 

Decarbonisation of Residential Sector in Bosnia and Herzegovina

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| Final Evaluation  |
| Evaluation data collection: March-April 2024 |

Final Evaluation Report

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Special thanks are extended to all project stakeholders and beneficiaries who participated in the interviews for their open views and candid opinions on implementation of the project and achievement of the planned targets.

Acronyms and Abbreviations

APR Annual Progress Report

BAM Bosnia-Herzegovina Convertible Marka

CDR Combined Delivery Report

CO Country Office

CO2 Carbon dioxide

DIM Direct Implementation Modality

DREI De-risking Renewable Energy Investment

EE Energy Efficiency

EPBD Energy Performance of Buildings Directive

EPC Energy Performance Contracts

ESCO Energy Service Company

FBiH Federation of Bosnia and Herzegovina

FEEE Fund for Environment and Energy Efficiency of the Republika Srpska

FEP Fund for Environmental Protection of the FBiH

GAP Gender Action Plan

GED Green Economic Development

GEF Global Environment Facility

GHG Greenhouse Gas

GIS Geographic Information System

GoBiH Government of Bosnia and Herzegovina

GWh Gigawatt hour

LCPB Low-Carbon Public Buildings

LCUD Low-Carbon Urban Development

MOFTER Ministry of Foreign Trade and Economic Relations

M&E Monitoring and Evaluation

NDC Nationally Determined Contribution

NECP National Energy and Climate Plan

NGO Non-Governmental Organisation

NIF National Investment Framework

OBF On-Bill Financing

PB Project Board

PM Project Manager

PMU Project Management Unit

PRF Project Results Framework

ProDoc Project Document

PV Photovoltaic

RES Renewable Energy System

RS Republika Srpska

R&D Research and Development

SDG Sustainable Development Goal

SECAP Sustainable Energy and Climate Change Action Plan

SEK Swedish Krona

SESP Social and Environmental Screening Procedure

ToC Theory of Change

ToR Terms of Reference

UNDP United Nations Development Programme

UNEG United Nations Evaluation Group

UNFCCC United Nations Framework Convention on Climate Change

UNSDCF United Nations Sustainable Development Cooperation Framework

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Table of Contents

[Executive Summary i](#_Toc166743280)

[1. Introduction 1](#_Toc166743281)

[1.1. Evaluation information table 1](#_Toc166743282)

[1.2. Evaluation purpose and objectives 1](#_Toc166743283)

[1.3. Evaluation scope 2](#_Toc166743284)

[1.4. Evaluation methodology 2](#_Toc166743285)

[1.5. Evaluation ethics 4](#_Toc166743286)

[1.6. Limitations to the Evaluation 4](#_Toc166743287)

[2. Project description 5](#_Toc166743288)

[2.1. Project start and duration 5](#_Toc166743289)

[2.2. Development context 5](#_Toc166743290)

[2.3. Immediate and development objectives of the project 7](#_Toc166743291)

[2.4. Expected results 7](#_Toc166743292)

[2.5. Main project stakeholders 8](#_Toc166743293)

[2.6. Theory of change 8](#_Toc166743294)

[3. Findings 10](#_Toc166743295)

[3.1. Project design/formulation 10](#_Toc166743296)

[3.2. Analysis of the project results framework 10](#_Toc166743297)

[3.3. Assumptions and Risks 11](#_Toc166743298)

[3.4. Linkages between the project and other interventions within the sector 12](#_Toc166743299)

[3.5. Planned stakeholder participation and partnerships 13](#_Toc166743300)

[3.6. Gender responsiveness of the project design 13](#_Toc166743301)

[4. Project implementation 15](#_Toc166743302)

[4.1. Adaptive management 15](#_Toc166743303)

[4.2. Actual stakeholder participation 15](#_Toc166743304)

[4.3. Project Finance and Co-finance 16](#_Toc166743305)

[4.4. Monitoring and evaluation 17](#_Toc166743306)

[4.5. Performance of UNDP 19](#_Toc166743307)

[5. Project results 21](#_Toc166743308)

[5.1. Relevance 21](#_Toc166743309)

[5.2. Effectiveness 24](#_Toc166743310)

[5.3. Efficiency 31](#_Toc166743311)

[5.4. Country ownership 32](#_Toc166743312)

[5.5. Gender equality and empowerment of women 33](#_Toc166743313)

[5.6. Other cross-cutting issues 34](#_Toc166743314)

[5.7. Progress to impact 35](#_Toc166743315)

[5.8. Sustainability 36](#_Toc166743316)

[6. Main findings, conclusions, recommendations and lessons learned 39](#_Toc166743317)

[6.1. Main findings and conclusions 39](#_Toc166743318)

[6.2. Recommendations 41](#_Toc166743319)

[6.3. Lessons learned 44](#_Toc166743320)

[Annex 1: Evaluation Terms of Reference A-1](#_Toc166743321)

[Annex 2: Evaluation Matrix A-2](#_Toc166743322)

[Annex 3: Itinerary of the Evaluation Mission A-9](#_Toc166743323)

[Annex 4: List of people interviewed A-10](#_Toc166743324)

[Annex 5: Indicative list of interview questions A-11](#_Toc166743325)

[Annex 6: Project Results Framework A-13](#_Toc166743326)

[Annex 7: List of documents consulted A-16](#_Toc166743327)

[Annex 8: Evaluation Consultant Agreement Form A-17](#_Toc166743328)

[Audit Trail – annexed separately](#_Toc166743329)

Glossary of Evaluation-related Terms

| Term | Definition |
| --- | --- |
| Baseline data | Data that describe the situation to be addressed by an intervention and serve as the starting point for measuring the performance of the intervention  |
| **Beneficiaries** | The specific individuals or organizations for whose benefit an intervention is undertaken |
| **Capacity development** | The process by which individuals, organizations, institutions and societies develop their abilities individually and collectively to perform functions, solve problems and set and achieve objectives |
| **Conclusion** | A reasoned judgement based on a synthesis of empirical findings or factual statements corresponding to a specific circumstance |
| **Effect** | Intended or unintended change due directly or indirectly to an intervention |
| **Effectiveness** | The extent to which the development intervention’s objectives were achieved, or are expected to be achieved |
| **Efficiency** | A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results |
| **Finding** | A factual statement about the programme or project based on empirical evidence gathered through monitoring and Evaluation activities |
| **Impact** | Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention |
| **Indicator** | Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention |
| **Lessons learned** | Generalizations based on Evaluation experiences that abstract from the specific circumstances to broader situations |
| **Logframe (logical framework approach)** | Management tool used to facilitate the planning, implementation and Evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results-based management) principles |
| **Outcome** | The likely or achieved (short- or medium-term) effects of an intervention’s outputs |
| **Output** | The product, capital goods and/or service which results from an intervention; may also include a change resulting from the intervention which is relevant to the achievement of an outcome |
| **Recommendation** | A proposal for action to be taken in a specific circumstance, including the parties responsible for that action |
| **Relevance** | The extent to which the objectives of an intervention are consistent with beneficiaries’ requirements, country needs, global priorities and partners’ and donor’s policies |
| **Risk** | Factor, normally outside the scope of an intervention, which may affect the achievement of an intervention’s objectives |
| **Sustainability** | The continuation of benefits from an intervention, after the development assistance has been completed |
| **Stakeholders** | The specific individuals or organizations that have a role and interest in the objectives and implementation of a programme or project |
| **Theory of Change** | A set of assumptions, risks and external factors that describes how and why an intervention is intended to work. |

# Executive Summary

### Project information table

|  |  |
| --- | --- |
| **Project Title**  | Decarbonisation of Residential Sector in Bosnia and Herzegovina |
| **UNDP Quantum ID#:** | 00124749 | **Project Document signature date** |  |
| **Country:** | Bosnia and Herzegovina | **Date Project Manager hired:** | 1 March 2021 |
| **Region:**  | Europe | **Inception Workshop ate:**  | 30 April 2024 |
| **Focal Area:**  | Climate Change | **Planned closing date:** | 30 April 2024 |
|  |  | **Actual closing date** |  |
| **Executing Agency/ Implementing Partner:**  | UNDP under Direct Implementation Modality (DIM) |
| **Project Financing** | ***at approval (US$)*** | ***At Terminal Evaluation (US$)*** |
| **Donor financing:**  | 2,699,849 | 2,458,873.90 |

### Project description

The primary objective of the project was to establish a foundation for investment in low-carbon residential buildings and facilitate paradigm shift in the residential building sector of Bosnia and Herzegovina towards low-carbon sustainable development, as specifically recommended in the Nationally Determined Contribution, the National Communication to the UNFCCC and the National Climate Change Strategy of Bosnia and Herzegovina.

The immediate objective of the project enabling relevant institutions to identify and adopt effective modalities of interventions for achievement of the Project Output, i.e. to address non-financial barriers to low-carbon investment in residential buildings in Bosnia and Herzegovina.

Implementation of the Project officially started on 01 March 2021 and the planned closing date is 30 April 2024. The Project’s budget amounts to US$ 2,699,849, however, the funds actually received amounted to US$ 2,526,914.35.

### Main findings and conclusions

Relevance

# The project is aligned to commitments of Bosnia and Herzegovina under the UNFCCC and Paris Agreement as well as to key national strategic documents, namely the National Energy and Climate Plan and the National Building Renovation Strategy, as well as with the BiH efforts for accession to the EU and transposition of the Directive 2010/31/EU on the energy performance of buildings.

* The project is highly relevant to the funding priorities of the Swedish International Development Cooperation Agency (Sida), to the UNDP Country Programme Document for BiH 2021-2025, and contributes to the UN Sustainable Development Cooperation Framework (UNSDCF) in Bosnia and Herzegovina for 2021-2025, and directly contributes to UN SDG #7 and indirectly to SDGs # 5, 8, 9, 11,12, and 13.

Effectiveness

* Energy efficiency studies elaborated for 36 municipalities/cities analysed status of 13,857 objects (single houses and multi-dwelling buildings) out of the total 408,768 housing objects in the participating municipalities/cities with total 49,792,230 m2 of heated space.
* Based on the energy efficiency studies, the project prepared long-term financial and policy mechanisms for improving energy efficiency in the residential housing stock in 42 municipalities/cities, considering their respective technical and financial capacities, as well as energy and climate objectives and indicators.
* The project enhanced capacities for decarbonisation in the residential sector of 153 governmental employees and through education sessions and awareness activities reached out to more than 70,000 citizens in the participating municipalities/cities.
* The project paid due attention to gender issues: 46% representatives of the participating local governments were women and 51% of the 85,901 residents in the 26,619 households surveyed by the project were women, including 2,468 women-led households (9.3%).
* Strong ownership of the project by core project stakeholders, demonstrated by active participation and engagement of relevant institutions on the Project Board and the local governments in preparation of EE studies and financial mechanisms, was one of the main drivers of progress towards achievement of the planned results.
* Based on adaptive management, the project developed a Gender Action Plan in which it established that energy efficiency projects tend to disproportionately affect disadvantaged groups and suggested increasing the awareness of civil representatives about the disproportionate impact of energy efficiency measures on women and men in disadvantaged positions.

Efficiency

* Despite Covid-19 restrictions in the first half of the project implementation period did not cause any delay in implementation and have not had any significant negative impact on delivery of the project results. The project was operationally completed on the planned completion date of 30 April 2024.
* The resource allocation to the individual project components was reasonable and well balanced and no inefficiencies in the use of the allocated funds were found. The initial staff allocation according to the original Project Document was strengthened for the second half of the project implementation and enabled new distribution of duties between the members of the strengthened PMU and added capacity for addressing the gender issues.

Sustainability

* The project successfully addressed several non-financial (technical and informational) barriers to energy efficiency in the residential sector through mapping of the residential building stock in the target municipalities/cities and preparation of model financial mechanisms for co-financing energy efficiency improvement measures. By this token, the project built organisational, technical and managerial capacities of the participating authorities at municipality/city level for engagement in interventions for energy efficiency improvements.
* The delivered project results along with enhanced local capacities and increased awareness at the level of the target communities encouraged stronger ownership of energy efficiency as an issue by the project stakeholders and pave thus a way for improved energy performance of residential buildings across the country.

Progress to impact

* Experience from implementation of this project shows that removal of non-financing barriers is a necessary but not a sufficient condition for real progress towards energy efficiency renovations in the residential building sector. Although the project delivered financial and organisational models, the participating municipalities/cities, the latter have only modest options for financing renovation in residential buildings. Substantive amounts of co-financing will be required from owners of houses and apartments who in many cases have financial constraints and do not have access to necessary capital. Lack of access to required capital is particularly prominent in case of large upfront costs associated with energy efficient renovation and will hinder faster uptake of energy efficient solutions for residential buildings.

Cross-cutting issues

* By adopting a human rights-based approach and application of the principle of leaving no one behind, the project contributed to identification of socially vulnerable groups amongst residents in the targeted municipalities/cities. The focus of the project on removal of non-financial barriers to EE improvements did not result in direct benefits to the vulnerable groups. However, the project was helpful in identification of the marginalised residents that allows the municipality/city governments to better understand the challenges for assistance to the underprivileged, as well as the underlying causes. Therefore, acquisition of such knowledge is a precursor for shifting from identifying and understanding the challenges to pursuing meaningful solutions in the form of inclusive EE improvement programmes specially tailored to the needs of the marginalized residents.

### Recommendation summary table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Recommendation** | **Evaluation criteria** | **Responsibility** | **Timeframe** |
| 1. | UNDP should support the municipalities/cities that have adopted decision on model financial mechanisms to launch public calls for energy efficiency renovations on a pilot basis and provide assistance for additional public awareness activities and establishment of a system for collection of energy consumption data in the renovated pilot buildings. | Sustainability | UNDP, Municipality governments | Immediately |
| 2. | UNDP should consider possibility of replication and upscaling of the current project in interested municipalities/cities with adopted Sustainable Energy and Climate Change Action Plan (SECAPs). Financial support for the replication should be sought from the Fund for Environmental Protection of the Federation of Bosnia and Herzegovina and the Fund for Environmental Protection and Energy Efficiency of Republika Srpska.  | Progress to impact | UNDP,Environmental protection and energy efficiency funds at the level of Entities | Immediately |
| 3. | Design of future residential EE projects should contain a fully-fledged Theory of Change reflecting the entire results chain and the results framework should enable monitoring at the level of immediate outcomes. | Project design | UNDP, GoBiH | Future projects |
| 4. | Formulation of future residential EE projects should consider establishment of a Technical Advisory Committee as a sub-committee of the Project Board for strengthening the advisory function of the Project Board. | Project design | UNDP, GoBiH | Future projects |
| 5. | Future residential EE projects should include capacity building for other financial mechanisms then the co-financing through direct grants to end consumers. In particular, a model of on-bill financing should be considered for application through public utility companies in project beneficiary municipalities/cities. The projects should also include a component on practical demonstration of EE improvements. | Project design | UNDP, GoBiH | Future projects |
| 6. | Developers of residential EE projects should explore and consult potential for funding for pilot EE investment demonstrations with agencies implementing the funding provided by the EU Energy Support Package for BiH. | Project design | UNDP, GoBiH | Future projects |
| 7. | Workplans of future residential EE projects should strictly synchronise public awareness activities with other planned activities from the start of project implementation. | Project implementation | UNDP, GoBiH | Future projects |
| 8. | Future residential EE projects should include Gender Action Plan presented in a matrix format with indicators and related targets facilitating monitoring of the GAP implementation and involve citizen-based organisations, in particular women associations, as important project stakeholders and agents of a gender responsive approach. | Project implementation | UNDP, GoBiH | Future projects |

# Introduction

## Evaluation information table

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| **Evaluation information** |
| **Evaluation type**  | Project evaluation |
| **Final/midterm review/ other** | Final evaluation |
| **Period under evaluation** | **Start** | **End** |
| 1 March 2021 | 30 April 2024 |
| **Evaluator** | Dalibor Kysela |
| **Evaluator email address** | dkysela@gmx.at |
| **Evaluation dates** | **Start** | **Completion** |
| 22 March 2024 | 1. pril 2024
 |

## Evaluation purpose and objectives

The project “Decarbonisation of Residential Sector in Bosnia and Herzegovina” (the Project) is funded by the Government of Sweden and implemented by UNDP in Bosnia and Herzegovina. The project’s budget amounts to USD 2,526,914.34. The Project Document was signed on 15 December 2020 and the planned closing date is 30 April 2024.

