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# EVALUATION REPORT

**Using biomass for development of rural areas  
in Bosnia and Herzegovina  
BA-2016-006-FO-23030**

November 2021

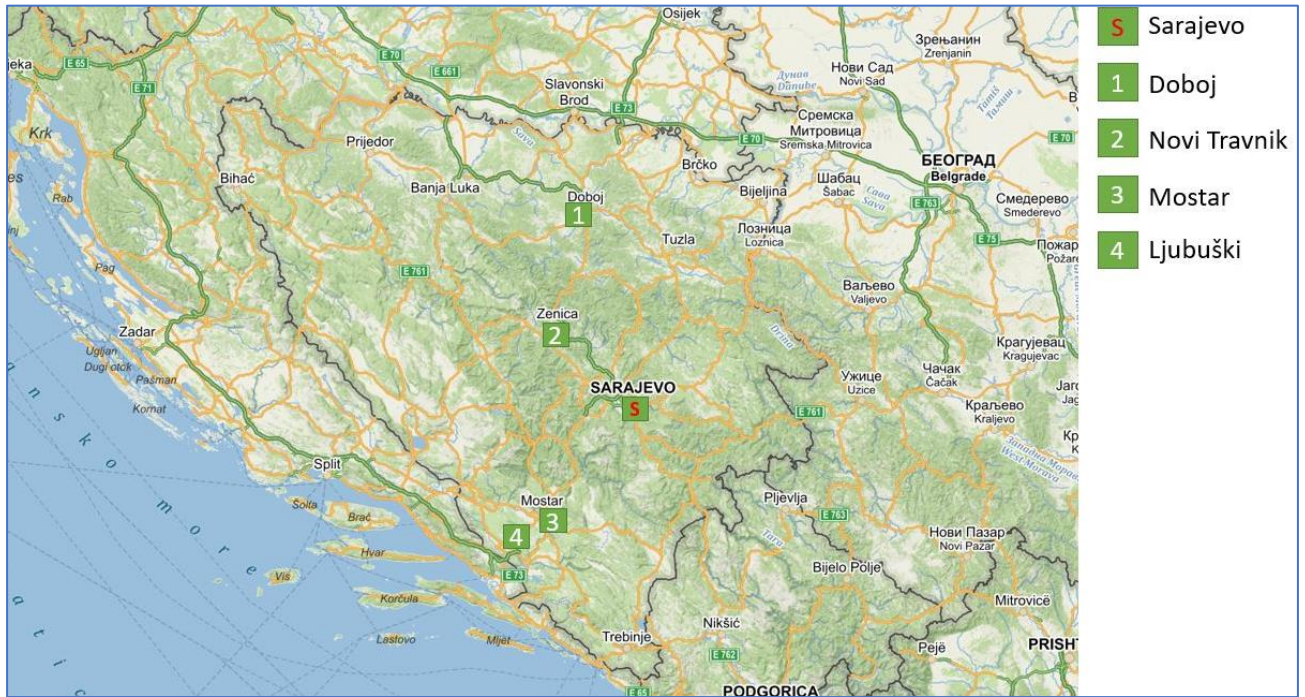


## Identification form

<b>Country of implementation:</b> Bosnia and Herzegovina	<b>Project locations:</b> Federation of Bosnia and Herzegovina: Sarajevo, Novi Travnik, Mostar, Ljubuški Republika Srpska: Banja Luka, Dobož
<b>Title of evaluated intervention in Czech and English:</b> Využití biomasy pro rozvoj rurálních oblastí Bosny a Hercegoviny Using biomass for development of rural areas in Bosnia and Herzegovina	<b>Specialization:</b> Economic growth (energy generation and supply)
<b>Coordinator:</b> Czech Development Agency	<b>Implementers:</b> AQUA-GAS, s.r.o. ; BFS Industry, s.r.o.; Ircon, s.r.o. Civil Engineering Institute „IG“ LLC Banja Luka UNDP Bosnia and Herzegovina
<b>Project Start Date:</b> October 2016	<b>Project End Date:</b> November 2021
<b>Total contribution utilised from Czech development cooperation funds (CZK)</b> 49,884,104 <i>(preliminary, project has not yet been completed)</i>	<b>Total funds utilised, including co-financing (CZK)</b> 63,040,053 <i>(preliminary, project has not yet been completed)</i>
<b>Other donors engaged in the project:</b> UNDP, GIZ, USAID	
<b>Authors of the evaluation report:</b> Barbora Latečková, Contract Manager; Marie Körner, Team Leader; Jan Štejf, Expert, renewable energy sources; Monika Přibyllová, Evaluator; Jana Mazancová, Junior Evaluator; Lejla Šuman, Local Expert	
<b>Period of the evaluation:</b> 2016 - 2021	
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## Locations of buildings with heating systems modernized under the CZDA Project



## EXECUTIVE SUMMARY

### Purpose of the evaluation

**The main purpose** is to provide concrete and feasible recommendations based on objective and consistent findings and conclusions to be used for verifying sustainability and efficiency of spent funds, including relevance of the implementing procedure (public contract) and of the thematic focus (renewable energy sources) on the intervention in Bosnia and Herzegovina (BiH) (2016 - 2021). Conclusions and recommendations from the independent evaluation will further inform the decision on the optimal renewable energy source at similar cases in energy sector in BiH or elsewhere. The aim of the evaluation is also to verify sustainability, potential and relevance of use of biomass in BiH in the long run. The evaluation examines to what extent this project really contributed to increasing energy production from renewable natural sources and to building related infrastructure to make this energy publicly available.

**Main focus of the evaluation** is on 4 “fuel switch” demonstration projects funded by Czech Development Agency (CZDA) under output 1.3 of the project *Using biomass for development of rural areas in Bosnia and Herzegovina* implemented by the UNDP. The evaluation used the **OECD-DAC evaluation criteria** with the emphasis on impact, sustainability and replicability potential, and assessed **visibility** and **application of cross-cutting themes** of the Czech Development Cooperation.

### The interventions and the context of evaluation

The project *Using biomass for development of rural areas in Bosnia and Herzegovina* was focused on improving living standard of local population by long-term reduction of CO<sub>2</sub> emissions across BiH by increasing the share of renewable energy in the BiH energy mix. This outcome is directly linked to Sustainable Development Goal (SDG) 7 (Affordable and clean energy), namely SDG 7.2: Increasing the share of renewable energy in global energy mix by the year 2030. The project included three outputs/components. Two “soft” components covered developed policy for sustainable biomass utilization in BiH reflected to the legislation and use in practice (output 1.1) and increasing the quality and availability of wood biomass for heating purposes by adopting and use of improved methods of biomass processing (output 1.2). Under the output 1.3 (*Number of implemented infrastructural RES projects increased due to the new business models and financial schemes for investment in biomass*) the CZDA tendered and funded the modernization of heating systems in four retrofitted public buildings: Kindergartens in Ljubuski and Novi Travnik, the Hospital of the St. Luke the Apostle in Doboje and the Center for Old and Infirm Persons in Mostar. The four projects were implemented by the winning companies, under the administration of the CZDA. Supervision was implemented by CZDA with their sectoral experts. The transition from light and heavy fuel oils to wood pellets should lead to financial savings and a reduction in CO<sub>2</sub> emissions. Remote monitoring of operation and regulation of the system will enable heating of buildings to the required temperature.

### Identification of the evaluation team

The evaluation was implemented by the evaluation team of **4G eval s.r.o.**, an independent consulting company based in Prague, specialized in providing a comprehensive range of services within the fields of monitoring & evaluation, social development, environmental management and water and sanitation. Evaluations implemented by 4G eval are compliant with the IDEAS Code of Ethics, the UNEG Ethical Guidelines for Evaluation, with the Code of Ethics for Evaluators adopted by the Czech Evaluation Society (CES), and follow the Formal Standards for Implementing Evaluations of CES. 4G eval operates worldwide for a variety of clients including the Czech Ministry of Foreign Affairs, EBRD, UNDP, UNICEF, the World Bank, Czech and International NGOs and the private sector.

## Most important findings and conclusions in relation to the evaluation brief

Evaluation criteria		Rate of fulfilment
Relevance		Quite high
Coherence		Quite high
Efficiency		Quite high
Effectiveness		Quite low
Likelihood of impacts		High
Sustainability and replicability		Quite low
Cross-cutting principles	Good governance	Quite low
	Environment and climate	High
	Human rights and gender	Quite low
Visibility of CZ DC		High

### Relevance

The four demonstration fuel switch projects (part of Output 1.3 of the project) Koherence in the Third-Party Cost Sharing Agreement between the CZDA and UNDP signed in 2016. Their demonstration potential is not reflected in the applied selection criteria. Generic business plans were developed, but the financing mechanism (in the form of revolving fund) has not been accepted by the EPEEF RS and EPF FBiH. While the four fuel switch projects could still fulfil their role as demonstrations of potentially profitable investments, the specific business models were not developed and there was no budgetary allocation for their promotion.

Their link to the remaining components and potential contribution to the project Purpose were missed in the tender documentation. The main control document were the Technical specifications of the respective contracts together with other relevant annexes of respective contracts. While they were not relevant as demonstrations in the context of the project, the 3 functional fuel switch projects brought environmental, financial and operational benefits appreciated by the staff of the public buildings as well as by the “owners” of these budget organizations. The Czech technology installed in Mostar stopped working shortly after the beginning of the previous heating season. Still, Mostar as well as Dobož, Ljubuski and Novi Travnik would recommend fuel switches. Dobož, Novi Travnik and relevant institutions also the use of the installed technologies. While the fuel switch projects have eventually not been conceptualized as demonstrations, the three functioning technologies are highly relevant for the direct beneficiaries.

### Coherence

The project is in line with the priorities of the Czech Development Cooperation and the relevant BiH plans and strategies. Internal coherence is weak. There is no synergy between the part of output 1.3 (CZDA demonstration fuel switch projects) and the soft components of the project. While there are no overlaps, there is also no complementarity or additionality with other CZDA projects. (The CZDA advised that specific measures to improve internal coherence (working group and annual stakeholder meetings) are foreseen for future projects involving multiple implementing partners.)

External coherence is also weak. There is no synergy or complementarity with projects funded by other donors or institutions with the exception of the UNDP project under which the four buildings were retrofitted and the EMIS used for their selection.

The lack of response from the implementer of the Centre for Old and Infirm persons in Mostar for removing defects on the system affected the implementation; the heating system in Mostar has been out of order since the first part of the last heating season. In spite of that, there is an overall satisfaction with coordination by the CZDA. The initial differences between the CZDA and the implementer of the Dobož hospital project were eventually settled with heavy fines and the project successfully completed. Cooperation with the UNDP in BiH has been valued by both, the CZDA, the Czech Embassy and the UNDP and is likely to continue.

The Czech expertise in the RES sector is appreciated at the central as well as at the local levels. This is partially due to the current project and involvement of Czech experts in the soft components, but also due to successfully implemented previous projects and contacts between institutions and experts of the two countries. The demand for Czech expertise is there, potential opportunities have been identified.

## Efficiency

Calculations indicate that the Czech technology installed in Mostar is least cost-effective. Equally important criteria of quality and non-failure operation apply for the technologies installed in the remaining 3 fuel switch projects. The system in Mostar is not operational. In October 2021, after learning of the problem, the CZDA visited the project together with contracted expert.

The capacity of the three working systems is fully used. While the investment in pellets technology is higher than in traditional heating systems, operational cost is much lower (savings on fuel and operators' time) and could be further decreased by larger storage facilities allowing to buy pellets at lower prices before the heating season. Factors listed by different stakeholders as supporting or hindering the project implementation indicate the importance of cooperation with the UNDP and good working relationships with local partners evidenced in their contributions. They also indicate the advantage of local implementers and suppliers, accessible if there are problems with the technology. When and how the situation in Mostar will be resolved and the system repaired is not clear. The CZDA is now assessing the situation.

Preliminary calculations indicate that some 80% or 49,884,104 CZK of the total project cost was funded from the Czech development cooperation funds, about double the originally estimated amount.

## Effectiveness

The project did not achieve the planned outcome, mainly due to unrealistic expectations at the beginning of the project. During implementation, the plans and target values have not been adjusted. Specification of long-term outcomes has been documented with a few gaps, such as consequences of delays in implementation and non-adoption of the financing schemes. Technical specifications have been fulfilled in all 4 fuel switch projects. Implementation in Dobož experienced major delays. The CZDA attributes them to inadequate choice of sub-contractor and the size of the implementation team. The evaluators see the main reason in the unrealistic schedule for this large and complex project. While the container systems in Ljubuski, Novi Travnik and Mostar serve one building, the system in Dobož encompasses some 12 buildings and the installation of 7 distribution stations. Information on problems and proposed solutions from Dobož has however not been systematically reported. Some delays occurred also in Mostar. Information on the final cost of the projects is available only partially as the project is still not concluded.

## Likelihood of impacts

Contribution of the project to its objective was minimal, partly due to external factors outside the control of implementers. The assessment focused on impacts of the 4 fuel switch projects.

There is evidence of positive environmental impact (including operational health and safety) in the hospital and the two kindergartens. Better air quality in and around the fuel switched buildings, improved heat comfort, easier operation and improved safety (no leakages of LFO) benefits the users of the buildings (patients in the hospital, children in the kindergartens, technical service and other staff, pupils and staff in the primary music school in Novi Travnik). Provided the savings on fuel will be used for improvements in the communities, financial impacts can also be expected. The environmental improvements have also social impacts. Reportedly children get less sick and more children attend the kindergartens. This brings time saving for the parents. No negative impacts have been identified.

