



Příloha 12. Záznamy z rozhovorů a shrnutí diskuse na debriefingu

Seznam záznamů a shrnutí:

- A. Zastupitelský úřad Sarajevo
- B. EBRD
- C. Federální ministerstvo životního prostředí a turismu
- D. Grijanje d.o.o. - teplárna Nemila
- E. Místní úřad Nemila
- F. SIDA
- G. USAID
- H. UNDP
- I. GIZ
- J. Městský úřad Zenica
- K. Ministerstvo hospodářství Zenicko-Dobojského kantonu
- L. Ministerstvo územního plánování, dopravy a životního prostředí Zenicko-Dobojského kantonu
- M. Dřívější koordinátor projektu
- N. ECO TOPLANE d.o.o., Gračanica
- O. REIC
- P. Inspekce životního prostředí Zenicko-Dobojského kantonu
- Q. Debriefing



A. Embassy of the CR, Development Cooperation Dept

Date and time: 3.7. 2017, 9.30h, doplněno o informace z jednání 23.10. v 15.30

Contact: Anesa Terza Vuković, Jana Zelingerová

Úloha ZÚ je ve fázi identifikace a monitorování.

Identifikace – na začátku fungování CZDA v Bosně, zástupci ZÚ jezdili po Bosně a sbírali náměty na projekty. V Nemile byl zájem o kotel na biomasu. Měli podporu ze Zenice, kde je celoročně velice znečištěné ovzduší díky těžkému průmyslu. Provozovatel kotelny se zdál jako dobrý partner.

V průběhu realizace projektu se ZÚ zapojuje hlavně, když nastanou problémy – např. když bosenský partner neplní to, co bylo dohodnuto. Jinak dělají monitoring.

Evaluační otázky:

2. Efficiency	
2.2. How did the involvement of Czech and of local capacities in the project function?	
2.2-1 How did the cooperation function between Czech and local partners in BaH?	V průběhu projektu (během monitorování ze strany ZU) byla spolupráce velmi dobrá, bez problémů. Bosenská strana investovala velkou část téměř polovinu celkové hodnoty projektu.
2.2-2 How did the communication function between Czech and local partners in BaH?	Stejně tak komunikace – zástupci bosenské strany se o projekt dobře starali.
2.2-3 How did the coordination function between Czech and local partners in BaH?	Koordinaci z bosenské strany zajišťoval p. Ahmedspahic. Staral se o celý proces v průběhu projektu. Doporučení sejit se s ním. Po ukončení projektu nemá ZÚ informace, jak detailně provoz teplárny funguje.
2.2-4 What were the main problems in cooperation?	Problémy nebyly. Zejména proto, že bosenská strana zajistila financování stavební části projektu a její realizaci.
2.3. Is there any effective and functional link between the project and other donors' projects?	
2.3-1 What was the added value of the interconnection of the project with activities of other donors?	Stavební část projektu byla zajištěna z bosenských zdrojů, které si město sehnalo samo – jako kofinancování. O dalších aktivitách donorů v Nemile nemá ZÚ informace.
2.5. Is it possible to identify any good practice examples (e.g. in comparison with other donors' projects)?	
2.5-1 To what extent is the project approach replicable?	Slyšeli, že byl zájem o návštěvu technologie teplárny, avšak detailní podmínky replikability neznají.
2.6. How was the project monitored? (progress and financial monitoring)	
2.6-1 How was the project monitored by Czech partners	ZÚ se podílí na monitorování podle plánu monitoringu na jednotlivé roky. Obvykle probíhá monitoring 1 – 2x ročně. Podklad pro monitoring je roční zpráva za předchozí období, podle které dělají monitoring prací. Při monitorování komunikují s bosenskými partner. Záznam z monitoringu je na speciálních formulářích.