The purpose of the Final Evaluation (the Evaluation) is to provide an impartial in-depth review of all aspects of the project, including its performance, results and any signal of change that might have resulted from the project interventions. The Evaluation will assess the relevance, coherence, efficiency, effectiveness, sustainability, and the potential for longer-term impact of the Project and make strategic recommendations for future decision-making in decarbonisation in residential sector, for the Project Board, UNDP, Government of Sweden and other relevant project stakeholders.

The Evaluation has the following objectives:

* Assess the overall project progress vis-à-vis the Project Results Framework (PRF) based on data, qualitative information and evidence on results and identify critical gaps or delays;
* Assess the project context, assumptions and risks, external and internal factors, including weaknesses in programme design, management and implementation, human resource skills and resources;
* Engage all relevant stakeholders (institutions, state, entity and cantonal ministries, local governments, the international community, etc.) in structured conversations, which will enable collective insights and distilling of key lessons learned in relation to (signals of) transformative change induced by the project, mistakes, as well as important cross-cutting issues, such as innovation, gender equality and leaving no one behind;
* Use different level analysis to generate understanding of change in the system where the project works and assess how this change was made and what specific contribution did the project make to the change;
* Formulate recommendations for consideration by the project owners and its partners, towards informed future decision making and programming.

## Evaluation scope

The Evaluation assesses the extent to which the planned project results have been achieved since the beginning of the project on 1st March 2021 until the end of the Project on 30 April 2024.

The Evaluation looked into the Project’s processes, strategic partnerships and linkages in the specific country context that proved critical in producing the intended or unintended results, the factors that facilitated and/or hindered the Project’s effort to bring about the change related to its objectives.

Based on the findings, the Evaluation provides evidence-based recommendations for future decision making in the area of concern, particularly in terms of potential future intentions, strategy of intervention, modalities of implementation and geographical areas for interventions.

The Evaluation also assesses the cross-cutting aspects of the Project, such as gender equality, disability and human rights and innovativeness in result areas.

The Evaluation was conducted according to the guidance, rules and procedures established and stipulated in the UNDP Evaluation Guidelines[[1]](#footnote-2).

The Terms of Reference (ToR) for the Evaluation is provided as Annex 1.

## Evaluation methodology

The framework for the Evaluation is based on standard criteria for final evaluations, namely relevance, coherence, effectiveness, efficiency, progress to impact and sustainability. Under each evaluation criteria, it addressed a set of questions stipulated in the Terms of Reference. Additionally, the Evaluation compiles lessons learned from implementation and provides forward-looking recommendations.

The Evaluation followed a collaborative and participatory approach ensuring close engagement of the evaluator with the project team and core project stakeholders.

As an initial step, a limited desk review and preliminary analysis was conducted of selected documents covering the project design and implementation progress. The approved Project Document (ProDoc) was the starting point for the review in terms of understanding the basics on which the project was designed and funded.

Results of the initial review provided grounds for formulation of Evaluation questions as discussion points that aim at gathering information from project stakeholders and beneficiaries about their attitudes and preferences as well as collecting factual information linked to the performance indicators from relevant sources. The evaluation questions were incorporated into the Evaluation Matrix that will serve as a framework for use during the data collection phase. The Evaluation Matrix is provided as Annex 2.

The data collection phase started with a detailed review of all relevant project documentation including documents prepared during the project formulation, planning, monitoring and implementation progress reports (substantive and financial), national development plans and sectoral policies, documents and reports related to parallel and complementary initiatives, as well as other available information on the specific context of the project.

The other part of the data collection phase was a data collection mission to Bosnia and Herzegovina on 14-20 April 2024. The main purpose of the mission was to collect first-hand information through semi-structured interviews with a selection of project stakeholders. The interviews were designed to solicit responses to a set of predetermined open-ended questions aiming to obtain in-depth information about the key informants’ experiences from the project implementation and their opinions on the achievement of the planned results. The semi-structured format allowed the respondents to express their perceptions of the main issues related to the project design and implementation. The evaluation criteria and the questions from the Evaluation Matrix were used as a frame for raising additional and/or more specific questions on the issues discussed. The interviews also served the purpose of collecting some additional documents to support the evidence base of the Evaluation.

The itinerary of the evaluation mission and list of people interviewed are provided as respective Annexes 3 and 4, and the indicative list of interview questions as Annex 5.

In view of the nature of the evaluation questions and use of predominantly qualitative assessment approach, the collected data were processed using validation, interpretation, and abstraction techniques, ensuring its accuracy, and translating the data into usable formats or units of analysis related to the evaluation questions.

The Evaluation adopted a participatory approach based on integration of universally recognized values and principles of human rights and gender equality into all phases of the Evaluation. While evaluating the project in accordance with the prescribed project evaluation framework, the Project achievements, implementation process, sustainability and potential impacts were assessed with a gender and human rights perspective.

To the extent possible, gender-disaggregated data and information were collected and analysed. Besides a targeted assessment of gender mainstreaming in the project design and implementation, the Evaluation also attempted to identify good practices and lessons learned from the intervention with regard to gender equality and the empowerment of women.

Evaluation conclusions are directly linked to the factual evidence and serve as a basis for recommending actions consistent with the conclusions. On the basis of the conclusions, recommendations for future actions are made as evidence-based proposals for action aimed at users of the Evaluation. The recommendations are formulated in a way that facilitate the development of a management response, i.e. are realistic and reflect an understanding of the commissioning organization and potential constraints to follow up. Each recommendation identifies its target group and stipulates the recommended action.

## Evaluation ethics

The Evaluation was conducted in accordance with the principles outlined in the United Nations Evaluation Group (UNEG) Ethical Guidelines for Evaluations[[2]](#footnote-3). In accordance with the Guidelines, the Evaluation ensured the right of informants to provide information in confidence and ensure that sensitive information is not traceable to its source.

The Evaluation consultant declares no prior involvement in the project design or in its implementation and asserts full adherence to the professional standards of independence and impartiality. A signed Code of Conduct form is included as Annex 7

## Limitations to the Evaluation

The main limitation is the tight deadline for completion because of delays in the evaluation commissioning process. The negative impact of this will be mitigated through intensive work of the Evaluation Consultant.

The other limitation is the fact that duration of the 5-day field mission did not allow for extensive meetings with a wide selection of project stakeholders and beneficiaries. Also, availability of some informants for in person interviews during the selected time of the evaluation mission may be limited. This limitation was addressed with support from the Project Management Unit (PMU) through careful selection of informants with the aim to ensure representation of all key stakeholder groups.

# Project description

## Project start and duration

Development of the project proposal started in 2019. The draft project proposal was presented to the representatives of the Ministry of Foreign Trade and Economic Relations (MOFTER) and the environmental protection funds of both Entities in the first quarter of 2020. Throughout the year 2020, it was presented to representatives of cities and municipalities that had been actively developing their Sustainable Energy and Climate Action Plans (SECAPs). The Project Document was finalised in November 2020.

Implementation of the Project officially started on 1 March 2021 and the planned closing date is 30 April 2024. The Project’s budget amounts to US$ 2,699,849, however the funds actually received amounted to US$ 526,914.35.

## Development context

Bosnia and Herzegovina (BiH) is an upper middle-income country in southeast Europe with a population of about 3.5 million. Accession to the European Union (EU) is an overarching priority. Over two decades after the signing of the Dayton Peace Agreement, the EU accession has been constrained by limited reform progress and frequent institutional and political deadlocks that hamper public sector performance.

The opinion on the Bosnia and Herzegovina European Union membership application indicates the country needs to significantly step up the process to align with European Union acquis and enforce related legislation. Aside from a broad consensus for joining the European Union, a shared vision for the country has been difficult to achieve.

The human development and economic development trends show vulnerability. The 2018 human development index was 0.769, placing the country in the high human development category. Of critical importance, the population is shrinking and ageing. Out-migration is an urgent challenge, representing a loss of young people and skilled workers upon which future sustainable development will depend.

Annual economic growth ranged from 2.9-3.8% between 2016-2019 and in 2020 it dropped to -3.0% owing to the COVID-19 crisis[[3]](#footnote-4). To be stronger and more competitive, the economy requires better infrastructure and a better policy and investment environment for private sector growth. The economy displays a high level of carbon and energy intensity, with the residential sector, energy sector, agriculture, industrial processes and waste the largest sources of CO2 emissions. High energy inefficiency contributes to the highest air pollution in Europe, which causes one of the highest average mortality rates by air pollution in the world.

Bosnia and Herzegovina is highly dependent on fossil fuels. In 2020, total gross electricity production amounted to 16,874 GWh with 12,079 GWh (63%) generated in thermal power plants[[4]](#footnote-5). At the same time, the energy intensity of Bosnia and Herzegovina, similarly to other countries with economy in transition, is about four times higher than the average in the European Union (EU) and in other OECD member states.table[[5]](#footnote-6)

Residential sector has the highest share of electricity consumption in Bosnia and Herzegovina. Total electricity consumption in households was 40.9% in 2018 and increased to 48.3% in 2020. Total production of thermal energy in Bosnia and Herzegovina in 2018 was 5,759 TJ, of which 3,412 TJ (59.2%) was generated in heating plants, 1,757 TJ (30.5%) in thermal power plants, and 590 TJ (10.43%) in industrial power plants. In 2018, households had the largest share in the final consumption of thermal energy with 74.6%, followed by industry and other consumers with 25.4%[[6]](#footnote-7).

In October 2015, Bosnia and Herzegovina submitted the first Intended Nationally Determined Contribution and ratified the Paris Climate Agreement in accordance with the United Nations Framework Convention on Climate Change (UNFCCC). The initial submission was updated in 2021[[7]](#footnote-8). By signing the Sofia Declaration on the Green Agenda for the Western Balkans in October 2020, Bosnia and Herzegovina recognised the importance of the European Green Deal (EGD), which is the EU’s new growth strategy towards a modern, climate neutral, resource-efficient and competitive economy. Currently, the country finalises an integrated National Energy and Climate Plan that will replace previously adopted action plans for energy efficiency and renewable energy sources.

Based on climate predictions and climate change mitigation scenarios within the preparation of the Fourth National Communication to the UNFCCC, Bosnia and Herzegovina formulated the 2020-2030 Climate Change Adaptation and Low-Emission Development Strategy. The Strategy represents a significant and important step forward towards a sustainable "green economy" and clearly defines measures and activities for reducing greenhouse gas (GHG) emissions and climate change adaptation, as well as the resources necessary for their implementation. With most of electricity generated by coal-fired thermal power plants with relatively low efficiency levels, the highest potential for reduction of GHG emissions lies in the energy sector.

According to the climate change mitigation scenario, buildings also have a great potential for GHG reductions given their present condition and prospect for implementation of energy efficiency measures and introduction of renewable energy sources. However, realising such potential requires active policy measures initially to be focused on awareness raising and providing subsidies for measures primarily on energy cost and pollutant emission reductions. Potentials for GHG reductions lie in changing energy sources and increasing energy efficiency. Mitigation scenarios envisage higher use of renewable energy, primarily use of solar collectors for domestic hot water heating and heat pumps for buildings. The mitigation scenario estimates the potential for GHG reductions in 2050 at about 1,200 Gg CO2eq. With use of adequate policy measures, approximately 50% of the potential may be utilized by as early as 2030[[8]](#footnote-9).

## Immediate and development objectives of the project

The primary objective of the project is to establish a foundation for and facilitate scaling-up of investment in low-carbon residential buildings and facilitate paradigm shift in the residential building sector of Bosnia and Herzegovina towards low-carbon sustainable development, as specifically recommended in the Nationally Determined Contribution, the National Communication to the UNFCCC and the National Climate Change Strategy of Bosnia and Herzegovina.

The immediate objective of the project enabling relevant institutions to identify and adopt effective modalities of interventions for achievement of the Project Output, i.e. to address non-financial barriers to low-carbon investment in residential buildings in Bosnia and Herzegovina.

## Expected results

The Project design envisaged the achievement of the Project Output through the following 3 results/activities, namely:

Activity 1: Create energy efficiency studies of residential sector in each participating municipality and cities.

Activity 2: Develop overall municipal/city financial and policy mechanisms for implementation of energy efficiency measures under this project and beyond; and

Activity 3: Facilitate public awareness-raising campaign and citizens' education in win-win energy efficiency benefits.

The main project inputs towards the set results were technical assistance for adoption of energy efficiency measures and use of renewable energy sources. In these efforts, the Project partnered with cities and municipalities that adopted the Sustainable Energy and Climate Action Plan and expressed interest to create homeowners-friendly locally managed investment frameworks for their citizens. The project aimed at developing and strengthening the technical and economic capacities and skills of city/municipal officials, utility services and private sector stakeholders with the ambition to enable their collaborative and effective engagement towards improving energy performance of the dwellings.

Building on the UNDP De-risking Renewable Energy Investment (DREI)[[9]](#footnote-10) approach, the project attempts to remove non-financial barriers, thereby reduce the risks, and achieve an attractive and acceptable risk-return profile of the investments. Specifically, the project addresses policy barriers faced by investors into low-carbon buildings and infrastructure by supporting the development and implementation of enabling policy framework. In partnership with local and international financial institutions, the project attempts to facilitate access to green energy finance at affordable terms.

The Project Results Framework (PRF) including the planned results, definition of baseline, output indicators and targets, is provided as Annex 6.

## Main project stakeholders

To avoid implementation delays due to the complicated vertical structure of the Government of Bosnia and Herzegovina, the project focused on the local level and directly targeted 36 municipalities and cities that had developed or were in the process of development of Sustainable Energy and Climate Action Plans (SECAPs) and therefore expressed commitment to improvements of energy efficiency and reduction of local air pollution.

Key project stakeholders were the implementing partners, namely the UNDP Country Office in Bosnia and Herzegovina, the Ministry of Foreign Trade and Economic Relations, the Fund for Environmental Protection of the Federation of Bosnia and Herzegovina, and the Fund for Environment and Energy Efficiency of Republika Srpska.

Direct beneficiaries of the project were representatives and employees of the participating cities and municipalities, who gained knowledge, skills and experiences in implementation of low-carbon investment in residential housing stock located in their territory as well as built their capacities for future projects to be implemented in their cities and municipalities.

Ultimate beneficiaries of the project were families living in residential buildings in the participating cities and municipalities across the country.

## Theory of change

Section 2.1. of the approved Project Document contains a simplified diagram of the project Theory of Change (ToC) that is reproduced as Figure 1 below.

**Figure 1:** Theory of change diagram (from the Project Document)



The project design, based on the ToC underlying the DREI approach, is that one of the principal challenges for scaling-up energy efficiency measures and renewable energy sources is to lower the financing costs that affect competitiveness *vis-a-vis* the baseline situation. As these higher financing costs reflect barriers and associated risks in the investment environment, the key entry point for policymakers to promote decarbonisation interventions is to address these risks and thereby lower the overall costs of the interventions.

The desired transformational change was to be achieved through implementing an integrated package of technical, managerial, financial, informational, and educational solutions to address the country-specific risks and barriers to the investment in low-carbon residential buildings.

The Evaluation makes a critical assessment of the Project’s Theory of Change, description of the project outcome, intended long-term environmental impacts of the project, causal pathways for the long-term impacts as well as drivers and explicit assumptions.

# Findings

## Project design/formulation

Formulation of the project was guided by several key national documents for low-carbon sustainable development, in particular the Nationally Determined Contribution, the National Communications to the UNFCCC and the National Climate Change Strategy of Bosnia and Herzegovina.