## Sustainability and replicability

Exit strategy including risks to sustainability/their mitigation has been covered in the project documents only partially with main focus on covering the cost of fuel and ensuring training and retention of operators. As discovered during the field visit, the system in Mostar has been out of order since shortly after the official handover in January 2021. This information is not available in the project reports. Assessment of economic or environmental sustainability and benefits of the systems that were meant to demonstrate the advantages of the approach of combining retrofitting and fuel switch and lead to replications are not included in the project documentation.

Assessments indicate that (with the exception of Mostar which can be assessed only after operating for 1-2 heating seasons after the repairs), the fuel switch systems could work without major repairs for 10 years or longer, provided they are properly operated and maintained. Replicability is possible only if new systems are funded from grants. Replicability on commercial basis could not be assessed due to the absence of business model including financial analysis.

## Cross-cutting principles

**Evaluation of individual cross-cutting themes** according to tools of the certified methodology of evaluation of cross-cutting principles CR DC: Principle of Environment – The project has contributed to high improvement of RES use and air quality in the surrounding of the four objects. Principle of Good Governance – The project has contributed to some extent to the engagement and participation of stakeholders and accountability and transparency of project partners and other actors. Principle of Gender Equality – The project has contributed to some extent to equal opportunity in the decision-making process for women and men in the recipient organisations (four buildings) and in using the project outcomes.

## Visibility

Visibility has been ensured by implementers including the UNDP and implementers of the 4 fuel switch demonstration projects following Methodical instruction of the Czech Development Agency to the external presentation of the Czech Republic's foreign development cooperation. Means of communication include printed materials, billboards, information shared on the web, promotional film.

## Important recommendations

Recommendation	Level of seriousness <sup>a)</sup>	Primary addressee	Justification/recommendation for implementation
<b>Project and programme recommendation</b>			
Rehabilitating the heating system in Mostar	1	AQUA GAS	Assures the system's operation (system is under guarantee)
External technical monitoring shall be carried out during the trial period of operation and before the last payment to the implementer	1	CZDA	Assures the system's operation (CZDA advised that this is planned for new projects in the energy sector)
Conclude with the implementer an agreement on post-guarantee services where the recipients are satisfied with the performance	2	Hospital Dobož, Municipalities NT, Ljubuski	Increases the long-term reliability of the heating plant operation
Utilize the demonstration potential of the three functioning fuel switch projects	2	Embassy	Contributes to replication of fuel switches
Include a backup generator to supply electricity for the electronic regulation unit for future projects in localities with unreliable power supply to avoid switches to LFOs	2	CZDA	Increases operational quality of the system
Reconsider the amount IRCON has to pay on fines	2	CZDA	Increases motivation of future bidders
Continued support to the RES sector in BiH	1	MFA, CZDA	Contributes to air quality in many areas of BiH and to decarbonization of heating
<b>Procedural and systemic recommendations</b>			
Implementers of evaluations are provided with complete relevant documentation	1	CZDA	Increases quality of evaluation
Aim for internal coherence of interventions	1	CZDA	Increases synergies within the project and with other donors, increased impacts of fuel/switch projects
Aim for external coherence	1	MFA, CZDA	Continue with complementing UNDP project
Introducing retention fee, clarification of responsibilities, obligations and sanctions during retention period of implemented projects	2	CZDA	Increases quality of operation of the system, contributes to impacts of the projects
Clearly defined coordination responsibilities and modalities of communication particularly for multi-donor, multi-implementers projects	1	CZDA	Coordinated implementation, monitoring and planning improves effectiveness

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# 1 INTRODUCTION

## 1.1 Context

This evaluation report was prepared on the basis of the tender documentation for independent evaluation of the multi-annual project of official development cooperation (ODA) of the Czech Republic under the responsibility of the Czech Development Agency (CZDA) entitled *Using biomass for development of rural areas in Bosnia and Herzegovina* (further *the project*) in 2016 – 2021. This report comes out from the term of references of MFA, input report, interviews with key actors, available project documentation, findings from evaluation mission and relevant strategic documents and other secondary sources.

The project was focused on increasing the energy security of rural areas by long-term reduction of CO<sub>2</sub> emissions across Bosnia and Herzegovina (BiH) by increasing the share of renewable energy in the BiH energy mix. The project included three outputs/components. Two “soft” components covered developed policy for sustainable biomass utilization in BiH reflected to the legislation and use in practice (output 1.1) and increasing the quality and availability of wood biomass for heating purposes by adopting and use of improved methods of biomass processing (output 1.2).

Under the output 1.3 (*Number of implemented infrastructural RES projects increased due to the new business models and financial schemes for investment in biomass*) the Czech Development Agency (CZDA) tendered and funded the modernization of heating systems in four already retrofitted public buildings. The intended purpose was to demonstrate on these model fuel switch projects the “green package” concept, including retrofitting and subsequent fuel switch using business model and financing scheme developed and introduced under activities 1.3.1 and 1.3.2. It was expected that these demonstrations will show the economic benefits of and facilitate further investments based on business models.

For various reasons, all four projects were formulated as technical modernization of the heating systems in the respective public buildings, without the business plan and the demonstration role. They were implemented by the winning companies, under the administration of the CZDA. Supervision was implemented by CZDA with their sectoral experts. The transition from light and heavy fuel oils to wood pellets will lead to financial savings and a reduction in CO<sub>2</sub> emissions. Remote monitoring of operation and regulation of the system will enable heating of buildings to the required temperature.

The 4 CZDA projects include: Modernization of heating systems in kindergartens in Ljubuski and Novi Travnik, in the Hospital of the St. Luke the Apostle in Dobož and in the Center for Old and Infirm Persons in Mostar.

## 1.2 Purpose of evaluation

**The main purpose** is to provide concrete and feasible recommendations based on objective and consistent findings and conclusions to be used for verifying sustainability and efficiency of spent funds, including relevance of the implementing procedure (public contract) and of the thematic focus (renewable energy sources) on the intervention in BiH (implemented from 2016 to 2021). Conclusions and recommendations from the independent evaluation will further inform the decision on the optimal renewable energy source at similar cases in energy sector in BiH or elsewhere. The aim of the evaluation is also to verify sustainability, potential and relevance of use of biomass in BiH in the long run. The evaluation examines to what extent this project really contributes to increasing energy production from renewable natural sources and to building related infrastructure to make this energy publicly available.

**Main focus of the evaluation** is the 4 CZDA projects.

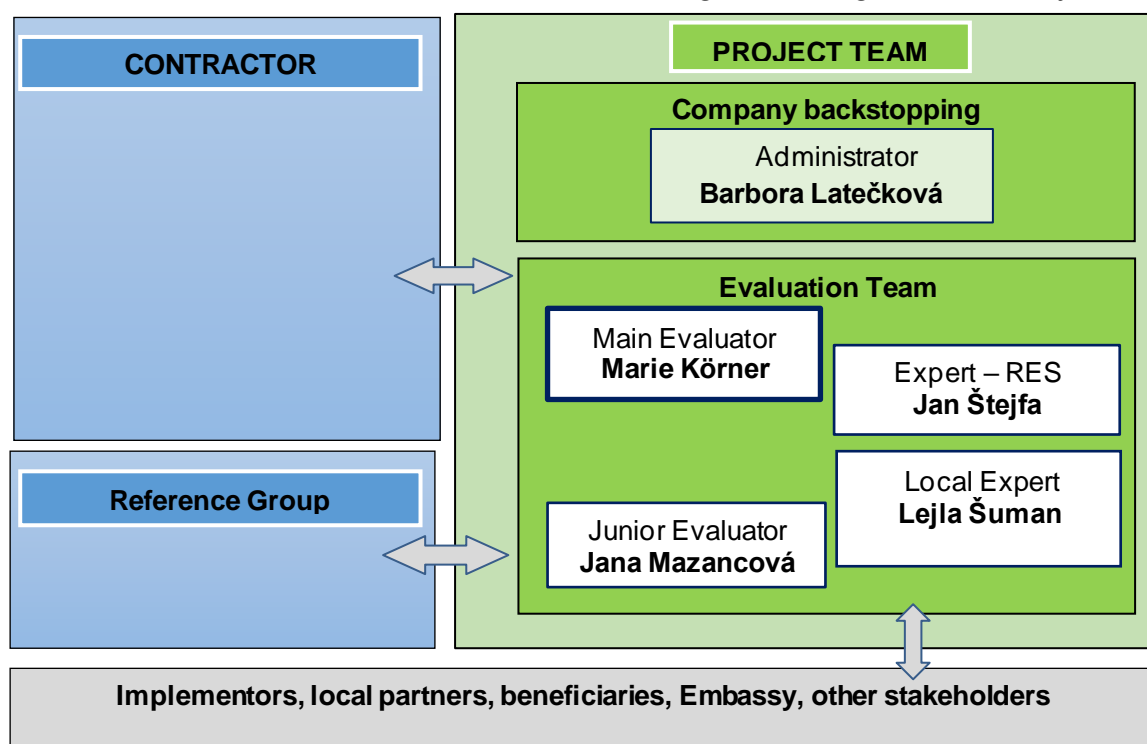
**Scope** of the evaluation: The evaluation team used to the following criteria: (a) Internationally recognized **OECD-DAC evaluation criteria**: Relevance, coherence (including coordination and integrated approach), effectiveness, efficiency, impacts and their sustainability. The criteria of effectiveness, impact and sustainability considered the external influences of the environment in which the project was implemented, and specified the objective obstacles that may have affected the results of the intervention. (b) External presentation (**visibility**) - intensity of communication activities and awareness of the target group about the outputs and impacts of the project. (c) **Application of assessment cross-cutting themes** of the Czech Development Cooperation defined in the Development Cooperation Strategy of the CR 2018 – 2030: Good governance; environment (sustainable

development); human rights, including gender equality. (d) An **assessment of the intervention logic** of the evaluated project incl. key assumptions and risks for achieving the objectives or analysis of methodological obstacles and evaluation limits.

### 1.3 Evaluation team

The evaluation was conducted by the evaluation team of 4G eval s.r.o., an independent consulting company based in Prague, specializing in providing comprehensive services in the areas of monitoring and evaluation, environmental management, social development, water supply and sanitation, gender equality and good governance. 4G eval operates worldwide and has implemented projects in Africa, East Asia, Europe and Central Asia, the Middle East and South Asia regions for a variety of clients including the Czech Ministry of Foreign Affairs, EBRD, UNDP, UNICEF, the World Bank, Czech and International NGOs and the private sector. Evaluations and surveys conducted by 4G eval are in accordance with the IDEAS Code of Ethics adopted in November 2014, the United Nations Evaluation Group's (UNEG) Code of Ethics and related evaluation guidelines (2008), the Evaluator's Code of Ethics (2011) and the Formal Evaluation Standards (2013). The management structure of the evaluation is provided in the figure 1.

*Figure 1: Management structure of the evaluation*



## 2 INFORMATION ON THE EVALUATED INTERVENTIONS

### 2.1 Context

Bosnia and Herzegovina with more than 50% of area covered with forests shows a substantial potential for energy production based on available wood biomass. The project focused on increasing the energy security of rural areas across BiH through transfer of Czech technology and implementation of projects dealing with effective heating systems using biomass while reducing CO2 emissions in long term run.

The framework of cooperation between UNDP and CZDA was justified with the expertise and success of previous interventions of UNDP in the energy and environmental sector which has been implemented since 2009 to increase employment and energy security. The Government has severely relied on and cooperated with UNDP in relation to biomass issues, in terms of financial and management facilitation and coordination of specific projects.

The programme included three main inter-linked components leading to stronger partnerships, networking and supporting schemes within the private, public and government sectors as follows: 1. Developed policy for sustainable biomass utilization in BiH reflected to the legislation and use in practice (Output 1.1), 2. Quality and availability of the wood biomass energy carrier for heating purposes increased due to the adoption and use of improved methods of biomass processing (Output 1.2), 3. Business models and financing schemes developed and enabled for investments in biomass infrastructure projects / Implementation of demonstration projects (Output 1.3).

Originally, the project was planned for 36 months with estimated budget of 886,000 EUR of which 486,000 EUR was planned to be directly allocated to UNDP for the soft components, while approximately 400,000 EUR was to be allocated for the infrastructure technology procurement (undertaken in the Czech Republic by the CZDA) with matching funds of 400,000 EUR to be co-financed by UNDP for additional energy efficiency infrastructure measures.

The budget for the soft component was paid in four instalments in line with the Third-Party Cost Agreement. The budget for soft components was enriched with co-financing from GIZ in the amount of 52,500 USD<sup>1</sup>. The matching budget remained the same. The four infrastructural projects including technical supervision for CZDA cost approximately 1,473,698 EUR; the final amount may be higher as Dobož has not yet been handed over. In addition, there was co-financing from the EPEEF RS for the work related to the project in the hospital in Dobož in the amount of 140,000 BAM (71,779 EUR). The four objects contributed in-kind with accordance of the respective Memoranda of Understanding. Hence, the total costs of the project were 2,476,529 EUR, of which CZDA contributed 1,959,698 EUR (79%).