4. Actual and anticipated impacts	
4.3. Which external factors affected the results and impacts of the project in positive/negative ways? Were those effects anticipated in the risk analysis of the project?	
<i>4.3-1 Which external factors helped to achieve objective and results of the project?</i>	Zajištění dotace z místních zdrojů ve výši 750.000 EUR; osobní zájem starosty; zájem občanů o připojení na CZT
<i>4.3-2 Which external factors obstructed achieving project objectives and results?</i>	Žádné
7. System knowledge findings	
7.1. Will the topics of the project still be relevant from the perspective of medium-term and long-term needs of Bosnia and Herzegovina (3 – 5 years)?	
<i>7.1-1 What are the mid-term and long-term plans in BaH in the energy production and supply sector, sub-sector heat production from renewable sources?</i>	NA. Mělo by to být snížení znečištění ovzduší. Zenica i Sarajevo se řadí na přední místa ve světovém žebříčku znečištěných měst.
7.2. Are there any system recommendations as to the focus adjustment or as to the effectiveness increase of the further development projects in Bosnia and Herzegovina?	
<i>7.2-1 How can the effectiveness of CZDC projects be increased?</i>	Zapojit relevantního experta při formulaci projektu. (většinou se tak v poslední době děje) Nastavit řízení projektu jako celek – chybí systém řízení, který by pojmul české i bosenské partnery. Toto nebyl v případě Nemily problém. Ale obecně je problém se specifikací povinností a spoluúčasti bosenské strany v MoU. V poslední době se zlepšuje specifikace MoU, ale dosud neobsahují částky, které by měli bosensští partneři zajistit. MoU je dosti obecné. Někdy problém s DPH – možné zdržení dodávek na hranicích.
8.3. To what extent was in the project reflected the principle of good (democratic) governance?	
<i>8.3-1 To what extent were key actors involved in decision making during the project preparation and implementation.</i>	V projektu byla zapojena místní samospráva i občané. Detaily poskytne p. Ahmetpahic.

Informace o ostatních donorech působících v BiH v daném sektoru:

- EBRD – setkali se v Gradačac – ČOV.
- UNDP – spolupracuje na projektu teplárny v Bihači.

Další projekty ČRA v oblasti dodávky tepla nebo vody

- Projekt teplárny na biomasu – nemocnice v Bihači - spolupráce s UNDP
- Projekt vodovodní systém v obci Lukavac - nebyl dodělaný - špatné spolupráce s místními partnery.
- Solární systém v Mostaru

Záplavy v květnu 2014 v oblasti Zenica/Doboj – větší škody než po válce.

Pojištění proti povodním v Bosně existuje, ale je to drahé. Nemají informace, zdali je provozovatel teplárny



v Nemile pojištěn.

Problém s kvalitou ovzduší v BiH:

- V Zenici je velký zdroj znečištění, problém nízké pokuty za znečištění a málo inspektorů např. na kanton Sarajevo jsou jen 2 inspektoři.
- V Sarajevu mají 3 stanice na měření kvality ovzduší
- kvalitou ovzduší v BiH se zajímají organizace Arnika (p. Skalský) – mají data o znečištění, Ekoforum Zenica – Samir Pelič, a <http://www.ekoforumzenica.ba/monitoring.php> - publikují aktuální informace o kvalitě ovzduší.

Doplnění z diskuse o závěrech a doporučení (23.10.)

- Program rozvojové spolupráce BaH 2018 – 2023 je schválen, s publikací na internetu se čeká na překlad do bosenského jazyka.
- Paní Zelingerová souhlasí s doporučeními týkajícími se ZÚ Sarajevo – plánuje připravit brožuru, která bude poskytovat přehled o všech možnostech podpory, které jsou v BaH k dispozici.



B. EBRD

Date and time: 3.7.