## Analysis of the project results framework

This section provides a critical assessment of the Project Results Framework (PRF) in terms of clarity, feasibility and sequence of the project outcomes and their links to the Project Objective. It also examines the specific indicators and their target values in terms of the SMART[[10]](#footnote-11) criteria.

The project design is described in Section III of the Project Document that contains definition of the single Project Output and detailed description of 3 Activities for its delivery. Section V of the Project Document presents a simplified project results framework (PRF) in a matrix format with a set of 7 indicators. For each indicator, a baseline is given as well as numerical targets for each of the 3 years of the project duration. Notably, the 3 Activities described in Section III were not included in the PRF.

The PRF does not follow the standard outcome-output template and the single Project Output is in fact the direct outcome describing the intended change in development conditions that is not only effect of the project outputs but requires a collective effort and contribution of national stakeholders. In line with the principles and common practice of results-based management (RBM), a project results chain should list not only outputs but also immediate and eventually higher-level outcome(s).

Table 1 below shows the comparison of the actual and suggested reformulated elements of the PRF.

 **Table 1:** Actual and suggested reformulated elements of the PRF

|  |  |
| --- | --- |
| **Actual** | **Suggestion for reformulated elements**  |
| **Output:** Addressing non-financial barriers to low-carbon investment in residential buildings in Bosnia and Herzegovina | **Immediate Outcome:** Non-financial barriers to low-carbon investment in residential buildings in Bosnia and Herzegovina addressed |
| **Output 1:** Energy efficiency studies of residential sector in each participating Municipality/City prepared |
| **Output 2:** Municipal/City financial and policy mechanisms prepared for implementation of energy efficiency measures under this project and beyond |
| **Output 3:** Public awareness-raising campaign and citizens' education conducted for win-win energy efficiency benefits |

The main deficiency of the PRF contained in the Project Document is lack of direct relation between the Output and the 7 indicators supposed to measure achievement of the Output. The reformulated PRF elements suggested in the right-hand column of Table 1 allow to link the original indicators to the 3 reformulated outputs so that Indicators 1.1 and 1.2 relate to Output 1, Indicator 1.3 links to Output 2, and Indicators 1.4 – 1.6 associate with Output 3. Indicator 1.7 in the original PRF does not have direct relation to the outputs as it was designed to measure achievement of the cross-cutting aspect of the project.

Apart from the issues with the incorrect use of the terminology discussed in the above paragraphs, the overall rationale and project logic is sound and realistic in response to the barriers identified in the project formulation phase through addressing the existing systemic, institutional, and technical capacity constraints of the project beneficiaries. All 7 indicators and their respective targets are compliant with the SMART criteria.

## Assumptions and Risks

Identification of risks enables the implementing partners to recognize and address challenges that may limit the ability of the project to achieve the planned results.

Section 3.10 of the Project Document contains a risk matrix with description of total 6 identified risks rated in terms of probability and impact, as well as proposed mitigation measures as summarised in Table 2 below.

**Table 2:** Risks and assumptions (as listed in the Project Document)

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk description** | **Probability** | **Type/Impact** | **Response** |
| 2020 local elections may change political leaderships and their commitment to the project | Medium | Political/ Medium | Signing Agreements with institutional partners, thus formalising their commitment and contribution.Right to remove and replace local governments with uncooperative leaderships. |
| Decrease of USD exchange rate against EUR / BAM | Low | Financial/ High | Pro-active early warning and financial planning/management system |
| Political gridlock between municipal government and municipal assembly interfere in project implementation | Low | Political/ Medium | Local governments’ involvement will be discontinued without support and cooperation of all political parties and relevant stakeholdersCommunication directed to the public to build pressure of the citizens and local development partnerships |
| Partners fail to ensure financial resources for local development | Low | Financial/High | Seek commitment from relevant authorities for early transfer of funds |
| Potential delay in implementation caused by COVID-19 | Low/Medium | Operational/Medium  | Enable distance learning and remote implementation of activities in times of such events.Take all necessary steps to insure all recommendation from the authorities and epidemiological services. |
| Force Majeure (e.g. natural hazards and disease outbreaks) | Medium | Environment/ Medium | Sequence the activities that the bulk of infrastructure/construction works are delivered during the peak construction season |

The TE considers the risk identification and rating at the project inception reasonable and sufficiently detailed. While some of the risks were effectively mitigated (e.g. the risk of implementation delays caused by Covid-19), the available progress reports do not contain any information on systematic monitoring and management of the risks.

## Linkages between the project and other interventions within the sector

Other projects pertaining to energy efficiency in buildings implemented by UNDP in Bosnia and Herzegovina are listed in Table 3. Some of these interventions were already under implementation at the time of design of the current project.

**Table 3:** Relevant past and parallel project on EE in buildings

|  |  |  |
| --- | --- | --- |
| **Project Title** | **Funding Source** | **Timing** |
| Green Economic Development (GED)  | SIDA | 2013-2024 |
| Scaling-up investment in low-carbon public buildings in Bosnia and Herzegovina (LCPB)  | GCF | 2018-2026 |
| Catalysing Environmental Finance for Low-Carbon Urban Development (LCUD) | GEF | 2018-2024 |

The first two projects were referred to in the Project Document and early lessons learned from these projects were reportedly considered in the design of the current project.

Primary previous experiences used for the current project design and implementation were derived from the GCF project that has supported design and implementation of the National Investment Framework (NIF) as a tool to support a gradual shift from predominantly grant-based financing for energy efficiency and low carbon urban development towards more innovative financing models. The NIF was ultimately finalized in June 2020 and adopted at both state and entity level. It includes guidance on leveraging additional private/commercial investment in the low carbon reconstruction of public buildings.

The GED project aims at institutionalising energy management in public sector buildings and creating decision-making processes facilitating implementation of energy efficiency infrastructure projects. The GED project proved to the financial institutions (state and commercial) that investments in energy efficiency are economically and financially attractive and profitable. The project was originally planned for completion by 2018. Based on the initial, results, the Government of Sweden has provided additional support for the second phase of project. Acquired knowledge and benefits of energy efficiency should be adequately transferred to the residential housing sector.

The main link of the current project to the other two projects mentioned in Table 3 is through focus on the municipality/city governments as direct beneficiaries. However, the connection is limited by the fact that the LCPB and LCUD projects address development of financial mechanisms for energy efficiency measures in public buildings (a revolving fund and ESCO energy performance contracting) that, as discussed further in this report, are not readily applicable in the residential building sector.

Given the complex administrative context of Bosnia and Herzegovina, the common lesson learned from the above projects is critical importance of lower-level governments’ understanding of energy commitments and managing energy related issues.

## Planned stakeholder participation and partnerships

Table 4 provides the list of main stakeholders along with description of their respective roles in the project.

**Table 4:** List of main stakeholders for the project (as per the Project Document)

|  |  |
| --- | --- |
| **Stakeholder name** | **Role in the project** |
| Embassy of Sweden | Participation on the Project Board for guidance and oversight of the project |
| Ministry of Foreign Trade and Economic Relations of BiH (MoFTER) | State Ministry directly responsible for BiH’s participation in UNDP-assisted projects. MoFTER has an important coordination role for the development and implementation of financial mechanisms. |
| Environmental Fund of the Federation of BiH | Participation on the Project Board for guidance and oversight of the project |
| Environmental Protection and Energy Efficiency Fund of Republika Srpska |
| Local governments of 36 participating cities/municipalities | Cooperation for identification of potential investment projects and development of financial mechanismsBeneficiaries of project capacity building activities  |
| Residents of 36 participating cities/municipalities | Beneficiaries of the interventions for energy efficiency |

The list of core stakeholders, identified at the project formulation stage and validated during the project Inception Workshop, did not change. Participation of the governmental stakeholders, namely the MOFTER and the two funds, was realized through their membership on the Project Board. Such close cooperation of the core stakeholders strengthened national ownership of the project and ensured visibility of the project at the level of the state and entity governments.

## Gender responsiveness of the project design

Section 3.7 of the original Project Document mentions the intention to ensure that women and men are equally included in the project activities, and that women’s opinion will be proactively addressed throughout the project implementation with an objective to ensure that women are equally empowered throughout major decision-making and creation of financial mechanisms. However, this intention was expressed in a general language as in the original PRF the gender focus is reflected only in Indicator 1.7 for mere collection of gender-disaggregated data on number of vulnerable groups in beneficiary communities.

At the project preparatory phase, assessment of social and environmental risks was conducted according to the standard UNDP Social and Environmental Screening Procedure (SESP). Annex 1 to the Project Document presents results of the SESP, composed of two parts, Part A- Integrating Overarching Principles to Strengthen Social and Environmental Sustainability; and Part B: Identifying and Managing Social and Environmental Risks. The latter part identified one potential risk, namely that duty-bearers do not have the capacity to meet their obligations in the project with low rating of both probability and impact. On this basis, the overall project risk categorisation was low risk.

Annex 5 of the Project Document contains summary of results of a gender analysis at the project inception that envisaged identification of opportunities for engaging women as active stakeholders and agents of change. Moreover, it was expected that gender specific qualitative assessments would be included in the performance measurement and assessment of the gender specific benefits attained by the project.

# Project implementation

## Adaptive management

Adaptive management is examined in terms of changes in the project implementation through adapting to changing political, regulatory, environmental, and other conditions outside of control of the project implementing team.

During the inception phase, the project team revisited the Project Document and performed consultations with the project stakeholders in respect of possible changes in overall context. Conclusion was made that there were no needs for changes in the project document. According to the project Inception Report, the Project Board at its first meeting agreed with the suggestion put forward that no changes and alterations were necessary to the original project design and implementation plan.

During 2022, the Embassy of Sweden put forward an initiative for further enhancement of project indicators in terms of their practicality and usability, in particular with regards to gender. This initiative requested the project to go beyond mere quantification of gender-related indicators and highlight qualitative aspect of gender issues in this context in terms of identification of the ways energy efficiency in residential sector affects livelihoods of women, girls and other vulnerable categories.

Moreover, the UNDP portfolio of projects on energy and environment underwent a review by an international gender consultant in early 2023. The consultant recommended to strengthen the gender focus of ongoing projects with the aim to make them more gender sensitive, not only in relation to the used language but also to the project substantive matters.

The above initiatives triggered a revision of the Project Document with an aim to make the existing performance indicators more suitable for tracking progress in the gender focus of the project. The revision was reflected in reformulation of Indicators 1.1, 1.3 and 1.4 and insertion of a new Indicator 1.8 related to gender analysis in the project and development of a Gender Action Plan.

Minor adjustment was done in relation to Activity 3 (Indicators 1.5 and 1.6). Instead of conduction of all planned activities simultaneously, it was decided to postpone implementation of public awareness campaign and educational sessions in order to synchronise them with adoption of financial mechanisms by respective cities/municipalities and make thus use of the momentum of the adoption of financial mechanisms at the local level.

There was no mid-term evaluation of the project.

## Actual stakeholder participation

Minutes of Project Board meetings prove active engagement of the core stakeholders for the advisory and oversight functions to the project. Through engagement of representatives of MOFTER and the entity environmental/EE funds, the project enabled links between the state and entity governments in the field of energy efficiency. Since these core stakeholders are directly involved in other similar interventions, the PB provided a platform for exchange of existing or emerging issues from other projects to ensure complementarity and minimise duplication of efforts.

The representatives of the local governments were actively engaged in consultations for preparation of energy efficiency studies and financial mechanisms for their respective cities/municipalities. However, they were not represented at the Project Board hence this is a missed opportunity for creation of stronger links between the state, entity and city/municipality levels on in the technical area of energy efficiency.

## Project Finance and Co-finance

Analysis of the project financial aspects is based on the information sourced from the annual UNDP Combined Delivery Reports (CDRs) for the duration of the project. This analysis aims at assessment of project financial delivery by years and by products, as well as the share of the project management budget line in the total project budget.

The total grant for this project as per the approved Project Document was US$ 2,699,849. However, the Finance Agreement stipulated the total Sweden contribution to implementation of the project at SEK 23,000,000 in three instalments. Table 5 below reflects the actual amounts received in SEK and exchanged into US$ as per the UN Official Rate of Exchange for the relevant dates. The total actual amount received was US$ 2,526,914.35.

**Table 5:** Actual instalments of the project grant in SEK and US$

|  |  |  |
| --- | --- | --- |
| **Date of instalment** | **SEK received**  | **US$ equivalent** |
| 16.2.2021 | 8,000,000 | 961,538.46 |
| 21.12.2021 | 9,000,000 | 989,228.40 |
| 13.3.2021 | 6,000,000 | 576,147.49 |
|  Total | 23,000,000 | 2,526,914.35 |

Table 6 below displays the breakdown of expenditures from the project grant by the years of the project implementation period.

**Table 6:** Actual expenditures by project activities/components and years of implementation (as of 20 April 2024)

|  |  |
| --- | --- |
| **Project Component** | **Expenditures in the year (US$)** |
| **2021** | **2022** | **2023** | **2024** | **2021-2024** |
| Activity/Component 1 |  437,786.97  |  651,812.09  |  346,330.30  |  84,066.68  |  1,519,996.04  |
| Activity/Component 2 |  11,437.44  |  366,300.26  |  223,004.40  |  16,273.67  |  617,015.77  |
| Activity/Component 3 | - |  8,733.89  |  6,351.87  |  1,891.23  |  16,976.99  |
| Project Management |  20,670.08  |  94,119.44  |  157,673.77  |  32,421.81  |  304,885.10  |
| **Total** |  **469,894.49**  | **1,120,965.68**  | **730,000.17** | **134,653.39**  |  **2,458,873.90**  |

Data in Table 6 shows that the total realised expenditure at the Final Evaluation was US$ 2,458,873.90 that is 91 % of the total project grant. The multi-year project budget plan in Section VII of the Project Document anticipated equal distribution of expenditures into each of the 3 years of the project implementation. Such budget planning was quite schematic as it anticipated parallel development of EE studies and financial mechanisms while in reality these two activities had to be sequential.

Data in Table 6 further shows that about 40% of the total disbursements were made in the year 2022 when majority of the EE studies and financial mechanisms were contracted. Overall, the above data show relatively balanced spending over the entire project implementation period.

Table 7 below provides comparison of the planned and actual expenditures by the project components.

**Table 7:** Planned and actual disbursement of the project grant by activities/components (as of 20 April 2024)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  **Project Component** | **Planned Budget (US$)** | **Budget as per actual amount received (US$)** | **Expenditures (US$)** | **% as per Planned Budget** |
| Activity/Component 1 | 1,524,336 | 1,454,617.18 | 1,519,996.04 | 99.72% |
| Activity/Component 2 | 671,798 | 625,633.75 | 617,015.77 | 91.85% |
| Activity/Component 3 | 39,755 | 26,653.11 | 16,976.99 | 42.70% |
| Project Management | 463,960 | 420,010.32 | 304,885.10 | 65.71% |
| **Total** | **2,699,849** | **2,526,914.35** | **2,458,873.90** | 91.07% |

Data in Table 7 shows that expenditures under Components 1 and 2 were around the budget allocation. Significantly lower spending under Component 3 (awareness raising) reflects the fact that implementation of these activities was delayed until completion of the EE studies and financial mechanisms. As of 20 April 2024, there was unspent balance of funds almost US$ 241,000.

Percentage of the total project budget allocated for project management (PM) serves as an indicator of the project cost-effectiveness. The PM allocation in the budget was 17 % of the total grant. However, with additional PM allocations uder the three substantive project components (allocation for the Project Officer split under Components 1 and 2, and partial allocation for the Communication Officer under Component 3, the total PM budget allocation constitute almost 22% % of the total project grant, which significantly exceeds 10% considered as cost-effective allocation. In reality, all expenditures for the PM were recorded under the PM budget line. The total realised expenditure on PM was 12.4% of the total project expenditures which only slightly exceeds the 10% threshold.

Overall, the final evaluation found that a well-established financial management and control system was in place and that relevant financial management regulations and reporting procedures were followed during the entire period of the project implementation.