The overview of the four CZDA projects is provided in Table 1. The implementation of the infrastructural projects was fully in hands of the CZDA. The identification of suitable project beneficiaries was done firstly by UNDP BiH which also conducted the detailed energy audit of the respective buildings (objects). The final selection of the four objects was done by CZDA. One of the criteria for the final selection was that the object had implemented some of the recommended energy measures (retrofitting the building, exchange of old windows).

The 4 CZDA projects subjected to the evaluation were finance by CZDA (incl. technical supervision for CZDA) (95 %) and co-financed by receiving partners or related entity (5 %).

**Table 1: Overview of four CZDA infrastructural projects**

Project: Modernisation of Heating System	Implementor	Total Project Costs CZK	Technology Description	Status
in kindergarten in the Municipality of Ljubuski (02 – 06/2018)	AQUA-GAS s.r.o.	2,996,465	Hargassner, 720,000 CZK incl. fuel stockpiling and fuel feeding, price of boiler 520,000 CZK with the output 60 kW, container, piping interconnection to the old boiler room inside the building, 2m <sup>3</sup> hot water accumulation	Handed over, operational
in kindergarten in the Novi Travnik Municipality (11/2017 – 06/2018)	AQUA-GAS s.r.o.	4,045,870	Hargassner, 904,000 CZK incl. fuel stockpiling and fuel feeding, price of boiler 690,000 CZK with the output 90 kW, container, piping interconnection to the old boiler room inside the building, 5m <sup>3</sup> hot water accumulation, new tanks for LFO (2m <sup>3</sup> )	Handed over, operational
in the Hospital of the St. Luke the Apostle in Dobož (2018 – 2019 planned)	Ircon s.r.o.	<i>Complete information not available</i> Total project costs 21,118,962 (according to the Amendment No3 of the Contract) 1,827,140 (contribution from EPEEF RS)	Topling, 4,665,000 CZK incl. storage and fuel feeding, price of boilers 2,300,000 CZK with total output of 1400 kW, Bosch boiler for LFO 1420 kW with 2x10m <sup>3</sup> LFO tanks, 60 m <sup>3</sup> hot water accumulation, new insulated hot water piping in the hospital area, 7 heat exchange stations with pumps, 12 buildings supplied by heat, about 1000 thermoregulation radiator heads	Handing over protocol missing, operational
in the Center for Old and Infirm Persons in Mostar (2019 – 2020)	LLC Banja Luka  AQUA-GAS s.r.o.	385,086**  7,266,591*	Structural analysis on the site, preparation of selected parts of documentation  Golem, 2,388,500 CZK incl. fuel stockpiling and fuel feeding, price of boiler 1,896,000 CZK with the output 170 kW, 2 containers (boiler room + pellets storage), piping interconnection to the old boiler room inside the building, 1,5m <sup>3</sup> hot water accumulation, hot water solar panels + 2 boilers heated from solar panels, boiler room or by electricity	Handed over, not operational

<sup>1</sup> Exchange rate (CNB 29.09.2021): 1USD = 21.844CZK

Project: Modernisation of Heating System	Implementor	Total Project Costs CZK	Technology Description	Status
Supervision	BFS Industry s.r.o.	1,700, 000	Technical supervision for CZDA	Completed

\*) Declarations of donation for Mostar does not include outcome 1 of the contract. Exchange rate CZK/BAM published by ČNB on 24.9.2021 = 13,051 CZK/BAM. \*\*) exchange rate (CNB 24.09.2021) 1EUR=25,455CZK

## 2.2 Implementers and key stakeholders

### 2.2.1 Implementers

The United Nations Development Programme (UNDP) in BiH was the implementer for the soft components of the project ([https://www.ba.undp.org/content/bosnia\\_and\\_herzegovina/en/home.html](https://www.ba.undp.org/content/bosnia_and_herzegovina/en/home.html)).

**AQUA-GAS s.r.o.** (<https://aquagas.cz/>) was the implementer for three buildings: Modernization of heating systems in kindergartens in Novi Travnik and Ljubuški and Center for old and infirm persons in Mostar. AQUA-GAS s.r.o.sub-contracted **KOLI Stavby s.r.o.** (Czech Republic) implemented ancillary construction works for the Center for old and infirm persons in Mostar.

**Ircon Ltd.** (<http://www.ircon.cz/en/>) implementer of the contract Modernization of the heating system in the hospital of St. Luke the Apostle in Dobož, the largest sub-project of the CZDA project. IRCON proved the fulfillment of qualification criteria (according to ZVZ) by associating with the **Project Plus sh.p.k** (<https://www.projectplus-ks.net/>) .

**BFS Industry s.r.o. (BFS)** (<https://www.bfsindustry.cz/>) assisted the CzDA in the preparation of technical and technological part of tender documentation as well as in the subsequent monitoring of the sub-projects.

**Civil Engineering Institute LLC Banja Luka (CEI)** ([www.institutiq.com](http://www.institutiq.com)) elaborated the static assessment and selected parts of project documentation for the needs of the project Modernization of the heating system in the Centre for old and infirm persons in Mostar – based on individual contract with CZDA.

### 2.2.2 Key stakeholders

The list of key stakeholders is provided in table 2 below.

*Table 2: Key stakeholders and their roles in the project*

Category	Key stakeholders
Contracting authority	<b>Ministry of Foreign Affairs of the Czech Republic (MFA)</b>
Administrator	<b>Czech Development Agency (CZDA)</b>
Reference group	<b>Development Cooperation &amp; Humanitarian Aid Department (ORS), Czech Development Agency (CZDA), MFA – South and South East Europe Department (OJVE), MFA - Economic Diplomacy Department (OED), Ministry of Industry and Trade (MIT), Embassy in Sarajevo (Embassy), Independent Expert from the Czech Evaluation Society (CES)</b>
Implementing partner	<b>UNDP Bosnia and Herzegovina (UNDP)</b>
Implementers, local partners-co-implementers, sub-contractors	<b>AQUA-GAS, s.r.o. (AQUA)</b> - implementer for three buildings: Modernization of heating systems in kindergartens in Novi Travnik and Ljubuški and Centre for old and infirm persons in Mostar. <b>Ircon, s.r.o. (IRCON)</b> - implementer of the contract Modernization of the heating system in the hospital of St. Luke the Apostle in Dobož. <b>BFS Industry, s.r.o. (BFS)</b> - preparation of technical and technological part of tender documentation and subsequent monitoring of the projects. <b>Civil Engineering Institute LLC Banja Luka (CEI)</b> – elaboration of static assessment and selected parts of project documentation for the needs of the project Modernization of the heating system in the Centre for old and infirm persons in Mostar. <b>Project Plus sh.p.k.</b> - subcontractor to Ircon: Elaboration of project documentation for obtaining a building permit. Performed technical installations and works according to the approved project and the agreed scope. <b>KOLI Stavby s.r.o. (Czech Republic)</b> implemented ancillary construction works for the Center for old and infirm persons in Mostar – based on sub-contract with AQUA-GAS
Final beneficiaries	<b>Users of public buildings (UB) and recipients of public buildings (municipality – MU)</b> with modernized and optimized heating systems, signatories of Memoranda of Understanding with the CZDA: <i>Kindergarten and municipality, Novi Travnik, Kindergarten and municipality, Ljubuski, Hospital of St. Lukas in Dobož, Center for old and infirm persons and municipality, City of Mostar</i>

Category	Key stakeholders
Key institutions involved in the implementation of the project	<b>Institutions (INST)</b> involved in strengthening the legislative framework in the field of energy, the creation of action plans for the management of biomass and the application of appropriate business models and management are numerous. <b>State level:</b> Ministry of Foreign Trade and Economic Relations of BiH, Agency for Statistics of BiH. <b>BiH Federation:</b> Federal Ministry of Agriculture, Water Management and Forestry, Ministry of Energy, Mining and Industry, Federal Office of Statistics for the Entity of the Federation of BiH, Chamber of Economy of the Federation of Bosnia and Herzegovina, Environmental Protection Fund of the Federation of BaH. <b>Republika Srpska:</b> Ministry of Industry, Energy and Mining of Republika Srpska, Ministry of Agriculture, Forestry and Waters, Republika Srpska Institute of Statistics, Chamber of Commerce RS, Environmental Protection and Energy Efficiency Fund of Republika Srpska ("EPEEF RS")
Indirect beneficiaries	<b>Association of Biomass Producers BiH (BA), Local Communities (LC), General public, Academia – (A) (Sarajevo University, Faculty of Forestry, Banja Luka University, Faculty of Forestry), Private sector (PS), Biomass suppliers (BS) including businesses in the biomass value chain</b>
Experts BiH	<b>Independent experts (Expert)</b>
Donors	<b>US Agency for International Development (USAID), German Agency for International Cooperation (GIZ)</b>
Czech companies and experts in the RES sector in BiH (except implementors and sub-implementors)	<b>Czech Biomass Association, Jan Habart</b> – expert on demand contracted by UNDP CF. <b>Strahinja Mladenović</b> – Operations Manager - Environment and International Projects – expert on demand contracted by UNDP <b>ENVIROS</b> – technical experts for CzDA (till ca 2016), was involved in identification and formulation of projects on RES (geothermal energy, heating systems on biomass - Nemila). <b>GEOtest a.s. a GEOtest d.o.o. Sarajevo</b> – implementation of the projects focused on geothermal energy funded by CzDA – Utilisation of Geothermal energy for Development of Municipality Cazin – explanatory work (04/2018 – 11/2019), budget 3.9 mil CZK; <i>Utilisation of geothermal renewable energy in municipality Doboј</i> . <b>MEVOS spol s r.o.</b> - consortium EKO-CZT Nemila – implementer of the project funded by CzDA - Utilization of RES for central heating system in Nemila village (2011 – 2013) (total budget 63 mil. CZK). <b>ProPelety s.r.o.</b> – implanter of the project funded by CzDA (B2B) Extension of local production of pellets and agro-pellets in BiH (2017) (budget 446 948 CZK). <b>AQUA – GAS, s.r.o.</b> – implementor of the project funded by CzDA - Solar energy for the hospital of Dr. Safeta Mujice in Mostar (2016 – 2021) (total budget 8 351 113 CZK)

## 2.3 Project logic

The project intervention logic in the form of logical framework matrix (LFM) is included as Annex I to the Project document (annexed to the Third-party cost sharing agreements between the CZDA and the UNDP). Annex 2 to the Project document includes detailed final budget proposal, Annex III time frame for the implementation. The LFM is coherent in the sense that if activities and outputs materialize, and if the assumptions are met, then the next step (ultimately the outcome) will be achieved. The objectively verifiable indicators are specific, measurable, achievable, realistic and time bound. The LFM, prepared in 2016 with the support of CZDA Expert, has been used for reporting but has not been updated.

The CZDA project encompassing fuel switches for the 4 public buildings has no LFM. It is assumed that the project was meant to be linked to the remaining components of the project LFM of which it was a part. Based on evaluation findings, the linkage of the four infrastructural projects to the soft components within the same output (1.3 – development of business model, introduction of biomass related supporting financial schemes) as well as fully “soft” outputs (1.1 Developed policy for sustainable biomass utilization in BiH reflected to the legislation and use in practice, and 1.2 Quality and availability of the wood biomass energy carrier for heating purposes increased due to the adoption and use of improved methods of biomass processing) has not been achieved.

## 2.4 Key assumptions and risks

There were identified 16 key assumptions and risks of the intervention in the Project Document and the LFM. The risk specifications of the original heat systems (on LFO and HFO) were outlined in the Contract between CZDA and the respective implementor – in the technical documentation (Annex 1 of the Contract). The evaluation team assumptions and risk from the LFM to the extent possible within the tight time frame:

- *Stable demand for RES projects in general / Stable supply and quality of RES heating medium – Assumption fulfilled: strategic goals of BiH and RS promote RES share in the energy mix. The policy and supporting mechanisms have been developed within soft components (output 1.2. a 1.3) as reported by the UNDP. The medium-short plans in the sector of biomass energy include promotion of biomass market, cascade use of biomass, promotion of circular economy in long term from supplying biomass material toward service supply. Public awareness campaign organized.*
- *Specified biomass related business models and supporting financial mechanisms will be appropriately updated and used in practice after the project accomplishment.*  
The assumption was not fulfilled: The business models were developed but not adapted. The financial mechanism (revolving fund) has not been accepted by the EPEEF RS and EPF FBiH.  
*Price of the biomass heating medium will be stable and available in sufficient amount.*  
The assumption fulfilled: The price has not been fluctuating significantly, except heavy winter in January 2017. There is sufficient supply.
- *Czech Development Agency / UNDP will have sufficient funds for implementation of model infrastructure projects.* The assumption fulfilled: CZDA increased the budget allocation for the four infrastructural projects in accordance with the real need.

Further, the evaluation team identified and verified the following assumptions:

- *The four fuel switches systems will be operational after the handover to the project outcome recipient and the objects used biomass-based fuel preferably.* The assumption is partly fulfilled: three heating systems are in good operation and the objects have used them in the heating seasons. The heating system in Mostar has not operated since January 2021 and the object has had to use LTO-based heating system.
- *The ambient air quality will improve after the fuel switches implementation.* The assumption fulfilled, but verified only as from qualitative data of the users of the four objects. Quantitative data on air quality are not available.
- *The project contributes to the local economy in the respective area of the implementation of the fuel switches.* The assumption has not been fulfilled: no new jobs created in long term perspective.
- *The four infrastructural projects will serve as models to be promoted as good practice and will be linked to the soft outcomes of the outputs 1.1 and 1.2.* The assumption has not been fulfilled: the four fuel switches were not promoted systematically.