Contact: Mr. Josip Polic, Associate Director, Senior Banker, policj@ebrd.com

2. Efficiency
2.1. Were the Implementer's procedures cost-effective, namely in comparison with similar procedures of other donors' projects?
<i>2.1-1 Which are any alternative/cheaper procedures used by other donors for heating systems based on sustainable energy sources?</i> EBRD co-financed reconstruction of Toplana AD Prijedor for CHP and change of fuel for biomass – wood chips. Capacity 2x10 MW of heat. In operation from 2016. Detailed information below.
<i>2.1-2 What is the energy efficiency of the implemented technology in comparison with other similar projects?</i> Information about energy efficiency of Prijedor not available. CHP plant not comparable with pure heating plant.
2.5. Is it possible to identify any good practice examples?
<i>2.5-1 To what extent is the project approach replicable?</i> The project was inspiration for many other municipalities; but the issue is availability of biomass in acceptable price. Unless biomass in required quality is available in long term, it is useful and economical to have possibility to use the shredder for the biomass.

EBRD Project: Toplana AD Prijedor.

Feasibility study from 3/2014; in operation since January 2016

Capacity: district heating 2x10MW hot water + cogeneration using pyrolysis 250 kW electricity

Since January 2016, heating boilers fired by wood chips (they have their own shredders for biomass).

5.600 customers which include 13.000 inhabitants (about 26% of population), but problem with decline of customers.

Heating is provided 24h/day.

The partner is the utility public company/ - guarantor city.

Monitoring for EBRD: annual report incl. financial, environmental (incl. CO2 emissions) and social issues.

Funding of the reconstruction:

SIDA – 2,6 mil. EUR grant (including 0,6 mil EUR for technical assistance + feasibility and technical studies)

Total cost – EBRD + SIDA: 8,6 mil EUR for new boilers; exchange stations are being reconstructed now.

Heating tariffs:

3 BAM/m² (1,54 EUR/m²) for commercial organisations without meters (without VAT)

1,48 BAM/m² (0,76 EUR/m²) for households without meters (without VAT)

Metered tariffs: 100 BAM/60 EUR/MWh for all customers included VAT

Available: Feasibility study from 3/2014



Information about other projects:

1. Municipality Pale – tried to do district heating for biomass, but it was failed – changed after signing contract for 5,5 mil. loan, sovereign 3mil. EUR.
2. Municipality Gradiška: 10x4,1 MW they used their Feasibility study – they hired their owned private investor. Private company produces boilers (IEE) – Elnes – power transmission company.
3. City of Banja Luka planning - 49 MW, district heating company – plan to convert to CHP.
4. Zenica public hospital – feasibility study CHP biomass prepared; model public private partnership; but the management changed opinion, stating that there is not enough biomass for the new project; currently burning lignite – 2nd biggest polluter, plan to switched to gas.
5. Paper mill Natron Hyat (the first Nemila biomass supplier) obtained loan for biomass CHP from EBRD.

There are 4-5 companies producing boilers in BiH.

Forest is mostly stated owned.

Supply of biomass is a challenge - illegal cutting of forest. Prices grow up.

EBRD also finance Hydropower, but some projects are causing lack of water in the original riverbed.



C. Federal Ministry of Environment and Tourism

Date and time: 3.7. 15.00h

Contact: **Mirjana Kovač**, head of the Department of Environmental Permits, S. Nomič, responsible for PRTR

1.3. To what extent are the project outputs relevant in terms of BaH international legal obligations?

1.3-1 To what extent are project outputs relevant to BaH obligations to EU?

Relevance rate with BaH obligations listed in the Program for approximation of EU environmental legislation BaH

- BiH signed PRTR protocol, but it is not ratified.

The heating plant obtained environmental permit with conditions which are in line with BiH legislation and the emission monitoring protocol confirmed compliance with the permit conditions. There has been no concrete EU requirements for combustion plants with capacity of 3 MW (which is the heating plant capacity) till the EU Directive 2015/2193 on medium combustion sources, which enters into effect since December 2017. Its ELV are valid for existing sources from 2030. The emission limits set in the environmental permit and the plant performance is following this Directive requirements already.