## Monitoring and evaluation

### 4.4.1 Monitoring and evaluation: design at entry

Section VI of the Project Document presents the monitoring and evaluation plans prepared in compliance with the UNDP requirements outlined in the UNDP Programme and Operations Policies and Procedures POPP) and the UNDP Evaluation Policy. Both plans define basic oversight and monitoring responsibilities of the project Implementing Agency.

The Monitoring Plan envisaged the project to be monitored through quarterly and annual monitoring by the project team and biannual project Quality Assurance by the UNDP CO. The principal results of the monitoring activities are the Annual Project Reports (APRs) according to the UNDP reporting requirements. The Evaluation Plan contains provisions for an independent Mid-Term Review and a Final Evaluation.

Both Plans prepared at the design stage were well conceived and articulated for tracking the progress toward achieving the planned results. However, the budgetary provisions in the Evaluation Plan were underestimated in relation to the MTR.

### 4.4.2 Monitoring and evaluation: implementation

The main subject of the discussion here is the implementation of the originally planned components of the M&E plan.

The evaluator reviewed the APRs for 2021 and 2022 as well as a summary of results for 2023. The APRs contain useful information on implementation progress and challenges, as well as on stakeholder engagement. However, none of the APRs addressed management of risks identified in the Project Document.

According to the initial Social and Environmental Screening Procedure (SESP), the project was assigned low risk rating for social and environmental risks. Therefore, no specific plan for management of social and environmental risks was developed.

There is no information available on update of the SESP during the project implementation.

The Project Management Unit (PMU), established in early 2021, was staffed by three people, namely the Project Manager (UNDP Climate Change Programme Manager), Project Officer and Project Assistant. Additional person was added as a Project Analyst in November 2022 to reflect the high number of studies and mechanisms developed under the project and the need to work, together with the Project Officer, more extensively with the technical experts hired for development of EE studies and financial mechanisms, and with representatives of the targeted cities/municipalities.

Members for the Project Board (PB) were nominated through official letters sent by UNDP to the relevant institutions in June 2021. The PB consisted of representatives of the following project stakeholders.

* Sweden Embassy in Sarajevo (on behalf of the Government of Sweden)
* Ministry of Foreign Trade and Economic Relations of BiH
* Environmental Protection Fund of the Federation of BiH
* Environmental Protection and Energy Efficiency Fund of Republika Srpska
* UNDP CO

The PB convened 4 times during the project implementation. The Inception Workshop (IW) on 2 July 2021 was also the 1st meeting of the PB. The IW report is integral part of the 2021 APR. The 2nd PB meeting was held on 21 December 2022 in an on-line modality and the minutes are integral part of the 2022 APR. The 3rd and 4th PB meetings convened on 21 September 2023 and 23 April 2024, respectively. As the 2023 APR was not available at the time of the Final Evaluation, the Evaluator was given a summary of results achieved in 2023 that serves for preparation of the 2023 APR.

The evaluator found the implementation of the M&E Plans in line with the expectations outlined in the Project Document. The APRs and PB minutes show that the PRF was used as a tool for project management and monitoring purposes throughout the entire project implementation period and that the PMU regularly presented the progress in implementation for discussion with the PB as the institution of the project governance. Based on the above, it can be concluded that the project monitoring and evaluation was effective and contributed to achievement of the planned targets.

## Performance of UNDP

Under the Direct Implementation Modality (DIM), UNDP assumed overall responsibility for the project implementation, according to the Standard Basic Assistance Agreement (SBAA) between UNDP and the Government of BiH.[[11]](#footnote-12)

Following all policies and procedures established for its operations, UNDP as the project Implementing Partner was responsible and accountable for managing the project, including the monitoring and evaluation activities, achievement of project outcomes, and for effective use of human and financial resources.

The UNDP CO organised recruitment of technical consultants, procurement of equipment, provided financial management of the project, organised annual review meetings with the representative of the donor, and arranged for the Final Evaluation. The recruitment was conducted on a competitive basis in accordance with the relevant UNDP rules and procedures.

The Project Manager managed the project on a day-to-day basis through an active role in the project monitoring, participation in field visits, consultations, and review meetings with various project stakeholders. The PM also prepared Annual Work Plans, Annual Progress Reports and led presentations on progress to meetings of the Project Board and review meetings with the donor. The Project Manager was engaged on a part-time basis (50% engagement).

The Project Officer was responsible for technical support to the Project Manager in terms of operational management support as well as support for assuring delivery of high-quality results. In particular, the Project Officer was responsible for organisation of awareness sessions and final round tables with the participating municipalities.

The Project Assistant was responsible for administrative support to the project. The Project Officer was recruited as of 1 May 2021 and the Project Assistant as of 1 June 2021, in both cases on a full-time basis.

Due to significant demand for processing and consolidation of the data generated by the project, the project team was further strengthened with inclusion of the Project Analyst as of November 2022. The Project Analyst was primarily responsible for quality assurance through enhanced analysis and tracking of project-generated data, assistance in development of reports, as well as consolidation and utilization of aggregated data.

Under the actual project management arrangements, there was no physical location of the Project Management Unit. The Project Management and Project Officer were based in the UNDP Regional Office in Banja Luka while the Project Analyst and the Project Assistant in the UNDP CO in Sarajevo. Based on interviews of the project team members and interactions with them during the mission to BiH, the evaluator concludes that the project was managed by a dedicated and highly technically and organisationally competent team of professionals and did not find any significant issues on performance of UNDP in implementation of the project.

# Project results

This part of the TE report contains an assessment of results as measured by broader aspects such as: relevance, effectiveness, efficiency, country ownership, gender equality and other cross-cutting issues, sustainability, catalytic role, and progress to impact.

## Relevance

This section summarizes the assessment to what extent is the project linked to national development priorities of the recipient country, its international commitments under the relevant MEAs, the strategic priorities of UNDP and Sweden in Bosnia and Herzegovina, as well as to the UN Sustainable Development Goals.

The project was found highly relevant to:

* Commitments of Bosnia and Herzegovina under the international climate agreements, expressed in the updated Nationally Determined Contribution and communications with the 3rd Biennial Update Report on GHG Emissions to UNFCCC;
* National development plans and strategies in the area of energy and climate, namely the integrated National Energy and Climate Plan as well as the integral National Building Renovation Strategy;
* Efforts of BiH for accession to the EU in terms of transposition of the Directive 2010/31/EU on the energy performance of buildings;
* Implementation of Sustainable Energy and Climate Change Action Plans of participating local governments and their commitment for reduction of GHJG emissions;
* Funding priorities of the Swedish International Development Cooperation Agency (Sida) in terms of gender equality and job creation as significant objectives besides environmental and climate change goals;
* UNDP global priority under the Climate Promise through the work with governments of all levels to advance equality, tackle poverty and strengthen social and environmental sustainability;
* Commitments under the UN Sustainable Development Cooperation Framework for BiH 2021-2025, in terms of promotion of sustainable, green economy and low-carbon growth;
* Direct contribution to UND SDG #7 on access to affordable, reliable, sustainable and modern energy for all, as well as indirect contribution to SDGs # 5,8, 9, 11 and 12.

The project supported the commitments declared in the Bosnia and Herzegovina’s national climate action plan – known as the Nationally Determined Contribution (NDC) that was prepared in response to the Paris Agreement. In April 2021, Bosnia and Herzegovina submitted the updated NDC in which it updated its conditional greenhouse gas emissions reduction target to 36.8% below 1990 levels by 2030 and increased the unconditional greenhouse gas emissions reduction target to 33.2% by 2030 compared to 1990 levels, that is 18% more than in the initial NDC. The revised NDC also sets long-term greenhouse gas emissions reduction targets for 2050 at 61.7% (unconditional) and 65.6% (conditional) below 1990 levels.

The NDC aims at implementation of measures in the building sector for reduced use of coal and heating oil based on improvements of energy efficiency measures for reduction of heating and cooling needs and for increasing efficiency of the current heating and cooling systems. Reform of the incentive system for the renewable energy sources (RES) aims at encouraging decentralisation of the energy system and implementation of community energy projects[[12]](#footnote-13).

The project is also in line with the conclusions of the updated report on GHG emissions to UNFCC that recognises great potential for GHG reductions in buildings given their present condition and potential for implementation of energy efficiency and RES. Moreover, the same report states that utilizing such potential will require active policy measures with initial focus on awareness raising and provision of subsidies for measures leading to GHG reductions[[13]](#footnote-14).

The project also falls under the integrated National Energy and Climate Plan of Bosnia and Herzegovina (NECP) that is currently under preparation and should be finalised by mid-2024. In the comments on the draft NECP for the area of energy efficiency in buildings, the Energy Community Secretariat recommends prioritizing the accelerated finalization, adoption, and rigorous implementation of a comprehensive long-term building renovation strategy harmonized with the NECP[[14]](#footnote-15).

The project supports implementation of the integral National Building Renovation Strategy that calls for the existing building stock transformed into energy efficient and decarbonized building stock by 2050[[15]](#footnote-16)*.* For the current decade, the two entity strategies envisage annual investments for reaching the planned final energy consumption around BAM 320 million for the FBiH and around BAM 133 million for the RS[[16]](#footnote-17).

The project is aligned with the BiH efforts for accession to the EU and transposition of the Directive 2010/31/EU on the energy performance of buildings (EPBD). All these efforts signal the interest of the Government to pursue improvements of energy efficiency and low-carbon economic growth.

The project provided direct support to implementation of Sustainable Energy and Climate Change Action Plans (SECAP), through which a number of local governments have committed to reduce CO2 emissions by a total of 1.5 million tons by 2030 (40% reduction) through implementation of specific measures such as energy retrofits of public and residential buildings, modernization of public lighting, construction of embankments, construction of cycle paths and other measures.

The project is highly relevant to the funding priorities of the Swedish International Development Cooperation Agency (Sida). Besides interventions for improved access to energy in low-income countries, Sida supports development of policies and regulatory frameworks to stimulate investments for transformation to low-emission and climate-resilient pathways in middle-income countries and economies in transition. The Sida energy portfolio pursues not only environmental and climate change goals but also gender equality and job creation as significant objectives of the supported projects.

The project is also highly relevant to the corporate priorities of UNDP articulated as the UNDP Climate Promise that draws upon UNDP’s extensive expertise and commitment to ensure that countries wishing to increase the ambition of their national climate pledge are able to do so. The Climate Promise provides five key technical areas of support to help countries take actions for reduction of their emissions, increase of their resilience to climate impacts and support to sustainable development priorities. Working closely with its partners, UNDP works on climate action across governments of all levels to advance equality, tackle poverty and strengthen social and environmental sustainability.

Specifically for Bosnia and Herzegovina, the project contributes to the UN Sustainable Development Cooperation Framework (UNSDCF) for 2021-2025:

*Outcome 1. By 2025, people benefit from resilient, inclusive and sustainable growth ensured by the convergence of economic development, and management of environment and cultural resources.*

*Indicator 1.a No. Policy, financial or other stimulus measures endorsed to promote sustainable, green economy and low-carbon growth and living.*

Universal access to energy, a higher share of renewable energy and massive improvements in energy efficiency are now part of the top global priorities for sustainable development. In relation to the UN Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development, energy has been being recognized as a key enabler for development through establishment of SDG7:

*Ensure access to affordable, reliable, sustainable and modern energy for all.*

Looking more broadly, improving energy efficiency can contribute to a wide number of SDGs through co-benefits and by enabling limited energy resources to reach more people. In addition to the direct relation to SDG7, energy efficiency is indirectly related to other SDGs as summarized in Table 8 below.

**Table 8:** Relation of energy efficiency to UN SDGs[[17]](#footnote-18)

|  |
| --- |
| **SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all** |
| *Targets* |
| 7.1. By 2030, ensure universal access to affordable, reliable and modern energy services;7.3 Double the global rate of improvement in energy efficiency;7.a. Enhance international cooperation to facilitate access to clean energy research and technologies, including renewable energy, energy efficiency, and advanced and cleaner fossil fuel technologies, and promote investment in energy infrastructure and clean energy technologies; |
| **Other Sustainable Development Goals** | **Linkage with energy/energy efficiency** |
| SDG5: Achieve gender equality and empower all women and girls | Women’s full and effective participation and equal opportunities in decision-making on planning and implementation of energy/energy efficiency interventions |
| SDG8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all | Energy efficiency and conservation influence the country’s energy intensity and carbon content of economic growth  |
| SDG9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation | Resilient infrastructure and public-private partnerships are required to ensure access to energy for all and to maximise energy efficiency |
| SDG11: Make cities and human settlements inclusive, safe, resilient and sustainable | Municipalities require careful electricity planning and efficient power distribution |
| SDG12: Ensure sustainable consumption and production patterns | The residential and buildings sector is a key part of a future in which there is sustainable consumption of energy and products |
| SDG113: Take urgent action to combat climate change and its impacts | The carbon-intensive energy sector (based on fossil fuels) is a key driver of climate change. |

Based on the above, the project is rated **highly relevant** for national development priorities of Bosnia and Herzegovina, its international commitments under the UNFCCC and the Paris Agreement, the strategic priorities of UNDP and Sweden in Bosnia and Herzegovina, as well as with regard to contribution to the UN Sustainable Development Goals.

## Effectiveness

The information presented in this section was sourced from the available Annual Project Implementation Reports, technical studies and reports produced by the project, and verified with information collected through interviews with key project stakeholders. The list of documents consulted is provided as Annex 7 to this report.

The principal questions discussed in this section are whether and how the results as per the PRF have been achieved. In the series of tables below, the project results are summarized and compared against the end-of-project target indicators in the PRF. Eventually, the further text also highlights positive and negative changes and effects induced by the project interventions.

Table 9 contains a summary of the actually delivered project results. The tabular summary is followed by a narrative text with additional information and details on how and why the results have or have not been achieved. By this token, the text summarizes important facts and issues related to the project results and achievement of specific targets under each of the project indicators.

Data in Table 9 show that the project met the respective targets of 36 energy efficiency studies, and development of one Gender Action Plan. It exceeded the targets on development of 42 financial mechanisms, on capacitation of 153 representatives of governments, on outreach to 71,815 citizens of the participating municipalities, and targeting 43,148 women in the households. The actual number of 36 educational sessions was lower than the original target value. During the annual project review in 2023, however, it was agreed to reduce the target to 36 educational sessions.

**Table 9:** Status of project deliverables

| **Output Indicator** | **Baseline****(2020)** | **EOP Target** | **Status in the year** | **Status at Final Evaluation (as of April 2024)** |
| --- | --- | --- | --- | --- |
| **2021** | **2022** | **2023** |  |
| 1.1 Number of gender-sensitive energy efficiency studies of residential sector in municipalities/cities | 0 | 36 | 12 | 20 | 33 | 36 EE studies developed and accepted by the participating municipalities/cities |
| 1.2 Number of households analysed by energy efficiency studies | 0 | 13,320 | 8,455 | 4,118 | 16,046 | 28,619 households (single houses and multi-dwelling buildings) analysed  |
| 1.3 Number of cities/municipalities with developed gender sensitive EE financial mechanism on residential sector | 0 | 36 | - | 13 | 29 | 42 financial mechanisms developed and 16 of them approved by the respective municipality/city councils[[18]](#footnote-19) |
| 1.4 Number of government representatives (gender disaggregated) with increased capacities in decarbonization of residential sector in Bosnia and Herzegovina | 0 | 108 | - | 96 | 57 | 153 representatives of governments capacitated out of which 71 (46%) were women |
| 1.5 Public awareness campaign outreach (out of which at least 40% women) | 0 | 40,000 | - | 0 | 15,800 | 71,815 (estimated in relation to population of the participating municipalities/cities) |
| 1.6 Number of educational sessions targeting residents in municipalities/cities | 0 | 36 | - | - | 33  | 36 educational sessions organised after completion of the EE studies and financial mechanisms |
| 1.7 Number of vulnerable categories, including gender, covered by energy efficiency improvement studies | 0 | 1,500 | - | - | 2,468 | 2,468 women-led households of of the total 43,148 women in households covered by the EE studies |
| 1.8 Gender analysis for the programme made and gender action plan developed | 0 | 1 | 0 | 0 | 1 | 1 Gender Action Plan developed  |

Output: Addressing non-financial barriers to low-carbon investment in residential buildings in Bosnia and Herzegovina

Indicator 1.1: Number of gender-sensitive energy efficiency studies of residential sector in municipalities/cities

|  |  |  |
| --- | --- | --- |
| Baseline: 0 | Targe: 36 | Achieved: 36 |

As a preparatory phase for development of EE studies, initial meetings were organised in each city/municipality with the mayors/heads and other relevant decision-making officials. The purpose of the meetings was to explain the requirements for provision of relevant data related to their residential stock, namely identification of utility companies, address registers, etc. Moreover, the mayors were requested to support designation of contact persons of the local communities who will ensure the active involvement of the relevant owners of the selected residential buildings by familiarizing them in a timely fashion with the purpose of the studies and coordinate field visits by the Project expert teams.