## 3 EVALUATION METHODOLOGY

### 3.1 Approach

The proposed approach (evaluation design) complies with **international evaluation standards and approaches**, especially the Formal Standards for Conducting Evaluations of the Czech Evaluation Society, Quality Standards for Development Evaluations according to OECD / DAC, the Czech Evaluation Society Evaluator's Code of Ethics and the certified Methodology for Evaluation of Crosscutting Themes in the Czech Development Cooperation<sup>2</sup>. The evaluation team respected the right to protect the privacy of respondents and anonymize the sources of its findings.

**The methodological approach** was participatory, based on consultation and dialogue, with the aim of maximizing stakeholder involvement and considering their views. Feedback from the Reference Group on preliminary findings during the Inception Phase as well as feedback from key stakeholders on major conclusions and key issues are reflected in this draft report.

Main findings, conclusions and recommendations considering the comments from the reference group, the implementer and local partners will be presented at the final meeting with the reference group and the implementers. The presentation from this meeting will be annexed to the final evaluation report, together with a table of settlement of the comments of the reference group and other involved actors.

<sup>2</sup> <http://www.inesan.eu/rozvojova-spoluprace/rozvojove-projekty>, accessed 28. 3. 2021



The assignment of this evaluation emphasizes **specific and feasible recommendations** with a primary focus on system and process, usable in deciding on future development activities focused on sustainable energy and general environmental protection in BiH as well as for possible modifications of existing programs and procedures of overseas development cooperation of the CR, including systemic recommendations for implementation of evaluations. The evaluation team applies the principles of "Utilization-Focused Evaluation"<sup>3</sup>. For each recommendation, the degree of importance, the addressee and the proposed implementation (time horizon) is indicated. The recommendations are sufficiently substantiated by specific findings and conclusions. **The evaluators formulated the findings, conclusions and recommendations so that it is clear to which evaluation questions they relate.** The evaluation conclusions focus mainly on their use for **further reflection and lessons learned**. Conclusions drawn from the findings for each evaluation criterion are rated on a scale of "high, rather high, rather low, low". Each of these conclusions includes a clear reference to the source of the information or data set resulting from the evaluation. The evaluator's own comments (if they contribute to improving the scope or quality of the evaluation) are clearly marked and adequately explained.

**Validity and reliability of data** - Evaluation questions and methodological tools were consulted with the contracting authority, the reference group and the implementer in order to guarantee the feasibility of the evaluation, as well as its usability. **Triangulation** of methods and resources improved the validity of information. **Reliability of data collection instruments** was verified by testing within the evaluation team and during the first interviews, leading to some modifications.

**Evaluation questions** are mainly descriptive. Further normative and cause and effect questions were also used. Evaluation questions and sub-questions, sources of information and methods of information collection are presented in the form of an **evaluation matrix** (Annex C).

The **approach to data collection** was semi-structured (systematic and, where possible, based on common procedures). Semi-structured interviews were based on pre-prepared lists of questions (Annex F) and conducted in the inception phase, during the mission in BiH (Itinerary attached in Annex N) and post-mission phase. Informed consent was required during the interviews, and the confidentiality requirements of the person providing the information is respected.

The **languages** used during the evaluation are Czech, English, Bosnian and Serbian.

## 3.2 Methods for collection and analysis of information

The methods for data collection were primarily qualitative; quantitative data were obtained from secondary sources. The following methodological tools for data collection and verification were used:

- **Review of secondary data (Review):** Secondary data provide basic information about the current state or the state before and after the project implementation. The list of secondary sources is attached in Annex D.
- **Key informant interviews (KII)** and/or **Group discussions (GD)** based on semi-structure questionnaires (Annex F) were conducted with selected stakeholders in person and online (Skype, MS Teams). In cases of unavailability of the informant the questionnaire was emailed with possible follow up over the phone. The overview of KII and GD is attached in Annex E.
- **Key stakeholder meetings (KSM)** included introductory and concluding meetings with the reference group, as well as briefings at the Embassy and with local partners in BiH. The final briefing will take the form of a moderated discussion of the findings, preliminary conclusions and proposed recommendations (Annex K).
- **Visits and observations (V&O)** were designed to inspect the technology and location of public buildings with upgraded heating systems, to check operational documentation and to inspect the condition of equipment (heating plants and related equipment and facilities). Visit was also made to a major supplier of pellets to get information on the development of demand, supply and prices and locally produced technology.
- **Case Study (CS)** was conducted with aim to compare the implemented four technologies with another to compare the efficiency, impacts, sustainability and cost-effectiveness of the funds spent.
- **Transect walk<sup>4</sup> (TV)** was conducted with the representatives of City of Mostar in order to understand the local situation in terms of the methods used to heat residential, municipal and other buildings.

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<sup>3</sup> Patton, Michael Quinn, fourth edition, 2008

<sup>4</sup> As defined in Road to Results, Designing and Conducting Effective Development Evaluations, World Bank, 2009, p. 304, this is a guided tour by a local guide who is well acquainted with the local situation.

- **Expert opinion (EO)** was used to obtain information from local BiH expert from the Association of Biomass Producers in Sarajevo on development of the biomass sector in BiH. The semi-structured questionnaire was employed.

**Evaluation of Cross-cutting themes** - In compliance with Certified Methodology for the Evaluation of Cross-cutting Themes in Development Cooperation (by INESAN), the structure Cross-cutting Theme Indicator Matrix was developed involving only the dimensions and subdimensions the evaluation team considers relevant for the evaluated project. The results are attached in [Annex H](#).

### 3.3 Limitations of the evaluation

Below the main limitations of the evaluation and respective solutions by the evaluation team are outlined:

#### Methodological obstacles

- Information about the actual costs of four fuel switch projects has not been available
- Lack of institutional memory where the staff working with the project has been replaced
- Unavailability of key informants in BiH during field visit (solved by online interviews and emails)

#### Other obstacles

- The mission outside the heating season limited the value of information concerning the operation of the evaluated heating systems
- Lack of interest to participate in the evaluation. Despite the close follow-up, information has not been received from several KII (details are provided in Annex F)
- Limitations on personal meetings due to COVID-19 restrictions (solved by online interviews)

### 3.4 Ethical principles

The evaluation team respected the right to privacy of the respondents. The primary sources of information were anonymized in accordance with the Code of Ethics of the evaluator adopted by the Czech Evaluation Society in 2011<sup>5</sup>.

### 3.5 Evaluation team and allocation of tasks

The evaluation team comprised six members. The structure is provided in figure 1.

**Barbora Latečková - Contract Manager** - has 10 years of experience in project management. In the team, she assured methodological support, evaluation administration, incl. secondary data, logistics, collaboration on quality control, editing and completion of all outputs.

**Marie Körner - Chief Evaluator** – expert in socio-economy, monitoring and evaluation with more than 33 years of professional experience in the field of development cooperation in 32 countries. She was a leader of the team and responsible for the whole process of evaluating and submitting agreed reports, and for communication with implementers and stakeholders.

**Jan Štejska – Expert on renewable energy sources** – has more than 29 years of experience in evaluating projects in the field of environment and energy. He verified and analyzed technical data from the switch-fuel projects on the spot, conducted visits and observations, expert estimates, interviews and discussions and cooperated on the reports.

**Monika Příbylová - Evaluator** – has more than 19 years of experience with coordination and evaluation of the projects in the field of environment. She participated in the BiH mission where she conducted visits and interviews and analyzed data.

**Jana Mazancová - Junior Evaluator** – 15 years of experience in designing and managing development projects (ODA CR, EU) focused on agriculture and appropriate technologies. Within the team, she searched for data and project documents, provided relevant inputs for the inception and final report, contributed in the preparation of the inception and final evaluation report.

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<sup>5</sup> Česká evaluační společnost (2011): Etický kodex evaluátora. Available on <https://czecheval.cz/cs/Aktivity/Kodex-a-standardy>

**Lejla Šuman - Local Expert** - more than 17 years of experience in coordinating and evaluating projects in the field of the environment. She speaks fluent Bosnian, English, Serbian. She identified relevant BiH document. She prepared and assured the mission in BiH and provided interpretation and translation.

## 4 EVALUATION FINDINGS

### 4.1 Relevance

#### 4.1.1 How are the 4 objects linked to the UNDP contribution and soft components?

The **Third-Party Cost Sharing Agreement between the CZDA and UNDP** signed in August 2016 clearly defines the division of implementation responsibilities and the contribution of CZDA to the “soft” components of the project implemented by the UNDP BiH office, amounting to 486,000 EUR. The “soft components” include outputs 1.1, 1.2 and parts of output 1.3: Developing business models and financing schemes and enabling them for investments in biomass infrastructure projects/implementation of demonstration projects. The Agreement does not clarify responsibility for the overall project management and coordination.

In the Project document annexed to the Agreement as its integral part, estimated budget of 400,000 EUR is allocated for the infrastructure technology procurement (fuel switch from heating oils to pellets) to be undertaken in the Czech Republic by the CZDA, with matching funds from UNDP for additional energy efficiency “retrofitting” measures. **Discrepancy between the UNDP matching funds and the actual budget** for the fuel switch projects has been explained by the CZDA: Pricing of the technical component in this phase of project preparation usually does not correspond to reality, as the technology is priced according to local customs and does not consider the profit of the selected implementer.

**Selection of 4 public buildings for the implementation of fuel switch** projects involved several steps. Based on submitted questionnaire/application for the project, basic information (building type, square meters heated, energy carrier, type of public sector building) over the past 3 years was entered into Energy Management Information System (EMIS) database. Buildings were selected based on prioritization list with key energy conservation potential indicators for conducting detailed energy audits. Based on energy audits results (techno-economic, environmental, financial criteria), UNDP proposed “shortlisted” projects for further assessment and selection. They then resulted in projects in Ljubuški, Novi Travnik, Doboje and Mostar.

#### 4.1.2 What is the relevance of the selected procedures in relation to the needs of final beneficiaries?

The selected **fuel switches fully met expectations of the final beneficiaries with the exception of beneficiaries in Mostar** where the new system does not work. **Advantages of the installed technologies** mentioned by the beneficiaries include: Energy savings, financial savings, improved heat comfort, reduction of CO2 emissions, elimination of environmental risks from leakages of hazardous chemicals, fly ash removal (relevant only for Doboje), electronic regulation operated from mobile phone. Institutional respondents appreciated that are certified, meeting the EU standards. Listed **disadvantages** include dependency on electricity supply, requirements on quality of pellets, and problems with functionality in Mostar during 1st heating season remaining unresolved before the 2nd heating season. Most respondents would **recommend the technologies** for other buildings in their areas. Novi Travnik has already specific plans and the Municipality has some funds. Mostar would recommend a fuel switch but not the installed technology because it does not work. Mostar City has an Action plan which contains energy efficiency and budget line for co-financing energy efficiency projects. Priority is retrofitting. Ljubuski would however prefer (combination with) solar energy because there are plenty of sunny days and the prices for pellets (and HFO) are too high during the heating season; they sometimes use the AC for heating

According to the MOFTER, medium-term plans of BiH in the sector of energy production and supply, subsector heat production focus on de-carbonization of heating systems by increasing share of RES in the mix of energy sources with focus on biomass and district heating systems. This has been anchored in the draft National Energy and Climate Plan (NECP) 2021 – 2030; approval is expected by the end of 2021. Shift is expected from pellets to wood chips that are not exported. Solar, wind fields, hydropower energy sources are also considered. The trend is moving from 100% grant financing to commercial approach to energy efficiency improvements,

combined with accompanying measures funded from grants. The EPEEF RS, the EPF FBiH as well as the private sector play an important role in this transition. “Soft” loans are provided by IFIs such as the EBRD. Investments are mainly in retro-fitting (pre-requisite for fuel switch investments) of public buildings, but also residential and commercial sector.

#### 4.1.3 Are the selected indicators for the project outcomes set correctly?

The logical framework matrix was reportedly created only for the needs of the umbrella project in cooperation with UNDP, not for the infrastructure projects themselves. The **indicator for output 1.3** *At least three RES infrastructure projects implemented until the end of 2018, at least another 6 RES infrastructure projects implemented based on newly developed financial schemes until 2020* is **not considered specific, measurable, available, relevant to the project level and timebound (SMART)**. Following the IF -> THAN logic, the output can only contribute to the intended outcome *Higher Renewable energy share in the BiH energy mix* if the demonstration projects with a proper business plan and clear supporting financial mechanisms will show the economic benefits and facilitate further investments based on business models. The indicators would then read: (i) Generic business models developed and adopted for each of the potential demonstration projects before the final selection (early rate of return on investment should be one of the selection criteria). (ii) Supporting financial mechanisms introduced in the EPEEF RS and EPF FBiH before the implementation of the selected demonstration projects. (iii) Potential investors including the private sector informed about the demonstration projects and their profitability. The assumptions would include: (a) Adoption of the financing mechanism by the EPEEF RS and EPF FBiH; (b) Interest of potential investors.