1.3-2 To what extent are project outputs relevant to BaH obligations in the field of greenhouse gas emissions (GHG) reduction (except EU)?

Relevance rate with the UN Framework Convention on Climate Change, - BiH member since 2000

Relevance rate with Kyoto protocol – ratified in 2007

7. System knowledge findings

7.1. Will the topics of the project still be relevant from the perspective of medium-term and long-term needs of Bosnia and Herzegovina (3 – 5 years)?

7.1-1 What are the mid-term and long-term plans in BaH in the energy production and supply sector, sub-sector heat production from renewable sources?

- Strategic framework for BiH, August 2015
- BiH plans related to air protection are listed in the Environmental Protection Strategy since 2018.
- The ministry favours switch to biomass fired sources or installation of new biomass sources due to decrease of air pollution.

7.2. Are there any system recommendations as to the focus adjustment or as to the effectiveness increase of the further development projects in Bosnia and Herzegovina?

- There is a problem with lack of coordination of the projects from various donors focussed on air protection, therefore there is a need for coordination improvement.
- The priority is to support smaller municipalities and enterprises which do not reach the support of big donors.
- All running projects shall be monitored.



Environmental permitting for small air pollution sources like the heating plant in Nemila are permitted on Cantonal level. I.e. the Federal ministry is not informed about such projects.

Strategic documents in Environmental protection:

- Environmental Protection Strategy since 2018 contains special part related to air pollution protection in Zenica, Sarajevo and Tuzla areas. The main problem in air protection is the wide use of coal as a fuel. It is necessary to ensure good management of biomass.
- Waste management plan on federal level

There is Federal Environmental Protection fund:

- There are new provisions related to obtain funding for energy efficiency and environmental projects
- There is obligation to finance the environmental protection as it is revolving fund.
- The fees for air emission releases are paid into the fund; 70 % of the fees have to return into the location of the polluters.

In some cantons, they have their own Environmental Protection funds (EPF), where there is not EPF, the fees go to the federal fund.

Monitoring of air pollution is ensured by certified organisations; certification is issued on federal level.

The main pollution in BiH is PM10 and PM20.

Air protection legislation is harmonised with EU legislation (e.g. LCP directive is fully transposed on federal level). There is a national emission reduction plan on state level.

Unclear competences between Law on energy production and Law on air protection.

Air quality – monitoring ensured by Hydrometeorological institute; publishing data on <http://www.fhmzbih.gov.ba/latinica/P-zrak.php>. (yearly reports)

Proposal for replication of biomass boiler in Visoko municipality in Kakanj country as there is very strong pollution from the coal fired power plant. It would be the priority for the federal ministry.



D. Grijanje” d.o.o. Zenica, heating plant Nemila

Date and time: 4.7. 9.30, amended based on 2nd meeting on 23.10. and meeting with technical director of Grijanje 24.10.

Contact: Muamer Babic, plant manager, Kemal Veledar, technical director

2. Efficiency	
2.1. Were the implementer's procedures cost-effective, namely in comparison with similar procedures of other donors' projects?	
2.1-2 What is the energy efficiency of the implemented technology in comparison with other similar projects?	EE 89 – 90 % efficiency would be bigger if the installed capacity is utilised; current utilisation is about 30 %.
2.2. How did the involvement of Czech and of local capacities in the project function?	
2.2-4 What were the main problems in cooperation?	No problems in cooperation
2.3. Is there any effective and functional link between the project and other donors' projects?	
2.3-1 What was the added value of the interconnection of the project with activities of other donors?	There were no connections with other projects. Only local co-financing of the construction works related to the heating plants and heating network.
3. Effectiveness	
3.2. In which way have been the objectives and results of the project achieved?	
3.2-1 To what extent was central heating introduced in Nemila?	3 biggest transmission stations supplying public buildings in operation (school, ambulance and police station); and 91 smaller transmission stations (35 KW) for residential houses and part of the local authority building. There were supplied additional 2 smaller transmission stations in case of break down. The scope is the same as originally installed before the 2014 flood. But not all private houses connected to CZT are utilizing the heat.
3.2-3 Were the outputs as specified in the tender documentation generated?	Yes. (Feasibility study, boiler with 3MW output, scope and parameters of hot water pipes, 93 transmission stations, sources and transmission station control, according to list of supplied equipment from MEVOS).