The next step was a baseline inventory of the overall housing stock in the municipality/city and selection of statistically valid samples of individual residential houses as well as multi-dwelling buildings in each of the above-mentioned cities/municipalities.

Based on a GIS-based identification of all individual residential objects in the relevant cities/municipalities, the project expert teams used a random sample calculator for compilation of representative samples of individual residential objects in each city and municipality.

Based on input from building management and utility companies, the expert team compiled a detailed lists/database of all multi-dwelling buildings in relevant municipalities and cities, which contained all necessary technical data, including building size and data on construction of the buildings (construction materials, thickness of the walls and of thermal insulation) type of heating system, etc.,). The collected data served for construction of a matrix with the required number of building types, where each type will contain a list of all relevant buildings with their addresses and technical characteristics.

Random sample calculator was applied to all the buildings classified by type to select one building within each type. This process provided the required number of randomly selected buildings, each of which as the best representative of the corresponding type. These buildings were surveyed in detail in the next stages.

To obtain standardized technical and socioeconomic input data necessary for the establishment of an accurate basic energy inventory of the residential sector in each city/municipality, two questionnaires were prepared for collection of general data, relevant characteristics of the building (surface area, height of the building, type of material used to build the building, thermal insulation, volume of the heated part of the building, types and characteristics of the structure, type of heating system and energy source used, etc.). For multi-dwelling buildings, the questionnaire contained information related to building management companies, such as energy efficiency measures implemented so far by apartment owners, and socioeconomic data on gender structure and vulnerability aspect.

Based on the above procedure, total number of residential buildings for detailed analysis was determined as a statistically valid sample representing the entire residential building stock in each target municipality/city. The studies further provided baseline inventory of energy consumption and GHG emissions and assessed the cost-benefit energy saving potential and associated costs for each city/municipality.

In addition to the baseline inventories, the studies contained aggregated data on the current energy needs of the entire residential building stock in the municipality/city. Proposed energy efficiency measures to improve the energy efficiency of residential buildings included the following 4 interventions:

* Installation of thermal insulation on the façades of the buildings;
* Installation of thermal insulation on the topmost ceiling construction;
* Replacement of the existing exterior joinery with the exterior joinery with lower thermal conductivity; and
* Installation of new or reconstruction of the existing heating systems and boilers

The studies also calculated the amounts of investment required for implementation of the proposed energy efficiency measures and estimated values of several indicators for economic evaluation of the proposed energy efficiency measures (simple payback period, net present value, internal rate of return, profitability index).

Furthermore, the studies determined annual energy consumption and energy savings of residential building stock after implementation of energy efficiency measures, disaggregated per investment levels, building types, and energy purposes, and estimated related total annual GHG emissions and GHG emission reduction.

The studies enable the targeted municipalities/cities to gain a clear insight into the energy consumption status of their residential housing stock and outline low-carbon opportunities and summarise implementation challenges.

In the first year of the project implementation, EE studies were completed for 12 municipalities with 8 and 16 studies completed in 2022 and 2023, respectively. The progress in implementation is summarised in Table 9.

**Table 10:** Progress in implementation of EE studies

|  |
| --- |
| **Municipalities completed EE studies**  |
| **2021** | **2022** | **2023** |
| Banja Luka | Banovići | Cazin | Bos. Krupa | Brčko | Zvornik  |
| Gradiška | Doboj Istok | Vlasenica | Šekovići  | Modriča  | Visoko |
| Laktaš | Lukavac | Doboj Jug | Novo Goražde | Čitluk  | Konjic |
| Doboj | Maglaj | Rogatica | Jezero | Bužim | Sanski Most |
| Teslić | Tešanj |  |  | Novi Grad | Novi Travnik |
| Tuzla | Bihać |  |  | Bijeljina | Odžak |
|  |  |  |  | Čajniče | Foča |
|  |  |  |  | Kotor Varoš | Livno |

Indicator 1.2: Number of households analysed by energy efficiency studies

|  |  |  |
| --- | --- | --- |
| Baseline: 0 | Target: 13,320 | Achieved: 28,619 |

The 36 energy efficiency studies delivered by the project analysed status of 28,619 housing objects (single houses and multi-dwelling buildings), out of the total 408,768 housing objects located in the participating municipalities/cities and exceeded thus the target of 13,320

After the analysis, the data was extrapolated to the entire housing stock of the participating municipalities/cities.

This analysis established total 49,792,230 m2 of heated space in all housing objects and calculated the necessary annual energy consumption of the total housing stock at 24,152,622 MWh. Total required investment into energy efficiency improvements for 50% gross energy reduction in the entire housing stock of the 36 municipalities/cities was estimated at about 9,7 million BAM.

Indicator 1.3: Number of cities/municipalities with developed gender sensitive EE financial mechanism on residential sector

|  |  |  |
| --- | --- | --- |
| Baseline: 0 | Target: 36 | Achieved: 42 |

Development of the financial mechanisms was postponed in 2021 for the reason that UNDP implemented a pilot project “Localised - Green Deal” which covered Tuzla and West Herzegovina cantons and focused on development of energy and decarbonization mechanisms. The latter project included studies on establishing operational criteria and specific financial mechanisms for the two cantons and was thus used for testing approaches for formulation of financial and policy measures under the current project. Activities on development of financial mechanisms started in 2022 and successfully implemented throughout 2023 Such approach allowed for ‘condensed’ implementation, whereby the development of financial mechanisms for all municipalities and cities has been completed in 2023. Savings achieved within the project allowed for development of mechanisms in additional 6 cities/municipalities has been contracted and initiated by the end of 2023.

The work on the financial mechanisms started with detailed analysis of relevant legislative frameworks as well as adopted and/or drafted policies, strategies, action plans and similar documents that entirely or partially relate to the residential sector in the participating municipalities/cities. This was followed by appraisal of current financial and policy mechanisms, opportunities and practices for improving energy efficiency in residential sector.

With results of the above analytical work and key findings from the energy efficiency studies, the consultants developed long-term financial and policy mechanisms for improving EE in the residential housing stock in each of 36 participating municipalities/cities, considering their respective technical and financial capacities, as well as energy and climate objectives and indicators. At the same time, the proposed financial schemes had to be fully harmonized with the required energy saving targets set in the key planning documents for the two entities.

The consultants also supported municipalities/cities through development of a package of relevant documentation for public calls for energy efficiency improvements, including templates for public announcement, and criteria for evaluations of submitted applications.

By the end of 2023, financial mechanisms for the implementation of EE measures were developed for all 36 originally selected participating municipalities/cities as well as for 6 additional ones. As of April 2024, financial mechanisms have been adopted in 17 municipalities/cities with the remaining 25 financial mechanisms scheduled for of adoption during 2024. Adopted finance mechanisms are an important tool for implementation of municipality/city energy efficiency action plans.

Indicator 1.4: Number of government representatives (gender disaggregated) with increased capacities in decarbonization of residential sector in Bosnia and Herzegovina

|  |  |  |
| --- | --- | --- |
| Baseline: 0 | Target: 108 | Achieved: 153 |

Total number of government representatives with increased capacities in decarbonization of residential sector achieved was 153, out of which 71 (46%) were women.[[19]](#footnote-20)

Indicator 1.5: Public awareness campaign outreach (out of which at least 40% women)

|  |  |  |
| --- | --- | --- |
| Baseline: 0 | Target: 40,000 | Achieved: 71, 815 |

Based on lessons learned from Green Deal project, implementation of public awareness-rising campaigns was postponed until 2023 in order to harmonise with the development of financial mechanisms (Indicator 1.3) as such activities were deemed more effective when realised in conjunction with the development and implementation of EE measures at the level of local communities.

Energy efficiency promotional materials were delivered to local authorities and placed such on their official websites aiming to increase awareness amongst the population. Public statements and invitations were published in local media and official channels of communication of local authorities prior to organizing energy efficiency info/ sessions. As of April 2024, the total estimated number of persons targeted by the public awareness campaigns was 71, 815.

Indicator 1.6: Number of educational sessions targeting residents in municipalities/cities

|  |  |  |
| --- | --- | --- |
| Baseline: 0 | Target: 36[[20]](#footnote-21) | Achieved: 36 |

Based on the applicable financial schemes and policy and regulatory requirements, the EE and FM consultants prepared materials for educational sessions for various target groups (local authorities, dwelling-owners' associations, energy service providers, etc.) aiming at better understanding and effective utilisation of the proposed financial mechanisms.

In the period November 2023 - January 2024, informative sessions on energy efficiency were facilitated by the project team and two EE experts in 35 municipalities. The last session was conducted on 30 April 2024 in the city of Bihac. The sessions were attended by total 615 citizens out of which 38% were females.

These topics were on the agenda of information days that were organized in each of the 36 cities/municipalities for presentation of key findings of EE studies and facilitation of discussion with citizens of the participating communities as ultimate beneficiaries of the project. The data from the EE studies served as an indication of energy and financial savings and carbon dioxide emission reductions that could be achieved by the implementation of the four proposed EE interventions Moreover, the info sessions provided feedback from the target population in the form of an insight on main obstacles to implementation of EE interventions and were provided to the technical experts for consideration.

Information materials and useful saving tips used in the information sessions included those that had been developed under the GED project, funded by Sweden, and were shared on websites of the participating local governments.

Indicator 1.7: Number of vulnerable categories, including gender, covered by energy efficiency improvement studies

|  |  |  |
| --- | --- | --- |
| Baseline: 0 | Target: 1,500 | Achieved: 2,468 |

The EE studies covered households with total 43,148 women, including 2,468 women-led households that are considered vulnerable households.

Indicator 1.8: Gender analysis for the programme made and gender action plan developed

As discussed under “Adaptive management”, the project was subject to review related to gender aspects. Upon recommendation of an international gender consultant, the Project Document was revised with the aim to make the performance indicators gender-sensitive and qualitative. At the same time, it was decided to develop a Gender Action Plan (GAP). The latter task was contracted in late 2023 and a draft GAP was presented at the end of February 2024 to the UNDP CO and on 4March 2024 to the 4th session of Gender and Climate Coalition in BiH.[[21]](#footnote-22) The main findings of the GAP are discussed in Section 5.6.

As the project has achieved almost all of the planned targets (with exception of the target on educational sessions), effectiveness of the project implementation is rated **Satisfactory.**

## Efficiency

The main issues examined in relation to efficiency were the length of implementation period, whether the management structure outlined in the Project Document and the allocated resources (financial, time, staff technical and gender expertise) were adequate for timely delivery of the expected results and to address gender inequalities.

The project was approved for implementation for a period of 36 months. Despite the Covid-19 restrictions in the first half of the project implementation period, the project team managed to cope with the restrictions moved the necessary communications into virtual space. Therefore, the Covid-19 restrictions and related social distancing did not cause any delay in implementation and have not had any significant negative impact on delivery of the project results. This is evident from the fact that cumulative expenditures after half of the total implementation period reached about two thirds of the total project grant showing dynamics of the project implementation in the period affected by Covid-19. The project was operationally completed on the planned completion date of 30 April 2024.

The Evaluator considers the resource allocation to the individual project components reasonable and well balanced and did not find any serious inefficiencies in the use of the allocated funds. The project management substantive part in the initial period included the Project Manager on part-time basis and Project Officer on full-time basis with both having strong technical background and capacities in energy efficiency. However, the staff allocation was sufficient only because the public awareness activities, that require intensive contacts with municipalities/cities and substantive amount of field work, were postponed until the last year of the project. The postponement appears to be one of the reasons that the number of educational sessions for residents of the participating municipalities/cities (Indicator 1.6) had to be reduced from the original planned target 180 to 36 educational sessions.

The staff allocation according to the original Project Document was also not adequate for tangible achievements in addressing the gender inequalities. However, this limitation did not have impact on delivery in the first two years of the project due to vague formulation of gender focus of the project that did not include concrete gender-related targets. As discussed under ‘Adaptive management’, the strengthening of the gender focus of the project that came with the updated Project Document created necessity for reinforcement of the project team. Recruitment of the Project Analyst not only brought more attention to the gender aspects but also enabled the Project Officer to focus more extensively on delivery of the financial mechanisms, and on organisation of educational sessions in particular.

Therefore, the Evaluator noted the improved efficiency of the staff allocation in the second half of the project due to new distribution of duties between the members of the strengthened PMU and the added capacity for addressing the gender issues.

Based on the above, efficiency of the project implementation is rated **Satisfactory.**

## Country ownership

As mentioned under ‘Relevance’, the project objective is in line with the national development priorities and plans on energy efficiency in buildings. A strong country ownership of the project was one of the key assumptions made during the project design phase. The project was designed upon extensive consultations with core stakeholders, including agencies of the State and Entity Governments with mandated responsibilities for development and financing energy efficiency interventions.

Strong ownership by the core stakeholders was sustained throughout the project implementation and proved to be one of the critical drivers of progress towards the planned results. The ownership was demonstrated by active participation and engagement of relevant institutions on the Project Board and the local governments in preparation of EE studies and financial mechanisms.

Awareness activities targeting core stakeholders from the national and sub-national governments, as well as tangential stakeholders from media, civil society and the private sector have put the project in the spotlight and facilitated generation of support from the general public. The importance of focus on meeting national commitments under the Paris Agreement were also emphasized by the stakeholders.

It can be therefore concluded that the strong project ownership by all stakeholders does not originate only from alignment of the project to relevant national priorities and action plans, but it also results from the proactive stakeholder participation in the project implementation and in targeted awareness activities.

Interviews with direct project beneficiaries demonstrated strong ownership of the project results, particularly the energy efficiency studies and proposed financial mechanisms, by the participating municipalities/cities. However, such ownership might not be sufficient for large scale progress towards energy efficiency interventions due to the evident inability of the local governments to shift from traditional grant-based financing to more innovative financial models that are suitable for the residential building sector.

Therefore, progress to impact in the short-term will depend on willingness to allocate funding from local budgets, on ability to mobilise additional external funding from available financial mechanisms at the level of the two Entities, and last but not least on potential to adopt financing through models and strategies suitable to the specificities of the residential sector dominated by private owners. More on this is under ‘Progress to impact’.

## Gender equality and empowerment of women

The data collected during the project implementation shows that out of the 153 representatives of the participation local governments there were 71 women (46%). The completed EE studies collected data on women-led households, young people, and people with disabilities.​ The data from the surveys include 26,619 households in the 13,455 buildings occupied by 85,901 residents, of which 49% were men and 51% women. This portfolio included 2,468 women-led households (9.3%).

The GAP development was based on analysis of relevant documentation accompanied with field research in selected municipalities (Bijeljina, Brčko district, Cazin, Doboj, Foča, Odžak and Tuzla). The field work included meetings with representatives of local authorities, interviews of women-led households, and meetings with representatives of NGOs working with vulnerable groups.

The main finding of the GAP is that marginalised groups do not have full access to information provided by the authorities. Consequently, women from socially vulnerable groups have very limited or no understanding of energy efficiency.​ As a result of their living conditions, energy efficiency is primarily viewed through financial savings, and not in the context of improved life quality and environmental protection.