For the monitoring of individual infrastructure projects, the main control document was the annex to the contract entitled Technical specification of the supply / contract. **The LFM has not been updated based on the project monitoring**, but has been used for project reporting.

## 4.2 Coherence

### 4.2.1 To what extent did the project contribute to the mutual coherence of project actors?

**The project is in line with the priorities and goals of the Czech Development Cooperation.** The Development Cooperation Strategy 2018 – 2030 focuses on partnerships with organisations that operate in synergy with Czech national priorities and interests, including the UNDP. SDG 13 – Sustainable management of natural resources is one of the priorities. BiH is one of the partner countries. Increasing the share of renewable energy generation in areas with optimum conditions is one of the objectives of the Bilateral Development Cooperation Programme of the Czech Republic, Bosnia and Herzegovina, 2018–2023. **The project made an important contribution to the implementation of the National Renewable Energy Action Plan (NREAP) 2016 -2020**, focused on de-carbonization of heating systems by increasing share of RES in the mix of energy sources. Specifically mentioned were the Biomass Innovation Centre, the Online Atlas and Biomass Potential Monitoring Report, useful for decision makers, investors, scientists, researchers and institutions, as well as capacity building activities and other components. **The project was also fully compliant with:** Climate Change Adaptation and Low Emission Development Strategy for BiH; The Framework Energy Strategy of Bosnia and Herzegovina until 2035; The Framework Energy Strategy of Federation of Bosnia and Herzegovina until 2035; The Framework Energy Strategy of Republic of Srpska until 2035; Federation of BiH Action Plan for the Use of Renewable Energy Sources (APOEF); and the Republika Srpska Energy Efficiency Action Plan and contributed to achieving their objectives: Reduction of emissions resulting from utilization of the biomass, improving energy efficiency in the building sector and for end consumer, promotion of good practice used in final consumption, district heating systems and cogeneration and use of waste heat and renewable energy sources (use of biomass).

The overall project was to have a direct impact on the entire BiH. The interconnectedness and complementarity of the hard-soft components was crucial in the selection of objects. **The 4 fuel switch demonstration projects were implemented as “supply” projects** rather than integrated in the context of the overall project, **without any value added by the soft components**. Preparation of the projects and tangible benefits from the completed installations offered an opportunity to promote biomass as a heating source in the local community and beyond to facilitate investments in RES based heating systems. Involving stakeholders at higher administrative levels and actors in the wood biomass value chain would help to imbed the projects in the context

of the strategies, policies and plans in support of the gradual commercialization of the sector. No such communication and promotion activities focused on demonstration of economic, social and environmental benefits took place. This “disconnection” happened **during the project formulation phase; no promotional activities were linked to the demonstration projects.** The information and visibility materials such as the promotional videos prepared by the UNDP and published on the project website were not meant for education campaign or for the general public. Budget for their broadcasting was not included, In Novi Travnik, they were broadcasted on the local TV thanks to the initiative of the kindergarten Directress. For the business plan and financing mechanism, appropriate internal acts and procedures were developed for adoption and implementation by the EPEEF RS and EPF FBiH but not implemented with success. Reportedly only 2 projects were financed through revolving fund due to the lack of interest on the part of the Funds, funding projects primarily via grants. Why business plans were not developed for the fuel switch demonstration projects, or why the CZDA initiated their implementation without link to the soft components could not be clarified. The evaluators’ see as a possible reason the division of implementation and monitoring responsibilities.

#### **4.2.2 To what extent did the project complement other projects and donor activities?**

The **CZDA implemented or plans to implement a number of related projects**<sup>6</sup>:

- Usage of renewable sources of energy for central heating system in Nemila village, Bosnia and Herzegovina” including its rehabilitation after 2014 floods, 20011 – 2013
- Promoting economic development in agriculture in Bosnia and Herzegovina in cooperation with USAID and Sida (Forestry agricultural markets activity – FARMA I.), 2011 - 2012
- Development of Ecological Production of Wood and Forestry Management in Bosnia and Herzegovina, 2014 – 2017
- Increasing capacities of Metrology Institute in BaH, 2014 – 2016
- Enhancing capacities of State Archive of BaH 2015 – 2017
- Support of Application of Free Trade Movement Principles and Increase of Safety of Products introduced to the Market of BaH, 2012 – 2013
- Institutional Support for Certification and Control of Plant Material, 2014 – 2018
- Support for Energy Self-Sufficiency of Minority Returnees in Western Bosnia, 2017 – 2019
- Solar Energy for Dr.Safet Mujić Hospital in Mostar, 2016 - 2021
- Use of renewable geothermal energy in Dobojska municipality (2017 – 2021)
- Preparation of project documentation for district heating in the city of Maglaj Phase I – Preparation of project documentation, Phase II – construction of a biomass heating plant and a pipeline network for heat supply) Zenica – Dobojski Canton, ongoing
- Clean energy in public institutions in Banja Luka (under preparation; use of biomass as a heat source for heating 4 public institutions / primary and secondary schools), planned

**Major donors supporting similar projects include the UNDP, EBRD and GIZ:**

##### **GIZ**

- Promotion of Renewable Energy Sources in B&H (ProRE), 2006 - 2020
- Cooperated with the evaluated project in mapping of biomass potential and co-funding Biomass Atlas
- Decarbonization of the Energy Sector in BiH<sup>7</sup>. Contains a subproject relevant for the RES sector. Technical assistance to promotion of community energy and implementation of market-based incentive schemes for renewable energy. 2020 –2023.

##### **EBRD**

- RS Energy Efficiency Fund<sup>8</sup>. Approved 21 July 2021. Installation of energy efficiency ("EE") measures in up to 20 publicly-owned buildings (schools and hospitals) in order to achieve reduction of energy consumption and cost savings. Client: EPEEF RS.

<sup>6</sup> More details can be found on <http://www.czechaid.cz/en/>

<sup>7</sup> <https://www.giz.de/en/worldwide/93730.html> (accessed on 18.09.2021)

<sup>8</sup> <https://www.ebrd.com/work-with-us/projects/psd/51605.html> (accessed on 10.10.2021)

- Western Balkans GEF II - ProCredit Bank BiH<sup>9</sup>. Signed. Facilitating the expansion of lending for investments into high performance residential green economy technologies and towards building the capacity of the PFIs for financing green economy projects. Client: ProCredit Bank dd BiH ("PCBiH")
- Western Balkans GEF II - Intesa Sanpaolo BiH<sup>10</sup>. Approved 05 October 2021. The facility will support investments in high-performance green technologies, materials and solutions undertaken in privately-owned residential dwellings or buildings.

## UNDP

- Green Economic Development (GED) Project (2013 – 2021)<sup>11</sup>. Co-funded by Sweden, the EPF FBiH, EPEEF RS and includes categorization of public buildings on their energy efficiency using the EU Eco-Management and Audit Scheme (EMAS). (Interactive map is available on <https://ged.ba/mapa/>).
- UNDP/Green Climate Fund (GCF): "Scaling-Up Investment in Low-Carbon Public Buildings", 2018 – 2026. The project aims to scale-up investment in low-carbon public buildings, addresses country-specific risks and barriers to investment.
- Sarajevo Canton/UNDP/SERDA (Sarajevo Economic Region Development Agency): Call for individual households to replace heating. Project provides subsidies.

No **complementarity** has been identified with the CZDA supported projects. High degree of complementarity existed between the soft activities of the project and activities of GIZ and USAID. Under the SW component, CZDA co-financed the Atlas biomass monitoring (CZDA 40% and GIZ 60%)<sup>12</sup>. The Fuel switch demonstration projects serve as examples. MOFTER is responsible for donor coordination and avoiding overlaps.

### 4.2.3 To what extent was coordination between the actors of the project carried out?

Cooperation with project partners has been described by most respondents as good to excellent. There were however some **problems that affected implementation of the projects in Mostar and Dobož**.

- Limited responses of AQUA-GAS to requests for removing defects in the Centre for Old and Infirm Persons in Mostar. During the visit on 16 September, the system was not working. It reportedly stopped about a month after signing the Declaration of Donation by the recipient and the implementer in November 2020 and has not been functional for most of the past heating season. The Director and Operator shared evidence of communication that remained without a reply, the latest in August 2021. They also reported delay caused by changes to the technical specification, which the implementer made without timely informing the CZDA.
- Problems were also reported between the CZDA (in consultation with contracted expert company) and IRCON. The Dobož hospital project is not yet closed, issues of final payments, final acceptance are still open. Shortcomings and inaccuracies in the technical documentation and tender documentation were mentioned by the implementer. Some elements were not implementable, some had to be done differently (such as heat exchanger connection). Within the tender procedure, tenderers are however allowed to ask the contracting authority for clarifications or to raise an objection to the current form of the tender documentation. The implementer had the opportunity to present proposals for changes / modifications for assessment by the CZDA. Evidence of such questions, objections or proposals for assessments was not available during the preparation of this report. Delays in reporting changes and issues to the CZDA. changes of IRCON key staff or changes to the project design described by IRCON as necessary due to the shortcomings in the technical documentation were reportedly discovered only during monitoring visit. Discussions on this subject continued throughout the project implementation. Eventually, a compromise was worked out, with fines to IRCON for delays and decrease in the budget.
- The selection of a sub-contractor from Kosovo (Project Plus sh.p.k.) has been discussed between IRCON and the CZDA from the beginning. The interviewed administrative and technical staff in the hospital however rated the cooperation with IRCON and the Kosovo company as excellent. IRCON

<sup>9</sup> <https://www.ebrd.com/work-with-us/projects/psd/52682.html> (accessed on 11.10.2021)

<sup>10</sup> <https://www.ebrd.com/work-with-us/projects/psd/53060.html> (Accessed on 06 October 2021)

<sup>11</sup> [https://www.ba.undp.org/content/bosnia\\_and\\_herzegovina/en/home/climate-and-disaster-resilience/GED.html](https://www.ba.undp.org/content/bosnia_and_herzegovina/en/home/climate-and-disaster-resilience/GED.html) (accessed on 13.07.2021)

<sup>12</sup> <http://www.atlasbm.bhas.gov.ba/> (accessed on 02.07.2021.)

described cooperation with the sub-contractor as very good. They took the responsibility and accepted the fines, resolved the problem with travel restrictions due to COVID-19 by creating a network of local experts.

**Satisfaction with coordination of the project** by the CZDA is overall high. The Czech Embassy representatives were part of the Project Board and were regularly informed about the progress. There was also periodic communication between UNDP and CZDA about status of four demonstration projects. UNDP submitted every June the Annual Progress Report. The CZDA organized coordination days for the 4 Czech projects. Project Plus mentioned differences in approaches to and reaching consensus on the detailed design at the beginning of the project that were however largely overcome during implementation. To further improve cooperation and coordination, the CZDA plans to incorporate into newly prepared projects so-called project committees/ working groups consisting of representatives of the CZDA, the Embassy, the winning bidder, CZDA contracted experts, recipient and all relevant stakeholders. These committees would meet on a regular basis to discuss the project progress, conflict resolution, assessment of changes and other arising issues.

**The main added value of linking the CZDA funded, UNDP implemented project and the 4 CZDA projects** was in linking energy efficiency measures (retrofitting) with fuel switch project for greater impact on the decrease of CO<sub>2</sub> emissions (approach by Green Climate Fund project) and the application of Energy Management Information System (EMIS) by selecting the demonstration buildings. There were no synergies other than that.

UNDP has complex programs, can bridge the level of bilateral cooperation, represents institutional level (energy, water), enables institutional anchorage also at the higher level. It has the strategies and experts that can assess the rate of innovation, the possibility of application in BiH and cooperation with the Czech Republic. Since 2017, the ORS has been managing a UNDP Trust Fund with UNDP Istanbul, the Challenge Fund<sup>13</sup>, a framework program, cooperating in the 6 priority countries on innovation elements including RES. Eligible applicants include the Czech private and public sector, NGOs, universities, state institutions or research centers. No projects have yet been implemented in BiH.

#### **4.2.4 What cooperation options do the outcomes of the project offer?**

Several Czech stakeholders concluded that given the complicated entrepreneurial environment, Czech implementors need a strong local partner to be successful on the market. It may be easier for local or regional companies with the necessary language skills and understanding of the local context. References from BiH help increase competitiveness in bidding for companies' who worked on the project. UNDP sees a niche for Czech companies/experts because the Czech Republic is recognized as a donor country in energy sector. Potential to introduce fuel switches in other municipalities/cities is also there. Smaller boilers can be imported, larger-scale boilers can be constructed on the locations, distributions systems could be implemented with the technical support and supervision by a Czech company. In Novi Travnik for example, the Municipality already asked for possible support for school for children with special needs. Several experts mentioned opportunities in biomass-based fuel production, small-hydropower, rehabilitation of central heating systems, building retrofitting of larger buildings and in geothermal sector. Opportunities identified during the evaluation are outlined below.

The selection of new project ideas must proceed in accordance with the Methodology of Czech Development Cooperation.

