satisfactory (MS): There were some short comings and quality of M&E design/implementation more or less meets expectations.
- Moderately Unsatisfactory (MU): There were significant shortcomings and quality of M&E design / implementation somewhat lower than expected.
- Unsatisfactory (U): There were major short comings and quality of M&E design/implementation substantially lower than expected.
- Highly Unsatisfactory (HU): There were severe short comings in M&E design/ implementation.
- Unable to Assess (UA): The available information does not allow an assessment of the quality of M&E design / implementation.

Implementation and Execution Rating

Quality of implementation and of execution is rated separately. Quality of implementation pertains to the role and responsibilities discharged by the GEF Agencies that have direct access to GEF resources. Quality of Execution pertains to the roles and responsibilities discharged by the country or regional counterparts that received GEF funds from the GEF Agencies and executed the funded activities on ground. The performance is rated on a six-point scale.

- Highly satisfactory (HS): There were no short comings and quality of implementation / execution exceeded expectations.
- Satisfactory (S): There were no or minor short comings and quality of implementation / execution meets expectations.
- Moderately Satisfactory (MS): There were some short comings and quality of implementation / execution more or less meets expectations.
- Moderately Unsatisfactory (MU): There were significant shortcomings and quality of implementation / execution somewhat lower than expected.
- Unsatisfactory (U): There were major short comings and quality of implementation / execution substantially lower than expected.
- Highly Unsatisfactory (HU): There were severe short comings in quality of implementation / execution.
- Unable to Assess (UA): The available information does not allow an assessment of the quality of implementation / execution.

Annex 10: Terms of Reference for Terminal Evaluation

Annex 11: Signed TE Final Report Clearance Form

| Terminal Evaluation Report Reviewed and Cleared By: | |
|--|-------------------|
| UNDP Country Office | |
| Name: Raduska Cupac, Energy and Environment Sector Leader | |
| Signature:  | Date: 06 May 2020 |
| UNDP GEF Regional Technical Advisor | |
| Name: Natalia Olofinskaya | |
| Signature:  | Date: 11 May 2020 |