The main takeaway from the GAP is that energy efficiency projects tend to disproportionately affect disadvantaged groups and that initiatives for energy efficiency should be fair and inclusive. The GAP suggests increasing the awareness of civil representatives about the disproportionate impact of energy efficiency measures on women and men marginalised groups and calls for proper recognition of impacts on women and men at the level of communities and individuals.​

The GAP identified the following areas for action:

* Increase awareness of disadvantaged groups and the impact of intersectionality on energy transition/decarbonization efforts;
* Increase access to energy efficiency measures for women and men from socially excluded categories;
* Strengthen internal mechanisms, including creation of specific gender-targeted interventions.

The GAP also highlights the importance of a support role of civil society organizations to the local authorities in this process through provision of information to various target groups.

The document titled “Gender Analysis – Report and Findings: Gender Action Plan” that was available for the Final Evaluation contains the outcomes and outputs of the GAP as bullet points but does not present them in the usual matrix format and does not provide indicators and targets that would enable monitoring and evaluation of the GAP implementation.

The evaluator concluded that women were involved to the extent possible in the project activities. However, the GAP findings indicate lack of access of women from marginalised groups to information on energy efficiency. Notwithstanding the importance of the data collected in the course of the EE surveys and GAP preparation, these activities were just the initial steps and did not have any concrete impact on improvement of the lives of women. Therefore, there is a room for improvement towards inclusion of gender-sensitive indicators for effective tracking and analysis of related data in the monitoring and reporting frameworks of future projects.

## Other cross-cutting issues

Poverty reduction: The project did not make any direct contribution to poverty reduction so far. While mapping of the existing housing stock contributed to identification of socially marginalized residents in the participating municipalities/cities, it is unlikely that the marginalised groups will immediately benefit from the first public calls for energy efficiency improvements. The reason for that is that socially vulnerable residents usually do not own buildings where energy improvements could be realised, and they do not have access to finances necessary for financial participation on execution of EE measures. Therefore, the direct benefits for marginalised groups can be expected later once the local government accumulate experiences from implementation of first EE measures and acquire sufficient funds for 100% financial support of the vulnerable groups.

The main expected benefit for the socially vulnerable groups could be expected through their involvement in execution of the EE improvements as a local workforce. It is estimated that about one third of workers that will be needed for execution of the EE improvements will be low-skilled workers that face risk of being unemployed and falling into poverty. Therefore, through identification of types of EE improvements and capacitation of municipality/city governments for financing the project established a potential for direct benefits to marginalised groups.

Improved governance: Through provision of guidance on announcement of public calls for energy efficiency improvements and on organization of the process of evaluation of applications, the project assisted in strengthening the decision-making processes at the level of the participating municipalities/cities. The improved governance of energy management will be based on enhanced transparency characterized by clear division and allocation of responsibilities for the decision-making, setting fair and inclusive eligibility criteria for beneficiaries of the co-financing schemes, as well as systematic monitoring and reporting of results.

## Progress to impact

The project direct objective was to address non-financial barriers to low-carbon investment in residential buildings in Bosnia and Herzegovina. The project has raised the perception of energy efficiency in residential buildings through mapping the residential building stock in participating municipalities/cities and through identifying a set of effective interventions for energy efficiency improvements. The delivered project outputs along with enhanced local capacities and increased awareness at the level of the target communities encouraged stronger ownership of energy efficiency as an issue by the project stakeholders and pave thus a way for improved energy performance of residential buildings across the country.

The support of the project to collection of data on energy consumption in the residential building sector has contributed to ongoing efforts to convince municipal and city governments and bring their attention to EE opportunities through quantification and highlighting of the multiple and diverse benefits of EE investments. By consolidating the data on energy consumption and making them available, the project contributed to more exact documentation of the building stock and paved the way to performing analysis and estimation of magnitude of required investments, as well as to identification of risks holding back investment in energy efficiency improvements.

Therefore, it can be concluded that the project successfully addressed several non-financial (technical and informational) barriers. However, the overall perspective of rapid advancement towards implementation of energy efficiency improvements in the residential sector in Bosnia and Herzegovina remains somewhat blurry. The reason for the slow progress from capacitation to implementation is the persistence of a variety of financial barriers to investments into energy efficiency improvements in residential buildings, such high upfront costs, lack of access to finance, high perceived risk, competing investment priorities, and split incentives.

Although the project primarily aimed at addressing non-financial barriers to low-carbon investment in residential buildings, its intention was also to “contribute to overcome a number of financial and non-financial investment barriers”[[22]](#footnote-23) through development of proposals for mechanisms for financing energy efficiency improvements. By this token, the project attempted to address the above outlined financial barriers. However, the EE studies established that the amount of investment required for the energy efficiency improvements greatly exceeds the current financial power of the participating cities and municipalities.

Although the project assisted in development of financial mechanism studies, the real impact of the FM studies is uncertain as currently there is no visible commitment of the local governments to innovative energy efficiency financing beyond the predominant approach of financing/co-financing through public grants. This is a result of combination of external factors including governmental subsidies on fossil fuel prices, insufficient legal and regulatory frameworks in the residential sector, as well as high perception of risks to implementation of innovative financing mechanisms. The project final evaluation concludes that coordinated efforts of multiple actors (entity and municipality/city governments, domestic vertical funds, international donors, community-based organisations, and private sector) will be needed to accelerate the progress towards longer-term goals and concrete impacts.

Apart from the financial constraints, there are two persisting legal barriers that hinder faster progress to adoption of energy efficient renovations in multi-dwelling apartments, namely lack of official recognition of associations of apartment owners in multi-dwelling buildings as legal bodies, and the obligation to obtain consent to execution of EE renovations from 100% of apartment owners. While owner associations are legally recognised in the RS, the obligation for 100% consent applies to both Entities. Therefore, adjustments of the existing regulations will be required to remove these barriers and empower apartment owners to take action through their local housing associations or representative bodies. At the same time, such mobilization of communities and their motivation to renovate will be beneficial for opening the market for EE interventions.

The evaluator concludes that the current project did not have any direct impact on structural changes in the market with EE products and services. However, the project can be seen as a catalyst for implementation of broader systemic efforts addressing energy efficiency in residential housing sector. Further progress will much depend on implementation of innovative financial mechanisms other than simple co-financing for end-user homeowners, that would address the existing market insufficiencies and accelerate thus the required structural changes. It should be noted, however, that likelihood of a faster progress to such impacts will highly depend on the political will and preparedness for removal of the existing energy subsidies that prevent full realization of gains from energy efficiency improvements in the residential sector.

## Sustainability

Sustainability of a project is judged by the commitment of the beneficiary country to continue and eventually replicate or upscale the project activities beyond the project completion date. The evaluation identifies key risks to sustainability and explains how these risks may affect continuation of the project benefits after the project closes. The sustainability assessment covers institutional/governance, socio-economic, financial and environmental risks.

Institutional/governance: The project supported building of human and institutional capacities relevant for informed decision-making on implementation of energy efficiency investments in residential buildings through intensive field work and organisation of awareness raising events in the 36 project target communities that had already made commitments for implementation of respective Sustainable Energy and Climate Change Action Plans (SECAP).

SECAPs are the primary policy instruments to promote low-carbon development at the level of local communities through establishment of targets for energy savings and deployment of RES, prioritisation of sectors for investment, and assignment of responsibilities for implementation. Given the decentralized governance system in the BiH, SECAPs are particularly important to ensure local ownership and financing, as well as sustainability and longer-term impacts.

The institutional strengthening resulting from the project is an enlargement of commitments and capacities for the already existing energy saving programmes and actions directed at public buildings and facilities owned by the local authorities, such as schools, hospitals, government offices, and public lighting networks. Due to the continued political commitment of the municipalities/cities to the SECAP implementation, the risk to institutional and governance sustainability is negligible.

Socio-economic: Deployment of EE measures in the residential building sector has the potential to save energy consumption and contribute to job creation and further development of companies involved in execution of EE measures (e.g. ESCOs[[23]](#footnote-24) and installer/contractor companies). It would also contribute to development of domestic market with energy efficient construction materials and products. Further positive effects originate in the support processes for EE installations, such as financial services, education, R&D, and consulting.

However, the socio-economic sustainability will depend to a great extent on willingness of the Government of Bosnia and Herzegovina to reduce and ultimately remove the current energy price subsidies. Although there is a plan for gradual reduction of energy price subsidies by 2030, the social issues involved and the current energy crisis in Europe, could cause prolongation of the current level of energy price subsidies and thus seriously endanger the sustainability of the project results.

Financial: The main financial risk originates from the resistance of multilateral as well as bilateral donors against provision of direct financial support for EE improvements in privately owned residential buildings. Consequently, the amount of financing available for direct support of EE interventions remains low. The scale of the financial risk could be aggravated by lack of financial incentives of the building owners for investing in EE improvements and by absence of innovative financial mechanisms for effective and efficient execution of EE interventions. Therefore, the financial risk to sustainability is substantial.

Environmental: Global environmental benefits of investments into EE are obvious as they contribute to reduction of GHG emissions from the conventional (fossil) energy sources and eventually replace the latter with renewable energy options. The global benefits are supplemented by several positive local environmental benefits. Nitrogen and sulphur oxides generated by electricity production from fossil fuels react in the atmosphere to form ground-level pollutants such as ozone, nitric acid, sulfuric acid and ammonium nitrates and sulphates that have negative effects on human health and cause visibility degradation, acid deposition, and eutrophication. In addition, the conventional power plants are also sources of direct emissions of mercury. Therefore, reduction of fossil fuel consumption translates into improved local air and water quality.

Indirectly related, there is a positive effect related to use of water, primarily for cooling. In electricity production from thermoelectric technologies. Water use by conventional power plants is characterized by water withdrawals (the total amount of water taken from a source) and water consumption (the amount of water not returned to the source). EE measures therefore could have positive environmental effects with regard to water withdrawals, in particular reduced competition for scarce water resources, decreased thermal pollution from water returns, as well as reduced discharges of chemical pollutants, such as the biocides used in cooling towers of conventional power plants.

However, there is a potential negative environmental risk directly related to execution of the energy efficiency interventions, namely the risk of unsafe disposal of asbestos roofs in absence and/or non-observation of relevant guidelines for disposal of asbestos-containing waste.

The summary of sustainability ratings is in Table 11 below.

**Table 11:** Sustainability ratings

|  |  |
| --- | --- |
| **Sustainability aspect** | **rating** |
| Institutional/governance | Likely |
| Socio-economic | Moderately Likely |
| Financial  | Moderately Likely |
| Environmental | Likely  |
| **Overall Likelihood of Sustainability** | **Moderately Likely** |

# Main findings, conclusions, recommendations and lessons learned

##  Main findings and conclusions

Formulation of the project was guided by several key national documents for low-carbon sustainable development and commitments of the Government of Bosnia and Herzegovina under the UNFCCC and the Paris Agreement. The evaluation found the project highly relevant for the national developmental priorities as it supports implementation of key national planning and strategy documents, in particular the National Energy and Climate Plan of Bosnia and Herzegovina and the integral National Building Renovation Strategy. Moreover, the project is aligned with the BiH efforts for accession to the EU and transposition of the Directive 2010/31/EU on the energy performance of buildings.

In addition to the relevance for the recipient country, the project is in line with priorities of the Swedish development assistance to Bosnia and Herzegovina, as well as to the corporate priorities of UNDP, namely the UNDP Climate Promise and the Country Programme Document and contributes to the UN Sustainable Development Cooperation Framework for Bosnia and Herzegovina for 2021-2025.

Finally, the project also directly contributes to the UN Sustainable Development Goal No. 7 and indirectly to the SDGs #5, 8,9,11,12 and 13.

The project was designed to address non-financial barriers to low-carbon investment in residential buildings in Bosnia and Herzegovina. This objective was achieved through mapping of the residential building stock in the target municipalities/cities, collection of data, as well as preparation of model financial mechanisms for co-financing energy efficiency improvement measures. By this token, the project built organisational, technical and managerial capacities of the participating authorities at municipality/city level for engagement in interventions for energy efficiency improvements. At the same time, it also increased knowledge and awareness of residents of 36 municipalities/cities about benefits of energy efficiency improvements.

After numerous successful previous interventions in energy efficiency in public buildings, this project is one of the first attempts to address energy efficiency in the residential sector. However, the success in the public buildings can’t be mechanically transposed to the residential sector. Despite the benefits of investing in energy efficiency improvements, private owners of houses and residents of multi-apartment buildings often behave as if they undervalue these benefits, in particular future savings on energy consumption. This aspect suggests that the way individuals make decisions about energy efficiency is a root cause of a slower than expected uptake of energy efficiency products and services in the residential sector.

Experience from implementation of this project shows that removal of non-financing barriers is a necessary but not a sufficient condition for real progress towards energy efficiency renovations in the residential building sector. Despite the fact, that the project delivered financial and organisational models to the participating municipalities/cities, the latter have only modest options for financing renovation in residential buildings. Substantive amounts of co-financing will be required from owners of houses and apartments who in many cases have financial constraints and do not have access to necessary capital. Lack of access to required capital is particularly prominent in case of large upfront costs associated with energy efficient renovation and will definitely hinder uptake of energy efficient solutions for residential buildings.

There are signs that lack of access to finances will constitute the main barrier to accelerated renovation of the residential buildings. Analysis of the cohort of approved financial mechanisms shows that municipalities/cities have opted for the simplest financial mechanism, namely a co-financing grant scheme provided to end consumers with financing shared between municipalities/cities and private property owners. However, the co-financing grant schemes are effective in initial phases for demonstration of the EE concept for gaining buy-in from the targeted segment and creating certain level of market interest for residential building renovations. Longer-term overdependence on co-financing grant schemes would limit potential for upscaling of EE interventions and raise questions about financial sustainability.

The available funding for EE interventions in the residential housing stock in BiH is currently limited by reluctance of multilateral and bilateral development assistance agencies to provide direct support to private owners of houses and apartments. Therefore, support for adoption of more complex financial mechanisms would be highly desirable.

Although experience has been acquired and market and stakeholder confidence gained in BiH regarding the business model of Energy Performance Contracts (EPC) implemented through the ESCO modality in public buildings and services, such experience is not immediately transferable for renovation works in the residential housing sector. The ESCO model fits with small number of relatively large projects, that is the typical situation in projects targeting public sector buildings. On the contrary, interventions in the residential sector consist of a large number of relatively small projects.

The main challenge is that the risks and rewards of the EE investment remain with the ESCO as the implementing agent while property owners pay only savings achieved that have to be verified on a public platform. The relative success of the ESCO model in the public sector is based on the fact that ESCOs work with stable and financially sustainable clients (public agencies, municipalities, etc.) Given the financial weakness of many private property owners, extensive involvement of ESCOs would require parallel mobilisation of support funding for owners’ grant or loan schemes as well as ESCO commercial financing.

On-bill financing (OBF) of EE interventions has some advantages that could address the current situation of low financial liquidity and restricted access to financial resources for owners of houses and apartments. Under the OBF, funds for EE investments are provided by a contracted utility company with repayments included as a line-items on bills (and could be tied to savings achieved). The advantage of the OBF is improved access to investment capital at relatively low risk for the investing utility company (the default rate of energy bills is low) and also has low transaction cost as payments of utility bills are routine.

One aspect that was underestimated in the current project design was the convincing effect of demonstrations. Despite the impact of the project on capacitation of the local governments and on building public awareness, the benefits of EE interventions remain at the theoretical level without practical demonstration. A real cases of housing objects with practical demonstration of EE interventions accompanied with effective informational campaign about the actually achieved benefits would have been equally if not more important than technical assistance and awareness raising.

Traditionally, initiatives for improving energy efficiency in the residential sector are based on an exclusively economic approach limited to consumer energy use and related potential for savings. There is a need for more holistic approaches that will consider behavioural changes for the energy efficient choices.