**Opportunities for transfer of Czech know-how developed by the UNDP under the project “Biomass Energy for Employment and Energy Security – Follow Up Project 2, Bosnia and Herzegovina (BiH)” with possibilities of co-financing, to be communicated and consulted with UNDP prior to their initiation.**

- *Supporting responsible institutions in development of framework to secure accelerated biomass utilization.* Includes the formulation and adoption of legal and regulatory framework for sustainable biomass utilization, certification of wood biomass-based energy carriers, obligation for local market and inspection as well as trainings, workshops, developing procedures for tracking quality of biomass. *Potential partner organization:* The Association of Biomass Producers.
- *Supporting the development of efficient and reliable biomass market.* This project demands urgent interventions in view of the gradual commercialization of the sector since it is meant to fill the gaps identified during previous UNDP project phases related to functionality and reliability of the market.

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<sup>13</sup> <https://undp.cz/challenge-fund/> accessed on 21 June 2021

*Activities* include: Establishment of accreditation labs. Trainings for inspections. Study tours. Upgrading the Biomass Atlas with overview of installed and potential biomass infrastructure projects with employment opportunities indicated, overview of legislatives and policies. *Potential partner organizations*: Biomass Innovation Centre at the Faculty of Mechanical Engineering in Sarajevo.

- *Developing stakeholders' capacity for implementation of sustainable biomass value chain*. Includes: Capacity building of stakeholders in the field of supply of wood biomass, quality of wood-biomass based energy carriers (standards, procedures, instructions, verifications and good practices). Development and installation of biomass heating and electricity production power plants (technical, legal, administrative requirements, economic and other advantages of these investments). *Business to business cooperation* - by connecting the BiH and CZ Biomass Associations and coordinating bodies.
- *Development and implementation of wood biomass-based energy cooperatives pilot projects*. This should be the main "infrastructur" part of the project. *Activities*: Establishing energy cooperatives as an effective way to involve private forest owners and reduce the usage of illegally logged fuelwood for household heating.
- *Advocating and supporting the transition from fossil fuels and inefficient fuelwood heating to wood biomass-based energy carriers*. *Activities*: Implementation of co-financing switch from coal based to wood biomass-based heating systems for individual households (opportunity for Czech companies). Country-wide awareness raising and promotional campaign.

### Technological opportunities for Czech companies in BiH market

MEFTER informed that there is a big interest; the Ministry should be aware of requests. The Association of Biomass Producers described the demand as reasonable, considering that there is no strong gasification in BiH and biomass is locally available.

**Table 3: Technological opportunities for Czech companies on the BiH market**

Technology, comparative advantages	Identified opportunities	Possible Limitation
Technologies for biomass to energy utilization Expertise in installation of medium-scale boilers (500kW and more) with specific demands (e.g. Nemila case where it was needed to design a specific grate tolerating contaminated biomass). Providing full technology or engineering supervision. Focus on small district heating systems and individual heating systems for households (to step away from public buildings only) is in line with the current trends in the sector.	<i>Novi Travnik</i> : Their Municipal Action Plan for Sustainable Energy Management and Adaptation to Climate Change (SEECAP) for the period until 2030 includes fuel switches in several public buildings. They apply for funding from the EPF FBiH for at least 1 project per year. Last year received support with retrofitting and energy audit. There may be a possibility of heating several buildings from one source.	Conditions for co-financing from the Municipality and/or from the EPF FBiH, possibly in the form of soft loan.
Rehabilitation and construction of central heating systems Existing know-how for competitive market price	<i>Novi Travnik</i> : Priorities of the SEECAP include rehabilitating the old central heating system and replacing coal with wood chips.	Availability of funds, possibly in the form of a soft loan complemented by grant for the TA component
Building retrofitting of larger buildings such as old factories, office buildings Czech companies have a comparative advantage in knowledge of region perception and settings of the economic scheme	<i>Novi Travnik</i> : Priorities of the SEECAP include Fuel switch for the Municipal building.	If funded by the Municipality, needs to be a public tender. The know-how is not so sophisticated and typical Czech – hence there is a high market competition.
Solar energy hot water preparation and heating system for public buildings. Photovoltaic power plants on buildings. Czech firms have solid experience with solar energy sources implementation in existing infrastructures.	<i>Ljubuski</i> : Expressed interest in solar heating, possibly in combination with other sources. The winters closer to the Adriatic coast are relatively mild and there is a lot of sun shine. The cost of pellets or LFO are high, they use sometimes AC in the retrofitted kindergarten to save funds.	Conditions for co-financing from the Municipality and/or from the EPF FBiH, possibly in the form of soft loan.



## Opportunities in soft activities other than identified by the UNDP

*Table 4: Opportunities in soft activities other than identified by the UNDP*

Opportunity, comparative advantages	Identified opportunities	Possible Limitation
Supervision of retrofitting in public buildings in RS Czech firms have extensive experience with retrofitting public buildings. May be interesting for companies with branches/partners in BiH or in the region. If familiar with the legal and regulatory requirements, design could also be included.	Some 25 – 30 public buildings are to be retrofitted under the EBRD funded project <i>RS Energy Efficiency Fund</i> implemented by the EPEEF RS. The projects will be announced by public tender, likely in packages of 5. If budget over 200,000 – 300,000 BAM – international tender. Czech companies could submit proposals for design and supervision.	The know-how is not so sophisticated and typical Czech – hence there is a high market competition.
Supporting the BHAS (Agency of statistics of BiH) with updating, upgrading and hosting the Biomass Atlas.  BHAS (Agency of statistics of BiH) is a host (transfer was made) but there is no finance mechanism for its updating. The bylaws on roles and responsibilities of updating the atlas on biomass potentials (cooperation between MOFTER and BHAS) could not be adopted during the project period.  During our interviews, several stakeholders including MOFTER and the Association of Biomass Producers mentioned that they find the Atlas very useful.	This opportunity has been discussed with the UNDP who recommended possible steps.  To continue these activities with the already established Working group comprised of relevant institutions.  Draft by-law should be further agreed with responsible institutions (mainly the BHAS who need to include this activity in their annual plans)  The upgraded Atlas should include information relevant for private sector representatives with overview of installed and potential biomass infrastructure projects with employment opportunities indicated, overview of legislatives and policies to form a basis for development of more biomass energy projects.	Funding

### 4.3 Efficiency

#### 4.3.1 How can the cost-effectiveness of the funds spent on the evaluated project be assessed based on the available information?

**Cost-effectiveness has been established by cost comparison of the 4 CZDA fuel switch projects and a locally produced boiler.** Only prices of boilers can be compared as the price of the whole necessary installation depends on the local conditions. In some projects the supply of container was part of the project, in Doboj the original building was adapted from the contribution of the EPEEF RS to the hospital. The technologies and their cost are summarized in the table below:

*Table 5: Comparison of cost among the 4 fuel switch projects and a local technology*

Location - technology	Boiler incl. installation CZK	Only boiler CZK	Output (kW)	Cost per 100 kW of output incl. installation CZK	Cost per 100 kW of output, only boiler CZK
Doboj – Topling	4,665,000 incl. storage and fuel feeding	2,300,000	1400	333	164
Ljubuški – Hargassner	720,000 incl. fuel stockpiling and fuel feeding	520,000	60	1,200	867
Novi Travnik – Hargassner	904,000 incl. fuel stockpiling and fuel feeding	690,000	90	1,004	767
Mostar - Golem	2,388,500 incl. fuel stockpiling and fuel feeding	1,896,000	170	1,405	1,115
Ati Terming	-	58,000* (4,458 BAM)	40	-	145*

Notes:

- pp\* price before discount (after discount 3,370 BAM)
- Exchangerate CZK/BAM published by ČNB on 24.9.2021 = 13.051 CZK/BAM
- Information on cost for the 4 buildings is taken from contracts with implementers. Price for Ati Terming taken from the product displayed at distributors' (EURO STILL) showroom.

This comparison shows that the Czech technology Golem is most expensive and, unfortunately, according to the findings, also least reliable among other applied technologies. The comparison can however be misleading, as price per 100 kW should be higher in smaller boilers rather than in big boilers. Also, the capacity is not the only parameter; the most important is the quality and non-failure operation. **Energy savings are unquestionable**, because the new sources are more efficient and the projects also included the insulation of hot water pipes and the installation of control valves. Moreover, in some objects, they previously also used electric heaters. All buildings were retro-fitted prior to the fuel switch installations. The **thermal/energy output corresponds with the needs** of the users of the four objects.

In general, **heating with pellets is much cheaper than with LFO, not considering the investment cost** (A boiler using pellets is more expensive than a boiler using LFO). The actual cost depend among others on the form in which pellets are delivered.

**The cost of buying fuel decreased in all four objects.** Novi Travnik reported cost savings of more than 7,000 BAM (about 90,000 CZK) per heating season (8 months). In Dobož, all buildings within the hospital territory are heated from the new system because it is cheaper. In Ljubuski, where the system has been in operation for 3 heating seasons, they also use electrical air conditioners if the prices of pellets are too high. Mostar reported decrease in cost when the new system was in operation.

#### **4.3.2 What are the main factors contributing to (in) efficiency of selected solutions in terms of processes and content?**

The CZDA **communicated with local partners** by email, telephone or in person during on-site inspection days. Partners in Mostar mentioned that during implementation, communication and coordination of work have been good. Lack of communication has occurred with the first heating system failures. Other local partners described the cooperation as good. All partners pre-paid the VAT and customs duty as per the MOUs. Ljubuski for example provided pipes, new radiators and paid for unloading the container. Novi Travnik provided coordinator for electricity installations and the Kindergarten staff supported the works.

The main **factors that helped to achieve the results** mentioned by different partners include:

- The cooperation framework with the UNDP. It has been possible to get all relevant institutions on board, CZDA had something to build on and there was an open door.
- Analysis, retrofitting activities implemented before the fuel switch projects facilitated people's understanding of the context, helped with communication and building trust.
- System of strict sanctions - if the implementer does not fulfil the requirements of the tender documentation.
- Preparation of the tender documentation and supervision implemented by the same subject.
- Good relationships between the local partners, implementing team and the CZDA. The team in the Dobož hospital pointed out that this was particularly important in view of the very short time for implementation.
- Pooling resources: Contributions from the recipients, regional authorities, the EPEEF RS for Dobož.
- Benefits of the new systems: Easy operation, improved safety, heat comfort.

**The following factors were mentioned as hindering achievement of results:**

- Complicated administrative structure.
- The absence of an updated Energy Masterplan and the RES Action Plan (the solution for the project was switching to demonstration pilots).
- Insufficient communication by the implementer with the donor (projects in Mostar and Dobož).
- COVID-19 and other restrictions on business trips abroad. (AQUA-GAS has no office in BiH, problems with communication services/repairs in Mostar. Caused some of the delays in Dobož resulting in heavy fines.
- Insufficient understanding of the assignment by the implementer (Mostar, Dobož).
- The Public Procurement Act that CZDA has to follow. The implementer is bound by technical specification. It is not possible to require a full technical solution including specific type of technology as part of the offer. (It may be possible to create an exception under the Act on Foreign Development Cooperation).

- The Czech companies were suppliers of equipment that could also be supplied by local dealers. The value added of Czech know-how is not obvious.
- Lack of dialogue between the CZDA with technical experts and the beneficiary during formulation stage.
- Lack of public promotions of the project results, limited exchange of information between UNDP and the Municipality.
- Delays in obtaining permits for use of the systems (unclear division of responsibility and costs).

**The capacity of the heating systems is reportedly fully used.** The field visit took place before the heating season; the evaluation team relied on statements of the users.

During elaborating of this report, **information on the total contribution utilized from Czech development cooperation funds** was available for the UNDP co-financing, amounting to 486,000 EUR (12,371,130 CZK) for the soft-components. The preliminary cost of the 4 fuel switch project is about 37,512,974 CZK. Hence, the CZDA contribution to the project covers **49,884,104 CZK**. Third party **co-financing** includes 400,000 EUR (approximately 10,182,000 CZK) matching grant from UNDP for retrofitting, 140,000 BAM (approximately 1,827,140 CZK) from the EPEEF RS for project related works at the Dobož hospital and estimated 52,500 USD (approximately 1,146,810 CZK) from GIZ for the Biomass Atlas. Subject to verification of the actual expenditure, the Czech Development Cooperation contributed almost 80% from the total project budget of **63,040,054 CZK**.

## 4.4 Effectiveness

### 4.4.1 To what extent was the intended objective (outcome) achieved?

According to the logical framework matrix (LFM), the project aimed to increase the share of RES in the BiH energy mix to 40% by the year 2020. In 2016, the share of RES in the overall mix was 25.3%. (Source: Energy Secretariat, 1 September 2018, Annual Implementation Report (in the following text referred to as Report 2017/2018). The 2018/2019 Report shows a decrease to 22.7% in 2017. According to the 2021 Report, the share of RES in the overall mix of energy sources fall short of the 2020 target by 2.4%.

The project's overall focus was on wood biomass and it is questionable whether there was a potential to fill the gap only with wood pellets, even if none of the identified risks occurred. The key assumption for transition to market-based mechanism has not materialized; the financial schemes for investment in biomass have not been adopted, the models have not been replicated.

The target values in the LFM have not been revised. Based on the available target values, the project target has not been achieved.