<p>3.2-4 <i>Is the boiler house operated in optimal regime (capacity vs. reality)?</i></p>	<p>Number of days operated per year: usually from 15/10 till 15/4 operated boiler output according to needs of connected buildings and outside temperatures: yes operated capacity: 1,1 – 1,5 MW in the coldest part of winter Possibilities for heat consumption regulation: operation possible from 10 - 110% of the capacity. On 23.10. around 10.30 am was the actual production capacity 0,6 MW</p>
<p>3.3. What particular features have the local partners adopted from the project's practice (newly created capacities or competences, etc.)?</p>	
<p>3.3-1 <i>What specific knowledge did you gain during the project implementation?</i></p>	<p>The operator's staff of the boiler house is familiar with the operating and maintenance requirements. The operating rules were elaborated in Bosnian language, are available to the boiler house manager and workers. The manager Mr. Babic started to work at Nemila heating plant in spring 2013, i.e. in the last ½ year of the project implementation. He got training how to operate the boiler and the network from the Czech specialist.</p>
<p>3.3-2 <i>To what extent are the 4 employees (participants of the thematic excursion) involved in the boiler operation?</i></p>	<p>The operation of the heating plant is ensured by 4 workers and the manager. Apart from the manager all the workers which were trained during the project were changed (some retired, some work in other places of the Grijanje company, i.e. Zenica). Mr. Babic did not take part in the thematic excursion to CR organised during the project implementation.</p>
<p>4. Actual and anticipated impacts</p>	
<p>4.1. What are the final objectively verifiable impacts of the project in relation to the intended impacts?</p>	
<p>4.1-2 <i>Why do people and organizations still use their traditional heating?</i></p>	<p>During heating season, there is no need to use additional heating as the capacity is sufficient.</p>
<p>4.2. To what extent did the project help to reduce environmental pollution in the area of Zenica?</p>	
<p>4.2-1 <i>To what extent has air quality improved in Nemila and its surroundings?</i></p>	<p>There has been carried out monitoring of the ambient air quality outside the heating plant and the results showed that the limits were not exceeded. The protocol from this monitoring was not made available to the heating plant.</p>
<p>4.3. Which external factors affected the results and impacts of the project in positive/negative ways? Were those effects anticipated in the risk analysis of the project?</p>	
<p>4.3-1 <i>Which external factors helped to achieve objective and results of the project?</i></p>	<p>Factors that facilitated achievements Support from the management of Grijanje company, from the Nemila local authority; availability of funds for construction part; flexibility from Czech partners and CZDA.</p>