There is no doubt that property owners are the most important stakeholders, since they are the ones who pay the cost of renovation and therefore ultimately adopt the decision whether to renovate or not. However, the importance of installers and contractors of energy efficiency renovations should not be overlooked. Especially owners of single-family houses, whose renovation process is less complex than the renovation in large multi-apartment buildings, tend to rely on professional advice of installers. This places installers in a position where their own preferences and skills are crucial for choices of the technical solutions to be installed. The above issues will have to be factored into any future initiatives funded by the multilateral and bilateral donor agencies.

By adopting a human rights-based approach and application of the principle of leaving no one behind, the project contributed to identification of socially vulnerable groups amongst residents in the targeted municipalities/cities. The focus of the project on removal of non-financial barriers to EE improvements did not result in direct benefits to the vulnerable groups. However, the project was helpful in identification of the marginalised residents that allows the municipality/city governments to better understand the challenges for assistance to the underprivileged, as well as the underlying causes. Therefore, acquisition of such knowledge is a precursor for shifting from identifying and understanding the challenges to pursuing meaningful solutions in the form of inclusive EE improvement programmes specially tailored to the needs of the marginalized residents.

## Recommendations

The Final Evaluation makes two types of recommendations. The first type is provided for consideration by the project partners in order to ensure the project results are consolidated and sustained beyond the completion and closure of the project. These recommendations are suggested for implementation using the existing institutional capacities and frameworks that have been created by the project. The second type of recommendations is provided for consideration of UNDP, the donor and the Government of BiH for improvement of design and monitoring of future projects in the area of energy efficiency in the residential sector.

Specific conclusions and recommendations on follow-up and reinforcement of the achieved benefits (for municipalities/cities and UNDP)

Conclusion 1: Since the actual realised energy savings might be uncertain, households are not convinced to invest into energy efficiency improvements. Execution and results of pilot EE interventions, if accompanied with additional public awareness activities, can convince residents in the participating municipalities/cities about benefits of EE improvements and accelerate the required behavioural change.

Recommendation 1: UNDP should support the municipalities/cities that have adopted decision on model financial mechanisms to launch public calls for energy efficiency renovations on a pilot basis and provide assistance for additional public awareness activities and establishment of a system for collection of energy consumption data in the renovated pilot buildings.

Conclusion 2: Several additional municipalities/cities are interested to receive assistance with development of EE studies and financial mechanisms for their residential buildings.

Recommendation 2: UNDP should consider possibility of replication and upscaling of the current project in interested municipalities/cities with adopted Sustainable Energy and Climate Change Action Plan (SECAPs). Financial support for the replication should be sought from the Fund for Environmental Protection of the Federation of Bosnia and Herzegovina and the Fund for Environmental Protection and Energy Efficiency of Republika Srpska.

Specific conclusions and recommendations on design of future projects on EE interventions in residential buildings (for Government of BiH and UNDP)

Conclusion 3: Design of residential EE projects should be based on a robust Theory of Change analysis linking the project outputs with defined immediate outcomes, intermediate states and longer-term impacts, and on the Project Results Framework reflecting the ToC analysis with SMART indicators and measurable targets set at the level of project direct outcomes.

Recommendation 3: Design of future residential EE projects should contain a fully-fledged Theory of Change reflecting the entire results chain and the results framework should enable monitoring at the level of immediate outcomes.

Conclusion 4: The Project Board for this project had a relatively narrow participation. While this was good for the oversight function of the PB, its advisory function could be strengthened for future projects. Consultations with a wider circle of stakeholders would be beneficial for formulation of future residential EE projects and could lead to establishment of a Technical Advisory Committee (TAC) as a sub-committee of the PB with membership of representatives of the entity ministries mandated in climate change, entity-level associations of municipalities, as well as relevant academic institutions and national citizen-based organisations. The TAC with such wider stakeholder representation would facilitate effective coordination and cooperation of relevant stakeholder agencies and institutions between the state, entity and municipality/city levels. Furthermore, the TAC would support the Project Board with in-depth analysis and focused expertise on relevant technical issues and enhance visibility of the project within the institutions represented at the TAC.

Recommendation 4: Formulation of future residential EE projects should consider establishment of a Technical Advisory Committee as a sub-committee of the Project Board for strengthening the advisory function of the Project Board.

Conclusion 5: In addition to co-financing through direct grants to homeowners, the project examined potential use of ESCO mechanism based on the fact that experience has been accumulated in the country with use of ESCOs for execution of EE projects in public buildings. However, the ESCO business model is less suitable for private owners of housing objects with restricted access to capital and therefore would not command sufficient market interest of existing ESCOs. For collection of data for EE studies, several municipalities established cooperation with local public utility companies that could be helpful in implementation of the mechanisms of on-bill financing. Also, effectiveness of residential EE projects is improved if technical capacity building and public awareness activities are complemented with pilot cases of practical demonstration of energy efficiency improvements.

Recommendation 5:Future residential EE projects should include capacity building for other financial mechanisms then the co-financing through direct grants to end consumers. In particular, a model of on-bill financing should be considered for application through public utility companies in project beneficiary municipalities/cities. The projects should also include a component on practical demonstration of EE improvements.

Conclusion 6: The project was successful in reduction of non-financial barriers to EE interventions. However, it also showed that lack of access to capital is a serious barrier to implementation of the approved financial mechanisms that could undermine success of the projects.

Recommendation 6: Developers of residential EE projects should explore and consult potential sources of funding for pilot EE investment projects, in particular the environmental funds in the two entities, that implement the funds provided from the EU Energy Support Package for BiH.

Conclusion 7: Citizens of the participating municipalities/cities did not have enough information about the purpose of data collection for EE studies. Lack of public awareness activities in the initial phase of the project prolonged the process of data collection for EE studies and elaboration of financial mechanisms.

Recommendation 7: Workplans of future residential EE projects should strictly synchronise public awareness activities with other planned activities from the start of project implementation.

Conclusion 8: Implementation of the project proved that emphasis on gender mainstreaming is an important feature of residential EE projects. The Gender Action Plan developed by the project did not provide tools for effective monitoring of the GAP implementation. The gender analysis conducted for preparation the Gender Action Plan found lack of access of marginalised groups to their local administrations. This caused insufficient flow of information about benefits of EE measures to the socially vulnerable groups. Citizen-based organisations can assist to address this issue and act as agents of change helping local governments to reach out with the required information to marginalised communities.

Recommendation 8: Future residential EE projects should include Gender Action Plan presented in a matrix format with indicators and related targets facilitating monitoring of the GAP implementation and involve citizen-based organisations, in particular women associations, as important project stakeholders and agents of a gender responsive approach.

## Lessons learned

Strong ownership of the project by core project stakeholders, demonstrated by active participation and engagement of relevant institutions on the Project Board and the local governments in preparation of EE studies and financial mechanisms is one of the main drivers of progress towards achievement of the results.

Experience acquired in BiH regarding use of the ESCO business model in public buildings and services is not immediately transferable for execution of EE interventions in the residential housing sector. The ESCO model fits well with small number of relatively large projects, while EE interventions in the residential sector consist of a large number of relatively small projects. The main challenge is that the risks and rewards of the EE investment remain with the ESCO as the implementing agent while property owners pay only savings achieved that have to be verified on a public platform. There are no ESCOs in the country that would be financially strong enough to conduct EE improvement project in the sector with financially weak clients with restricted access to capital.

The technical capacity and public awareness activities were not complemented with practical demonstration of EE interventions that would provide a convincing effect to the target beneficiaries. Financial resources for practical demonstration of EE measures should be mobilised as immediate follow-up to the project otherwise its main impact will remain at a theoretical level.

Importance of public awareness elements of EE projects should not be underestimated. Insufficient public awareness activities at the beginning of the project caused delays in data collection and caused inefficiencies in preparation of EE studies.

Effective and transparent governance arrangements of the financing mechanisms are fundamentally important and can often be the key factor that determines whether a mechanism is a success or a failure. Provision of materials for effective and transparent implementation of public calls for energy efficiency improvements is a good practice that support good governance and active participation of interested owners of housing objects.

# Annex 1: Evaluation Terms of Reference

[https://erc.undp.org/Evaluation/documents/detail/23201](https://erc.undp.org/evaluation/documents/detail/23201)

Annex 2: Evaluation Matrix

| Evaluative Criteria/Questions | Indicators | Sources | Methodology |
| --- | --- | --- | --- |
| Relevance: |
| * Is the project aligned to national development objectives, broadly, and to national energy transition priorities specifically?
 | * The project design includes explicit links (e.g. outputs, indicators) to the national development policy/national energy policies
 | * Project Document
* National development strategy, energy policies,
 | * Desk review of documents
* Interviews of the project stakeholders
 |
| * Does the project have a Theory of Change relevant for addressing the development challenge(s) identified?
 | * The Theory of Change clearly indicates how project interventions and projected results will contribute to the reduction of the three major barriers to low carbon development (Policy, institutional/ technical capacity and financial)
 | * Project Document
 | * Desk review of documents
* Stakeholder Interviews
 |
| * Does the project and its components address the structural challenges in the residential sector?
 | * The Theory of Change clearly identifies beneficiary groups and defines how their capabilities will be enhanced by the project
 | * Project Document
 | * Review and analysis of the Theory of Change
* Stakeholder Interviews
 |
| * Is the project’s results framework relevant to the development challenges have the planned results been achieved?
 | * The project indicators are SMART
* Indicator baselines are clearly defined
* The results framework is comprehensive and demonstrates systematic links to the ToC
 | * Project Document
* Inception Report
 | * Desk review of documents
* Stakeholder Interviews
 |
| * Have the relevant stakeholders been adequately identified and have their views, needs and rights been considered during design and implementation?
 | * The stakeholder mapping and associated engagement plan includes all relevant stakeholders and appropriate modalities for engagement.
* Planning and implementation have been participatory and inclusive
 | * Project Document
* Inception report
* Stakeholder mapping/engagement plan and reporting
 | * Desk review of documents
* Stakeholder Interviews
 |
| * Did the project design adequately identify and plan appropriate mitigation actions for the potential social and environmental risks posed by its interventions?
 | * The SES checklist was completed appropriately and all reasonable risks were identified with appropriate impact and probability ratings and risk mitigation measures specified
 | * Project Document
* SES Annex
 | * Desk review of documents
* Stakeholder Interviews
 |
| Did the project design promote participation of female-headed households, women with disabilities, and elderly women?  | * Elements of project design responsive to gender equality conventions, and national gender policies and strategies
 | * Project Document
* Gender analysis at inception
 | * Desk review of documents
* Stakeholder Interviews
 |
| Coherence: |
| * Are the project components reinforcing each other’s efforts?
 | * Consistency of the project components with the Project Objective
 | * Project Document
 | * Analysis of the PRF
 |
| * Were there complementarities and synergies with other interventions and investments in the area addressed by the project?
 | * Links to other interventions and investments
 | * Documentation of other similar interventions
 | * Desk review of documents
* Stakeholder Interviews
 |
| Effectiveness:  |
| * Is the project meeting its main targets set in the Project Result Framework?
 | * The project has met or exceeded the output end-of-project targets
 | * Annual Progress Reports
* Project monitoring reports
 | * Desk review of documents
* Stakeholder Interviews
 |
| * Have lessons learned been captured and integrated into project planning and implementation?
 | * Lessons learned captured periodically and/or at project end
 | * Annual Progress Reports
* Project monitoring reports
 | * Desk review of documents
* Interviews with project staff, stakeholders, beneficiaries
 |
| * Has the M&E plan been well-formulated, and has it served as an effective tool to support the project implementation?
 | * M&E plan has an adequate budget and was adequately funded
* Logical framework used during implementation as a management and M&E tool
* Compliance with the financial and narrative reporting requirements (timeliness and quality)
 | * Project Document
* Project monitoring reports
* Annual Workplans
* Site visit reports
 | * Desk review of documents
* Interviews with project staff, stakeholders, beneficiaries
 |
| * How effective were the partnership arrangements under the project and to what extend did they contribute to achievements of the project results?
 | * The Project Board with representatives from key project stakeholders
* A partnership framework in place for coordination of parallel initiatives, involvement of key partners and identification of complementarities
 | * Project Board Minutes
* Annual Progress Reports
 | * Desk review of documents
* Interviews with project staff, stakeholders and beneficiaries
 |
| * How well were risks, assumptions and impact drivers managed?
 | * A clearly defined risk identification, categorization and mitigation strategy (updated risk log)
 | * UNDP Risk Log
* M&E Reports
 | * Desk review of documents
* Interviews with project staff, stakeholders, beneficiaries
 |
| * Did the gender-responsive activities achieve the expected results and to what extent they contributed to overall project achievements?
 | * Women were meaningfully engaged or involved with the project (design, implementation)
* Indicators and targets capturing gender equality dimensions
 | * Project Document
* Project monitoring reports
 | * Desk review of documents
* Interviews with project staff, stakeholders, beneficiaries
 |
| Efficiency |
| * Did the project adjust dynamically to reflect changing national priorities/external Evaluations during implementation to ensure it remained relevant?
 | * Demonstrated adaptive management with changes integrated into project planning and implementation through adjustments to annual work plans, budgets and activities
* Substantive changes (output-level) approved by the Project Board and donor, as required
 | * Annual Work Plans
* Annual Progress Reports
* Combined Delivery Reports
* Project Board meeting minutes
 | * Desk review of documents
* Interviews with project staff, stakeholders, beneficiaries
 |
| * Was the process of achieving results efficient? Did the actual results justify the costs incurred? Were the resources effectively utilized?
 | * Extent to which funds were utilized effectively and contributed to achievement of project results
 | * Annual Workplans
* Annual Progress Reports
* Combined Delivery Reports
 | * Desk review of documents
* Interviews with project staff
* Analysis of project allocations and expenditures
 |
| * What were the strengths and weaknesses of the implementation modality?
 | * The project implementation followed the division of responsibilities between the project implementing partners in an efficient manner
 | * Annual Progress Reports
* Combined Delivery Reports
 | * Desk review of documents
* Interviews with project staff, stakeholders, beneficiaries
 |
| * To what extent co-financing contributed to achievement of results?
 | * Co-financing was realized and tracked continuously throughout the project lifecycle
* Co-financiers were actively engaged throughout project implementation
 | * Annual Progress Reports
* Combined Delivery Reports
 | * Desk review of documents
* Interviews with project staff, stakeholders, other donors and beneficiaries
 |
| * Was the level of implementation support provided by UNDP adequate and in keeping with the implementation modality and any related agreements?
 | * Technical support to the Executing Agency and project team were timely and of acceptable quality.
* Management inputs and processes, including budgeting and procurement, were adequate
 | * UNDP project support documents
* Annual Progress Reports
* Combined Delivery Reports
 | * Desk review of documents
* Interviews with project staff, UNDP personnel
 |
| Sustainability |
| * Are there political, social or financial risks that may jeopardize the sustainability of project outcomes?
 | * Exit strategy with explicit interventions to ensure sustainability of relevant activities
 | * Program Framework Document
* Risk Log
 | * Desk review of documents
* Interviews with project staff, stakeholders, other donors and beneficiaries
 |
| * What are the factors that will require attention in order to improve prospects of sustainability and potential for replication?
 | * The exit strategy includes explicit interventions to ensure sustainability of relevant activities and identifies relevant factors requiring attention in the future
 | * Risk Log
* Contextual information
 | * Desk review of documents
* Interviews with project staff, stakeholders, other donors and beneficiaries
 |
| * Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits?
 | * The exit strategy identifies relevant socio-political risks and includes explicit interventions to mitigate same
 | * Risk Log
* Contextual information
 | * Desk review of documents
* Interviews with project staff, stakeholders, other donors and beneficiaries
 |
| * Have key stakeholders identified their interest in project benefits beyond project-end and accepted responsibility for ensuring that project benefits continue to flow?
 | * Key stakeholders are assigned specific, agreed roles and responsibilities outlined in the exit strategy
 | * Risk Log
* Contextual information
 | * Desk review of documents
* Interviews with project staff, stakeholders, other donors and beneficiaries
 |
| * Are there ongoing activities that may pose an environmental threat to the sustainability of project outcomes?
 | * The exit strategy identifies relevant environmental risks and includes explicit interventions to mitigate same
 | * Risk Log
* Contextual information
 | * Desk review of documents
* Interviews with project staff, stakeholders, other donors and beneficiaries
 |
| Progress to Impact: |
| * What are signals of positive change that can be attributed to the project results?
* Are there specific aspects that may be considered to ensure the intervention will contribute to system change?
 | * The project has contributed directly to improved ecological conditions, including through reduced GHG emissions for energy generation
 | * Annual Progress Reports
* Contextual information
 | * Desk review of documents and contextual information
* Qualitative data analysis (i.e. triangulation, validations, interpretation, etc.)
 |
| * Did the gender-responsive activities facilitate positive impacts?
 | * Equal participation of gender in decision-making processes, improved mechanisms to capture women's perspectives
 | * Annual Progress Reports
* Contextual information
 | * Desk review of documents and contextual information
* Qualitative data analysis (i.e. triangulation, validations, interpretation, etc.)
 |
| * To what extent have marginalized or underserved communities been targeted and/or impacted by the project?
 | * Evidence of engagement of marginalized communities or groups in the project
 | * Annual Progress Reports
* Contextual information
 | * Desk review of documents and contextual information
* Qualitative data analysis (i.e. triangulation, validations, interpretation, etc.)
 |