### 4.4.2 Are the long-term outcomes of the projects specified/documentated sufficiently?

In all four CZDA fuel switch projects, technical specifications have been fulfilled according to the tender. In all four CZDA fuel switch projects, **technical specifications have been fulfilled according to the tender requirements** with possible modifications agreed between the CZDA and the implementers. **Main changes and modifications in the time schedule** were introduced in Dobož, because the original schedule was unrealistic. Further modifications resulted from delays with elaboration of the final design, restrictions due to the COVID-19 pandemic, the need for and delays in additional works. In both, Mostar and Dobož, there were also delays in the processing of project documentation and ensuring its nostrification. Delays in implementation led to the sanctioning of implementers which in the case of Dobož were significant. **Financial monitoring:** Information on the actual cost is included in the draft final reports for Novi Travnik, Ljubuski and Mostar. Signed versions of the reports are not available. Information on the actual cost of the Dobož project and the supervision services paid from the project are also not available. Ljubuski and Novi Travnik provided **information on possible problems and their solutions** in their interim reports. Due to the short implementation period, problems arising in Mostar were resolved ad hoc by email / phone call and confirmed in the form of an official letter addressed to the Director, CZDA. Dobož informed occasionally, mainly during control days.

## 4.5 Likelihood of impacts

### 4.5.1 What are the main intended and unintended development impacts of the project?

There are no measurement stations in the locations of the fuel switch projects, data on **air quality** is not available. Users of buildings and municipalities from Ljubuski, Novi Travnik and Dobož reported significant improvements (in Mostar, the system has not been working and they continue using LFO). **The project affected also other groups: Parents of children** in the kindergartens appreciate the improved air quality in the building and in the yards. Due to the improved air quality and heat comfort, they also reported decrease of the health issues of the kids, hence parents do not absent from their jobs. Ljubuski reported that they could decrease the fees due to the lower cost of heating. The numbers of children in both kindergartens has significantly increased, saving time for their parents. In Novi Travnik, the capacity of the new system is sufficient to heat the **primary music school** located on the second floor of the building, attended by over 100 children. **Suppliers of original fuels for local heating sources have not been affected.** Prices of LFO have increased, the decrease in demand is negligible.

### 4.5.2 What are the main positive and negative impacts on final recipients?

**Improved thermal comfort** is appreciated by the Dobož hospital as well as by the two kindergartens; all rooms have now stable comfort temperature, which was not the case with the old system. Technical service staff appreciates **better working environment, easier boilers operation** (digital control panel with visualization). The project had positive impacts also in the form of improved safety resulting from the fuel switch and from replacement of some obsolete equipment.

#### *Technician in Mostar:*

Health and safety conditions would improve if the heating system for pellets would operate without malfunctions. LFO is dangerous chemical substance, wooden pellets have no dangerous characteristics.

## 4.6 Sustainability and replicability

### 4.6.1 Which parameters of the project are key for its sustainability and to what extent were they reflected in the project?

Key factors of sustainability for the 4 CZDA projects include economic (coverage of cost.), technological (competent and systematic operation and maintenance), regulatory (standards for pellets), social (turnover of staff), environmental (sufficient supply of pellets) and organizational aspects. These aspects have been assessed on the basis of information from stakeholders interviewed during the inception phase and from available documents.

Key parameters for sustainability should be assessed, included in relevant documents and agreements prior to the project implementation. **Exit strategy** including risks to sustainability/their mitigation has been covered in the project documents only partially. CZDA explained that focus was on economic and technological sustainability and project ownership by the beneficiary, proven, among other things, by partners' co-financing (Ljubuski, Novi Travnik and Mostar contributed in kind, the EPEEF RS contributed 140,000 BAM (approximately 1,817,000 CZK) for the Dobož hospital). The implementer in Dobož identified local providers of post-guarantee services and spare parts. Long-distance monitoring during the guarantee period is included in the contracts with implementers. Reports for Ljubuski and Novi Travnik date back to April 2021, it is assumed that the process continues. Reports available for Mostar where the system does not work indicate that between December 2020 – August 2021, the new system worked some 42 days. Most heat has been generated by the LTO boiler meant as a backup, some 5% the solar system. This is consistent with statements of the Director and operator (the pellet boiler ran 1 month after commissioning until the first failure of the feed spiral. After the delivery of two more spirals, it was always operational only for 10 days).

The construction of a new hospital in Dobož has not been addressed in the tender documentation. Output 1.3 of the project, formulated with the support from CZDA, foresees a number of implemented infrastructural RES projects based on the new business models and financial schemes for investment in biomass resulting from demonstration on the 4 CZDA projects of advantages the combination of retrofitting and fuel switch bring. This has not been reflected in the tender documentation.

The Memoranda of Understanding signed between the CZDA, the organizations and in the case of Mostar, Ljubuski and Novi Travnik also the Municipalities stipulate i.a. the obligation to provide adequate fuel (pellets, LTO) for trial operation and technology deployment. All four objects are budget organizations. The **cost of operation and maintenance** of the heating systems are covered by the municipalities/Ministry of Health, in Mostar 70% is covered by the Centre. Evidence of economic calculations including the cost of pellets or discussions on budgetary allocations is not available. The same applies to the **extent to which the cost of repairs, depreciation, overhauls and revisions of the heating systems is covered**. Information obtained during field visit indicates ad-hoc solutions.

“The Municipality has some funds. The Centre pays for repairs and asks the city for reimbursement. If funds are available, the city provides them, if not the Centre cover the expenses.”

The **market price for pellets** typically increases during heating season. Findings from discussions with relevant stakeholders and review of available data indicate that the price of biomass is more or less stable since 2018. In 2017-2018 the biomass market collapsed; one ton of pellets was up to 300 EUR. Currently, the price 150 – 200 EUR/MT for quality A1 (usually used) or A2. (Wood chips cost about 40 EUR/MT, based on water content.) Pellets and other wood products are already certified<sup>14</sup>.

According to information provided by the technical staff, **the new heating systems are operated in accordance with the manual/relevant standards**. This could not be verified because the mission took place before the start of the heating season. The new heating system in Mostar is not operational. Manuals in local languages are available in all four locations. All **technical staff trained in operation of the new technologies continues working**. This includes 5 of the 15 technical staff in Dobož, 1 person in each of the kindergartens and 2 in Mostar (continue working with the old system).

**Potential problems with the long-term operation of installed technology** and possibilities for mitigation identified during the evaluation are summarized below. The life time of the technology should be at least 10 years, depending on preventive maintenance.

*Table 6: Potential problems with long-term operation and mitigations by the project*

Potential problems	Options for mitigation
Unreliable technology, incorrect installation	Removal of defects during the guarantee period (Mostar)
Regular preventive maintenance	Securing funds, monitoring maintenance logs, regular revisions of the LTO boilers
Chemical composition of water reflects the requirements of the heating system	Has not been tested, should be tested and adjusted if necessary
Professional post-warranty service	Ideally by competent local companies on a contractual basis
Availability of spare parts	Sufficient storage of spare parts that can be easily worn out
Renewal of the distribution networks	Parts have been replaced under the fuel switch project. Their rehabilitation would contribute to further energy savings as well as to improved safety of the system.
Water change in the entire heating circuit after the end of the season	Monitoring maintenance logs
Well maintained radiators	Including radiators in the retrofitting or in the fuel switch projects
Using low quality pellets	Quality A1 <sup>15</sup> is used, depends on the supplier. So far, no problems with operation.

The **availability of pellets** is influenced by developments on the international/EU markets as well as by their use in larger systems. It is not expected that large combustion sources would use wooden pellets. They usually use brown biomass/wood chips (such as the district heating in Banja Luka). Estimates of the current share of

<sup>14</sup> FSC (Forest Stewardship Council) Chain of Custody (CoC) | Forest Eco Certification (FSC Chain of Custody certification verifies FSC certified forest products through the production chain. Chain of Custody (CoC) is a channel through which products are distributed from their origin in the forest to their end-use. The FSC CoC enables verification of use of FSC certified material through the production process – from the forest to the consumer, including all successive stages of processing, transformation, manufacturing and distribution.) Member of FSC: Independent Trade Union of Forestry, Wood Processing and Paper of BiH + 3 individual members

<sup>15</sup> Properties of pellets quality ENplus A1, A2 and B are determined by *Limit values for parameters of ENplus wood pellets*, European Pellet Council, <https://epc.bioenergyeurope.org/enplus/> (accessed on 12.10.2021)

exported pellets vary between 30% (Association of Biomass Producers) and 70% (retailer), but further increases are not expected. While the volume of export and domestic demand is increasing, so is the production. The government is introducing taxes to curb the export volumes. None of the three organizations reported shortages. Delivery may be delayed by 1-2 days due to distribution problems, particularly in the winter. In the medium future, availability of pellets should not be a problem. The longer-term situation depends on several factors: With the development of price of EU ETS emission allowances (almost 60 EUR) and decrease of coal consumption, biomass will be the solution. The question is how BiH will reflect this in its policy. If BiH goes the direction towards EU, then it should gradually introduce fiscal measures for biomass-based fuel competitiveness. However, this solution is of low popularity as coal used mainly by low income population will be more expensive. In the long-term, it can also be influenced by shortage of sawdust. In BiH regulation for re-forestation exists, but there is a question of enforceability. Forest management is an issue.

**Other sources of biomass** for which technologies in BiH have been developed include wood chips, wood briquettes made from sawdust and leftover woods, and fuel wood. An exemption is the Monastery of Trappist (near Banja Luka) which uses organic waste for biogas generation and is energy self-sufficient. Sunflower husks are available only in the big oil pressing companies; market with agri-biomass does not exist. Advantages of pellets include better manipulation and transport compared to wood chips where extra labour force is needed. They can be delivered in bulk or in bags (this includes extra costs). The local market for briquettes is weak.

## **4.7 Cross cutting principles**

### **4.7.1 To what extent did the project contribute to the improvement of the environment in the given locality?**

Subjective perception of improved air quality was reported by users of the objects. The objective quantitative data from measurement are not available in the project areas. Stakeholders reported poor quality of such measurement stations in BiH.

### **4.7.2 Have negative results or impacts been recorded related to environmental sustainability in relation to the project?**

No negative impacts have been recorded. The negative impacts on the environment were mitigated after the fuel was changed from heavy oil to biomass where the heating efficiency was increased. Every pellet boiler is equipped by a cyclone for dust removal from the flue gas. This mitigation measure is sufficient and corresponds to the boiler's capacity. The project made an important contribution to the implementation of the National Renewable Energy Action Plan (NREAP) 2016 -2020.

### **4.7.3 To what extent was the cross-cutting principle of good (democratic) governance reflected in the project?**

The selection of the objects was based on transparent criteria using the following steps: 1. EMIS analysis (Energy Management Information System), 2. Data related to CO<sub>2</sub> emission collected for six months, 3. Energy audit, 4. Economic analysis, 5. Energy efficiency measures, 6. Prelisting of potential objects to CZDA, 7. Assessment based on the budget. The managers of the objects stated that they were involved in the project since beginning. Responsibilities were specified in the MoU between CZDA and the respective beneficiaries, and in the contract between the implementor and his sub-contractor. The selection process of implementers complied with Czech and Bosnian legislation. According to the key informants, beneficiaries had a chance to express their opinions/requests in joint meeting, but did not take the opportunity due to the cultural patterns. Some stakeholders at Municipality level reported that were involved only after the selection of the building and were not consulted about prioritization from their perspective. MOFTER was regularly informed of the project progress. Information about the project is in local languages and English on the websites of various stakeholders. Information about the four infrastructural projects were not found on the websites of the implementors.

#### 4.7.4 To what extent has the project reflected the cross-cutting theme of respect for the human rights of beneficiaries, including equality between men and women?

The fuel switches were implemented in four public buildings used by marginalized/vulnerable groups - children, elderly and infirm people, women. However, the gender equality component was not included in the project design. All members in community have an equal access to the project-generated outcome. The participation in the project was gender-limited in some aspects due to the technical nature of it (all operators are men), while users of the public buildings were prevalently females. The stakeholders at management position involved both women and men in the four objects, some partner organisations reported equal opportunity for both gender in this respect.

### 4.8 Visibility

#### 4.8.1 Were the requirements for the external presentation of the project in BiH met?

Presentation is the responsibility of the implementers. **Methodical instruction of the Czech Development Agency to the external presentation of the Czech Republic's foreign development cooperation were followed by all implementers.** They included ZRS ČR stickers, leaflets, billboards in front of the boiler rooms, press releases, publicity during handing over ceremonies of the boiler containers in the two kindergartens. UNDP Sarajevo widely publicised the project and CZDA as a donor on its website and prepared a promotional video about the Novi Travnik kindergarten (<https://www.youtube.com/watch?v=8rUn0g0AQK4&t=41s>). The Agency for Statistics of Bosnia and Herzegovina published the logo of CZDA on the Biomass Atlas website.

**Different stakeholders learned about the project in a variety of ways.** The association of Biomass producers from its experts' network, MOFTER was familiar with the project from the very beginning as a key stakeholder, MOA RS thru working with the Czech Embassy in Belgrade. The municipalities and managers of the four public demonstration buildings learned about the project from third sources, some of them quite interesting. Two learned from UNDP's announcements and during participation in their workshops. It has been noticed that the local partners are proactive and experienced in seeking grants for energy efficiency measures and other improvements in their respective communities.

*.... Went to Sarajevo to different organizations. Got information about the project from Czech wives married to Bosnian husbands. Went for meetings with the Czech Embassy in Sarajevo and submitted the project proposal form.*

## 5 EVALUATION CONCLUSIONS

### 5.1 Relevance

The four demonstration fuel switch projects were linked to the UNDP contribution (matching grant for their retrofitting) and soft components of the project in the Third-Party Cost Sharing Agreement between the CZDA and UNDP. The amount foreseen for their funding at the time of signing the Agreement in 2016 was some 3.7 times below their actual cost. There is no evidence about considerations of their demonstration potential in the applied selection criteria. While generic business plans were developed, financing mechanism proposed under the project has not been accepted by the EPEEF RS and EPF FBiH. While the four fuel switch projects could still fulfil their role as demonstrations of potentially profitable investments, the specific business models were not developed, rate of return not established. No budgets have been allocated for their promotion. The main control document for their monitoring were the Technical specifications of the respective contract. There was no longer a link with the project and its soft components, including contribution to the project Purpose. While they failed to meet their demonstration role, the 3 functional fuel switch projects brought environmental, financial and operational benefits appreciated by the staff of the public buildings as well as by the "owners" of these budget organizations. The Czech technology installed in the Mostar project stopped working shortly after the beginning of the previous heating season. Still, Mostar as well as Dobož and Novi Travnik would recommend fuel switches. Dobož, Novi Travnik and relevant institutions also the use of the installed technologies.

While the fuel switch projects have eventually not been conceptualized as demonstration, the three functioning technologies are highly relevant for the direct beneficiaries. **Based on the above, relevance is assessed as quite high.**

## 5.2 Coherence

The project is in line with the priorities of the Czech Development Cooperation and the relevant BiH plans and strategies. There is however no synergy between the CZDA demonstration fuel switch projects and the soft components. While there are no overlaps, there is also no complementarity or additionality with other CZDA projects or projects funded by other donors with the exception of the UNDP project under which the four buildings were retrofitted and the EMIS used for their selection. The demonstration effect of the four projects was thus very limited.

The lack of response from the implementer of the Centre for Old and Infirm persons in Mostar for removing defects on the system affected the implementation of the project; the heating system in Mostar has been out of order since the first part of the last heating season. There is an overall satisfaction with coordination by the CZDA. The initial differences between the CZDA and the implementer of the Dobož hospital project were eventually settled with heavy fines and the project successfully completed. Cooperation with the UNDP in BiH has been valued by both partners and is likely to continue.

The Czech expertise in the RES sector is appreciated at the central as well as at the local levels. This is partially due to the current project and involvement of Czech experts in the soft components, partly due to the fuel switch projects (where they work) but also due to successfully implemented previous projects and contacts between institutions and experts. The demand for Czech expertise is there and several potential opportunities have been identified. **Based on the above, coherence is assessed as quite high.**

## 5.3 Efficiency

Calculations indicate that the Czech technology Golem is least effective. The comparison can however be misleading. The actual cost for the 4 fuel switch projects is not known, the calculations are based on budgets; in theory price per 100 kW should be higher in smaller boilers rather than in big boilers. Also, the capacity is not the only parameter; the most important is the quality and non-failure operation. Failure rates for the Serbian made Ati-Terming boilers available on the local market are not known, the system in Mostar using Golem technology is not operational. While the investment in pellets technology is higher than in traditional heating systems, heating with pellets is much cheaper. The cost could be further decreased by creating storage facilities and buying pellets before the heating season when the prices are lower. The capacity of the working systems is fully used.

The factor listed as supporting or hindering the project indicate the importance of cooperation with the UNDP and good working relationships with local partners who contributed to the implementation. They also indicate the advantage of local implementers and suppliers because of their accessibility if there are problems with the technology. When and how the situation in Mostar will be resolved and the system repaired is not clear. The CZDA has no leverage over implementers who fail to make repairs during the guarantee period.

Preliminary calculations indicate that some 80% or 49,884,104 CZK of the total project cost was funded from the Czech development cooperation funds, about double the originally estimated amount. **Based on the above, efficiency is assessed as quite high.**

## 5.4 Effectiveness

The project did not reach its stated outcome, mainly due to overambitious target value. Long-term outcomes were documented to some extent. While technical specifications have been fulfilled in all 4 fuel switch projects, there were major delays in implementation in Dobož, partly due to the unrealistic schedule. Some delays occurred also in Mostar. Information on the final cost of the projects is available only partially. Information on problems and proposed solutions from Dobož has not been systematically reported. **Effectiveness has been assessed as quite low.**

## 5.5 Likelihood of impacts

The project resulted in better air quality in and around the fuel switched buildings, improved heat comfort, created better working environment with easy operation of the systems and improved operational and health safety. Such healthier, safer and comfortable environment benefits the users of the buildings (patients in the hospital, children in the kindergartens, technical service and other staff, pupils and staff in the primary music



school in Novi Travnik). It also benefits parents who save time by sending more children to the kindergartens and the local communities where savings on fuel can be used by the municipalities for other activities. **Likelihood of impacts has been assessed as high.**

## 5.6 Sustainability and replicability

Exit strategy including risks to sustainability/their mitigation has been covered in the project documents only partially with main focus on covering the cost of fuel and ensuring training and retention of operators. As discovered during the field visit, the system in Mostar has been out of order from January 2021. This information is not available in the project reports and has not been shared during discussions with the CZDA. The implementer was not available for a meeting. Assessment of economic or environmental sustainability and benefits of the systems that were meant to demonstrate the advantages of the approach of combining retrofitting and fuel switch and lead to replications are not included in the project documentation. Assessments of the status of the systems, technical competence of operators, prices and availability of pellets indicate that, depending on preventive maintenance, the technology should work without major repairs for at least 10 years, with the exception of Mostar. Replicability is possible if new systems are funded by grants. Replicability on commercial basis could not be assessed due to the absence of business model including financial analysis. **Sustainability and replicability have been assessed as quite low.**

## 5.7 Cross cutting principles

Three cross-cutting dimensions were relevant for the evaluation: Environment - The project outcomes contributed to the air quality in the surrounding of the four objects. No negative impacts on environment were indicated, if needed mitigations measures were applied in compliance with legislation (e.g. disposal of used LTO). **Improvement in environment has been assessed as high.** Good governance – The participation in the project varied according to the stakeholders. The management of the objects was involved since the beginning of the project, however, had limited agency in negotiations with the donor. Some authorities at municipality level reported that were not involved in the selection process of the objects, nor consulted on their priorities. The selection process was based on transparent steps and criteria. **Improvement in good governance has been assessed as quite low.** Gender equality – was not involved in the project design. The fuel switches were implemented in four public buildings used by marginalized/vulnerable groups - children, elderly people, women. All community members despite the gender have an equal opportunity to benefit from project outcomes. The participation in the project was gender-limited in some aspects due to the technical nature of it (all operators are men), while users of the public buildings were prevalently females. **Improvement in gender equality has been assessed as quite low.**

## 5.8 Visibility

Methodical instruction of the Czech Development Agency to the external presentation of the Czech Republic's foreign development cooperation were followed by all implementers including the UNDP and implementers of the 4 fuel switch demonstration projects. Key stakeholders at the central level learned about the project because they were directly involved. Partners at the regional and local levels learned mainly thru the UNDP and Czech Embassies in Sarajevo and Belgrade. **Visibility has been assessed as high.**

# 6 RECOMMENDATIONS

Level of seriousness: 1 – the most serious, 2 – serious, 3 – the least serious

## 6.1 Recommendations related to project and continuation of CZ DC

### 1. Rehabilitating the heating system in Mostar (level of seriousness: 1)

Primary addressee: AQUA-GAS

The system is under the guarantee; the implementer has contractual obligation to put it into operation.

The timing is urgent as the heating season is about to start - before 01 November 2021.

**2. External technical monitoring shall be carried out during the trial period of operation and before the last payment to the implementer (level of seriousness: 1)**

*Primary addressee: CZDA*

The external technical monitoring company of the CZDA shall check the installed technology during the testing – trial period. They shall report any design incompliance or operating problems. If this is the case, CZDA shall delay the final payment to implementer till the installation is repaired and operates without defects.

Timing: during trial period of boiler operation

**3. Conclude with the implementer an agreement on post-guarantee services where the recipients are satisfied with the performance (Hospital Doboј with Project Plus, Kindergartens with AQUA-GAS) (level of seriousness: 2)**

*Primary addressee: Hospital Doboј, Municipalities in Novi Travnik and Ljubuski*

The commitment of post-warranty service will contribute to the long-term reliability of the heating plant operation.

Timing: Before the end of the respective warranty periods

**4. Utilize the demonstration potential of the three functioning fuel switch projects (level of seriousness: 2)**

*Primary addressee: Embassy*

Demonstration of profitability may support investments in line with the current strategy of commercialization. Together with information on social and environmental benefits, improves awareness of CZ DC as an actor in the RES sector.

Preparation and publication of business plans, rate of return, monitoring annual cash flow, preparing a short study (could be MS thesis for a student)

Timing: Between now and the end of the return on investment, max 3 years.

**5. Include a backup generator to supply electricity for the electronic regulation unit for future projects in localities with unreliable power supply to avoid switches to LFOs. (level of seriousness: 2)**

*Primary addressee: CZDA*

In Novi Travnik, the Kindergarten advised that they sometimes switch to the old system because of power cuts. Assessment of reliability of power supply as part of project identification.

Timing: whenever new fuel switch project is planned.

**6. Reconsideration of the amount IRCON has to pay on fines (level of seriousness: 2)**

*Primary addressee: CZDA*

Findings confirm that the implementer did not communicate proposed changes in design or requests for extension to the donor in time. While the allocated time may have been adequate for the container technologies heating 1 building, the Doboј Hospital was much more complex, providing heating in some 12 buildings and the installation of 7 distribution stations. The CZDA concluded contract in the full knowledge of the implementer's capacities. The client is satisfied with the project results, the system is working. The strict approach may deter future bidders.

**7. Continued support to the RES sector in BiH (level of seriousness: 1)**

*Primary addressees: MFA, CZDA*

Due to poor air quality in many areas of BiH due to the burning of fossil fuels, especially coal to produce heat and electricity, it can be recommended to continue supporting projects aimed at air protection, promoting sustainable energy sources and reducing energy intensity.

Given the focus of most donors in this sector on large projects, it is appropriate to focus on smaller cities or civic amenities, where the construction of a biomass heating plant (or reconstruction of an existing heating plant with transition to RES or combined production of electricity and heat from RES) would contribute to improvement. air quality at the local level. It is also recommended to support the reconstruction of obsolete heat distribution systems (by replacing modern insulated systems), or the construction of new heat networks where they are not yet. Additional projects for heating water from solar sources or photovoltaic systems are also suitable.

Time horizon for the implementation of the above focus of the development cooperation projects of the Czech Republic - 2018–2023 in accordance with the program of development cooperation of the Czech Republic with Bosnia and Herzegovina for the period 2018–2023.

## 6.2 Procedural and systemic recommendations

### 1. Implementers of evaluations are provided with complete relevant documentation (*level of seriousness: 1*)

Primary addressee: CZDA

At the time of drafting this report, the following evidence has been missing:

- Signed handing over protocols/declarations of donation for Mostar, Doboj if completed.
- Actual payments for Novi Travnik (only 1 invoice issued), Doboj, Mostar, Supervision
- Actual starting dates/signature of contracts for Novi Travnik, Mostar

### 2. Aim for internal coherence of interventions (*Internal coherence addresses the synergies and interlinkages between the intervention and other interventions carried out by the same institution/government, as well as the consistency of the intervention with the relevant international norms and standards to which that institution/government adheres*) (*level of seriousness: 1*)

Primary addressee: CZDA

The linkages between the fuel switch demonstration projects and the remaining “soft” components of the project are weak/missing. The potential of synergies has not been used. The donor could not provide information on consistency with the strategies and plans of the BiH. Evidence of complementarity and additionality with other CZ DC projects in BiH in the related sectors has not been detected.

It is recommended to focus CZDA in the sector geographically, topic wise, or on other criteria for enhanced impact and better visibility (the Example of Ethiopia where the CZ DA focuses on and as well known in a defined geographical area is a good example).

### 3. Aim for external coherence (*External coherence considers the consistency of the intervention with other actors' interventions in the same context. This includes complementarity, harmonisation and co-ordination with others, and the extent to which the intervention is adding value while avoiding duplication of effort.*) (*level of seriousness: 1*)

Primary addressees: MFA, CZDA

It is recommended to continue with complementing UNDP project.

### 4. Introducing retention fee, clarification of responsibilities, obligations and sanctions during retention period of implemented projects (*level of seriousness: 2*)

Primary addressee: CZDA

The heating system in Mostar has been out of order during the past heating season and until now does not work in spite of repeated communication on the side of the recipient. The final payments have been reportedly released. The CZDA has a leverage on the implementor to rectify the defects based on paragraph 8.4 of the Contract, however, to the best knowledge of the evaluators this has not been applied yet. This is an unfortunate situation that could be mitigated by retaining a portion of the final payment until after the retention/ guarantee period. (The recommendation is in line with the current policy of CZDA. The CZDA also advised that information about malfunction has been received via the Embassy only in September 2021 and is in the process of being evaluated.)

### 5. Clearly defined coordination responsibilities and modalities of communication particularly for projects funded by several donors and with different implementation modalities.

Primary addressee: CZDA

The lack of overall management and coordination resulted in disassociation (separation) of related project activities and in breaking the logic of the project. The project logic has not been updated to reflect the actual scenario. Possible synergy effect has been lost. Coordinated implementation of activities, monitoring of risks and adjustments of the project design improves effectiveness.