# Annex 3: Itinerary of the Evaluation Mission

|  |  |  |
| --- | --- | --- |
| **Date/Time** | **Institution/Place**  | **Activity** |
| **Sunday 14 April** | Arrival at Sarajevo |
| **Monday 15 April** |  |
| 10:00 | UNDP CO Sarajevo | Meeting with the project team |
| 13:00 | Meeting with the Project Officer from the Embassy of Sweden |
| 14:00 | Meeting with the Plus Minus consultant |
| 15:00 | Meeting with the nLogic consultant |
| 16:00 | Meeting with Enova consultants |
| **Tuesday 16 April** | Travel to Banja Luka |
| 10:00 | Municipality of Visoko | Meeting with representative |
| 12:30 | Vitez Police Station | Meeting with Chjef of the station |
| 14:30 | Municipality of Novi Travnik | Meeting with representative |
| 16:00 | Ministry of Education of SBK  | Meeting with Minister |
| 18:30 | Arrival at Banja Luka |
| **Wednesday 17 April** | Travel to Sarajevo |
| 10:00 | City of Banja Luka | Meeting with representatives |
| 11:30 | City of Laktaši | Meeting with representative |
| 14:00 | City of Doboj | Meeting with representatives |
| **Thursday 18 April** |  |
| 9:00 | UNDP CO Sarajevo | Meeting with Head of UNDP Environment and Energy Sector |
| 10:30 | Hotel Holliday  | Meeting with representative of Municipality Zvornik |
| 11:15 | Meeting with representative of City of Cazin |
| 12:30 | Participation at the pPoject Final Conference |
| 15:30 | Meeting with representative of Municipality Sekovici |
| 16:00 | Meeting with representative of Municipality of Maglaj |
| **Friday 19 April** |  |
| 10:00 | Conducted on-line on 22 April | Fund for Environment and Energy Efficiency of Republika Srpska |
| 12:30 | MOFTER | Meeting with representative |
| 14:00 | Cancelled  | Fund for Environmental Protection of FBiH |

# Annex 4: List of people interviewed

| **Institution** | **Name** | **Position** |
| --- | --- | --- |
| Decarbonisation Project Team | Siniša Rodić | Project Manager |
| Miroslav Radinković | Project Officer |
| Andrea Borovac  | Project Analyst |
| Nataša Tanasijević | Project Assistant |
| UNDP CO | Raduška Cupać | Sector Leader, Energy and Environment |
| Amra Zorlak | Monitoring & Evaluation Analsyst |
| Embassy of Sweden/Sida | Aiša Bijedić | Project Officer, Environment and Climate |
| Ministry of Foreign Trade and Economic Relations | Tamara Bajkuša | Expert Advisor for Electric Power System Development |
| Fund for Environment and Energy Efficiency of Repubika Srpska | Srđan Todorović | Director (on-line modality) |
| Fund for Environmental Protection of Federation of Bosnia and Herzegovina | Jasmina Kafedžić | Head, Energy Efficiency Department (cancelled) |
| Municipality of Visoko | Alma Bašić | Head, Environment, Infrastructure, Communal Utilities and Inspection |
| Vitez Police Station | Ratko Bošnjak | Commander of the Station |
| Municipality of Novi Travnik | Višnja Čolić | Expert advisor for public procurement, legal affairs and trade registration |
| Ministry of Education of Central Bosnia Canton | Bojan Domić | Minister |
| City of Banja Luka | Boriša Mandić | Expert Advisor on Communal Affairs |
| Nevena Šljivić | Expert Advisor on Public Utilities |
| Sanela Kecman | Head, Spatial Planning Department |
| City of Laktaši | Strahilo Moconja | Senior Expert Associate for Local Development Management and European Integration |
| City of Doboj | Alen Petković | Professional Associate, Department of Strategic Planning, European Integration and Local Economic Development |
| Zdravko Đuričić | Senior Expert, Eenrgy Efficiency |
| Municipality of Zvornik | Aleksandar Jevtić | Senior Expert, Section for Development Management and International Cooperation |
| City of Cazin | Selma Rošić | Head of Development  |
| Municipality of Sekovići | Mijomir Šivčić | Head, Department for General Administration |
| Municipality of Maglaj | Nermin Bešlagić | Expert Advisor for Local Development and Entrepreneurship |
| Plus Minus Engineering & Consulting | Elvis Hadžikadić | Director |
| nLogic Advisory | Nihad Harbaš | CEO/Climate & Energy Expert |
| Enova Consultants and Engineers | Fethi Silajdžić | Director |
| Marin Petrović | Expert on Energy Efficiency |

# Annex 5: Indicative list of interview questions

Relevance: the project and its strategy

* To what extent did the Project respond to the national development priorities and needs of the stakeholders and beneficiaries?
* What do you think about the design of the project?
* What is the comparative advantage of UNDP for implementation of this project?
* Were there enough financial resources in the project budget?
* Did the project incorporate the perspectives of vulnerable groups? What could be improved in this regard?

Coherence

* Which were the main partnerships and/or networks established for implementation of the project?
* What do you think about the project's interaction with stakeholder organizations and local experts?
* How has the actual level of stakeholder engagement influenced achievement of the project results and national ownership of the project?
* Were there any efforts made for synergies and complementarities with other initiatives to avoid duplication of efforts?

Effectiveness

* What have been the main project achievements and why do you think so?
* What were the main challenges for achieving the planned results? Were alternative approaches considered during implementation?
* Are there any changes in the energy sector system issues that can be attributed to the project achievements?
* How would you rate the work planning for the project? What should have been done differently?
* To what extent were the project-level monitoring, reporting, and communications supporting the project’s implementation?
* In what areas can the project be replicated and/or upscaled?
* Has the project led to increased local capacities? What could have been done differently?
* Has the COVID-19 pandemic affected project implementation and how?
* Was the project communication regular and effective for achievement of adequate visibility?

Efficiency

* Were there any changes in the project management arrangements compared with the Project Document?
* Did UNDP properly discharge its role as the Implementing Agency?
* Were any efforts made for synergies and complementarities with other initiatives to avoid duplication and increase project efficiency?
* Which were the main cases of adaptive management?
* Were there external factors influencing the project implementation?
* Was the composition of the Project Board and the staffing of the project team adequate?
* Has there been any co-financing to the project and how was the co-financing monitored?

Sustainability

* Will the project achievements be sustained beyond the project completion? Why do you think so?
* What is the likelihood that financial and economic resources will be available after the end of current assistance to sustain project results?
* Are there any social or political risks that could jeopardize the sustainability of the project results?
* What is the risk that stakeholder ownership will not be sufficient to sustain the results / benefits of the project?
* Is there sufficient public / stakeholder awareness to support sustainability of the project?
* Were successful aspects of the project communicated to the appropriate parties?

Other

* With the benefit of hindsight, what could have been done differently?
* Do you have any other comments on the project that were not covered in the interview?

#

# Annex 6: Project Results Framework

|  |
| --- |
| Intended Outcome as stated in the UNDAF/Country [or Global/Regional] Programme Results and Resource Framework: Outcome1.By 2025, people benefit from resilient, inclusive and sustainable growth ensured by the convergence of economic development, and management of environment and cultural resources. Indicator 1.a. Number of policy, financial or other stimulus measures endorsed to promote sustainable, green economy and low-carbon growth and living.Baseline (2019): 17Target (2025): 25 |
| Outcome indicators as stated in the Country Programme [or Global/Regional] Results and Resources Framework, including baseline and targets:Output 1.3. Smart growth principles accelerate sustainable, resilient and inclusive economic development, contribute to decent work, and leverage development financing by the private sector.Indicator 1.3c: Number of innovative and scalable solutions developed and applied for circular and green economy.Baseline (2019): 1Target (2025): 10 |
| ***Applicable Output(s) from the UNDP Strategic Plan:*** Advance poverty eradication in all its forms and dimensions; Outcome 2: Accelerate structural transformations for sustainable development |
| **Project title and Atlas Project Number:** Decarbonisation in Residential Sector of Bosnia and Herzegovina, Atlas Project Number 00124749 |

| **EXPECTED OUTPUT** | **OUTPUT INDICATORS** | **DATA SOURCE** | **BASELINE** | **TARGETS (frequency of data collection)** | **DATA COLLECTION METHODS & RISKS** |
| --- | --- | --- | --- | --- | --- |
| **Value** | **Year** | **Year2021** | **Year2022** | **Year2023** | **FINAL** |
| Output  Addressing non-financial barriers to low-carbon investment in residential buildings in Bosnia and Herzegovina | **1.1** Number of gender-responsive energy efficiency studies of residential sector in municipalities/cities | Project reports and relevant technical/tender documentation | 0 | 2020 | 12 | 12 | 12 | 36 | Project reportsRelevant technical documentation |
| **1.2** Number of households analysed by energy efficiency studies | Project reports and relevant technical/tender documentation | 0 | 2020 | 4,440 | 4,440 | 4,440 | 13,320 | Project reportsRelevant technical documentation |
| **1.3** Number of cities/municipalities with developed gender sensitive EE financial mechanism on residential sector | Project reports and relevant technical/tender documentation | 0 | 2020 | 12 | 12 | 12 | 36 | Project reports |
| **1.4** Number of government representatives (gender disaggregated) with increased capacities in decarbonization of residential sector in Bosnia and Herzegovina | Project reports | 0 | 2020 | 36 | 36 | 36 | 108 | Project reports |
| **1.5** Public awareness campaign outreach (out of which at least 40% women) | Project reports and relevant technical/tender documentation | 0 | 2020 | 10,000 | 15,000 | 15,000 | 40,000 | Communication reports including progress reports submitted by contractor |
| **1.6** Number of educational sessions targeting residents in municipalities/cities | Project reports and relevant technical/tender documentation | 0 | 2020 | 0 | 0 | 36 | 36 | Communication reports including progress reports submitted by contractor |
| **1.7** Number of vulnerable categories, including woman, covered by energy efficiency improvement studies | Project reports and relevant technical documentation | 0 | 2020 | 500 | 500 | 500 | 1,500 | Project reports |
| **1.8.** Gender analysis for the programme made and gender action plan developed | Project reports and relevant documentation | 0 | 2020 | 0 | 0 | 1 | 1 | Project reports and relevant documentation |

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# Annex 7: List of documents consulted

1. Decarbonization of Residential Sector in BiH, Signed Project Document
2. Decarbonization of Residential Sector in BiH, Revised Project Document
3. Decarbonization of Residential Sector in BiH, Project Inception Report
4. Annual Progress Report for 2021
5. Annual Progress Report for 2022
6. Overview of Project Indicators for 2023 and Implementation Plan for 2024
7. Decarbonization of Residential Sector in BiH, Gender Analysis Report
8. Minutes of the Annual UNDP-SIDA Review Meeting for 2022
9. Minutes of the Annual UNDP-SIDA Review Meeting for 2023
10. Study on Energy Efficiency of Residential Buildings in the City of Visoko
11. Study on Development of Financial Mechanisms for the Implementation of Energy Efficiency Improvement Measures in the Residential Sector of the City of Visoko
12. Model of Co-Financing Energy Efficiency Improvement Measures in the Residential Sector of the City of Visoko: Decision and Operations Manual
13. UNDP Revised Evaluation Policy, UNDP, 2019
14. UNDP Evaluation Guidelines, Independent Evaluation Office of UNDP, 2021
15. Glossary of Key Terms in Evaluation and Results Based Management, OECD, 2010
16. Ethical Guidelines for Evaluations, UNEG, 2020

# Annex 8: Evaluation Consultant Agreement Form

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

Evaluators:

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 imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the Evaluation.

**Name of Consultant:** Dalibor Kysela

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

Signed at Vienna 22 March 2024

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Audit Trail – annexed separately

1. UNDP Evaluation Guidelines, Independent Evaluation Office of UNDP, 2021 [↑](#footnote-ref-2)
2. UNEG Ethical Guidelines for Evaluation, 2020 [↑](#footnote-ref-3)
3. World Bank Open Data [↑](#footnote-ref-4)
4. Third Biennial Update Report on Greenhouse Gas Emissions in Bosnia and Herzegovina, 2022 [↑](#footnote-ref-5)
5. Energy Balances of non-OECD Countries, International Energy Agency, 2017 [↑](#footnote-ref-6)
6. Energy Statistics, Electricity and Heat, BiH Agency for Statistics, 2019 [↑](#footnote-ref-7)
7. Nationally Determined Contribution of Bosnia and Herzegovina (NDC) for the Period 2020-2030 [↑](#footnote-ref-8)
8. 2020-2030 Climate Change Adaptation and Low-Emission Development Strategy, UNDP and BiH Government, 2020 [↑](#footnote-ref-9)
9. De‐Risking Renewable Energy Investment: A Framework to Support Policymakers in Selecting Public Instruments to Promote Renewable Energy Investment in Developing Countries, UNDP, (2013), [↑](#footnote-ref-10)
10. SMART stands for Specific, Measurable, Achievable, Relevant, Time-bound. [↑](#footnote-ref-11)
11. SBAA of 7 December 1995 [↑](#footnote-ref-12)
12. Nationally Determined Contribution of Bosnia and Herzegovina (NDC) for the Period 2020-2030, MOFTER, April 2021 [↑](#footnote-ref-13)
13. Third Biennial Update Report on Greenhouse Gas Emissions of Bosnia and Herzegovina to UNFCCC, October 2022 [↑](#footnote-ref-14)
14. Recommendations 2/2023 by the Energy Community Secretariat on the draft integrated NECP of Bosnia and Herzegovina [↑](#footnote-ref-15)
15. Integration of the respective building renovation strategies of the FBiH, RS and Brcko District [↑](#footnote-ref-16)
16. Data presented by Department for Secondary Energy and Projects of MOFTER, 2023 Energy Summit [↑](#footnote-ref-17)
17. Compiled from Transforming our World: the 2030 Agenda for Sustainable Development (UN, 2015), Indicators and a Monitoring Framework for the Sustainable Development Goals, Sustainable Development Solutions Network (SDSN) [↑](#footnote-ref-18)
18. Additional mechanisms were developed in 6 municipalities with savings achieved under the project [↑](#footnote-ref-19)
19. Self-reported data by the project team [↑](#footnote-ref-20)
20. The original target 180 was reduced to 36 as per the Annual Project Review in April 2023 [↑](#footnote-ref-21)
21. The Gender and Climate Coalition in BiH (globally known as Feminist Action for Climate Justice) was launched by UNDP in BiH, in partnership with UN Women and Gender Equality Agency of the Ministry of Human Rights and Refugees in 2021. [↑](#footnote-ref-22)
22. Project Document, Section III. Results and Partnerships, p. 22 [↑](#footnote-ref-23)
23. ESCO stands for Energy Service Company [↑](#footnote-ref-24)