<p>4.3-2 Which external factors obstructed achieving project objectives and results?</p>	<p>Mr. Babic did not experience any problems.</p>
<p>4.4. Did any other unintended positive or negative impacts occurred?</p>	
<p>4.4-1 To what extent has the project contributed to increased employment?</p>	<p>The regular employment is about the same, maybe increase by 1 – 2 workers, because the 3 public building which are connected had their own coal boilers, which had to be manually fed. So, two or three workers took care about it before the new heating plant was put in operation. The construction work during the project implementation was carried out by local construction company, so it had positive impact on temporary employment.</p>
<p>4.5. What follow-up project's initiatives have the local governments or any other target groups implemented?</p>	
<p>4.5-1 What follow-up project's initiatives have been implemented by the local organisations?</p>	<p>Till now there has not been implemented any follow up initiative related to the heating plant and network. Grijanje jedná s GIZ o vytvoření „družstva“, jehož cílem bude shromažďovat spalitelnou biomasu na lokální úrovni (např. zbytky z těžby, polomy, staré odrostlé maliny – potenciál 2000 m3/rok); v rámci této aktivity by bylo dobré také pořídit shredder na řezání biomasy na potřebnou úroveň.</p>
<p>5. Sustainability</p>	
<p>5.1. Did the project have an elaborated phase-out strategy?</p>	
<p>5.1-1 Has a sustainability plan/phase-out strategy including time frame been agreed with partners and reflected in the project?</p>	<p>Some parts of the sustainability plan were reflected in the project activities – e.g. FS about biomass availability; training of the operational staff; elaboration of the operational manual; 5 years guarantee. In addition to the activities carried out during the project – there has been established close cooperation with EVECO company which agreed to provide online consultations in case of any operational difficulties indicated by the automated control system. Apart from the guarantee, there is no specific sustainability plan.</p>
<p>5.2. To what extent were local partners (or responsible state institutions) involved in the project preparation? What is the sustainability of the project from the perspective of its recipients' ownership?</p>	
<p>5.2-1 How did you participate in the project preparation?</p>	<p>Hired as heating plant manager in April 2013. So, no involvement in project preparation.</p>

<p>5.2-2 How has been ensured the ownerships of the supplied technology, operational procedures, and gained knowledge of how to operate the boiler house?</p>	<p>Ownership of the technology and all tangible project outputs is ensured by delivery protocols signed by the technology supplier (MEVOS) and receiving organisation (LA Zenica). After start of the operation the ownership of the installation was transferred to Grijanje in order to allow count for depreciation.</p>
<p>5.2-3 What is the readiness of local partners to continue operation of the heating system?</p>	<p>The operator – Grijanje d.o.o. Zenica has allocated staff for the operation and subsidy for funding the operational cost which are not covered by the collected heating fees. Financial data were supplied by Mr. Veledar – listed at the end of this document. Thanks to keeping reasonable fees for heating the connected households) and organisations pay the required fees based on metered delivered heat. Moreover, there is increased interest to connect additional private/residential house to the network.</p>
<p>5.3. Are the project outputs in accordance with the legislative and normative framework of Bosnia and Herzegovina?</p>	
<p>5.3-1 Did the boiler house operator obtained all relevant permits and approvals from authorities?</p>	<p>Operator obtained land use, construction permit, permit for operation in testing period and operational/environmental permit. The environmental permit was obtained in June 2012 and was valid for 5 years. Renewal of the permit is needed till the beginning of the 2017 heating season.</p>
<p>5.3-2 Does the boiler house operator operate the combustion technology and related operations in accordance with permitted conditions and norms?</p>	<p>The operator states that all permitted environmental conditions are fulfilled. The environmental permit requires to monitor emissions to the air once per year since the end of testing period. Emissions were measured in 2013, 2016 and at the beginning of heating season in October 2017.</p>
<p>5.4. Were the chosen technological solutions appropriate in terms of sustainability?</p>	
<p>5.4-1 To what extent is the technological solution sustainable?</p>	<p>Expected lifetime of the heating plant technology 15 – 20 years. Since the start of operation, there was only one break down which lasted several hours due to unsuitable fuel during the season after flooding as there was lack of biomass on the market. The manager of the heating plant considers the technological solution very good as it allows wider variety of biomass size to enter the combustion. The technological solution is relatively simple and allows easy operation and does not required complicated maintenance.</p>

	<p>5.5. To what extent did the project succeed as to the risk reduction on market development of fuel (biomass/wood chips)? To what extent has the boiler house operator managed to ensure sufficient amount of suitable fuel considering the biomass market development?</p>
<p>5.5-1 Has there been sufficient amount of the required biomass fuel during the heating season?</p>	<p>After the paper mill Natron Hayat stopped supply of biomass, the operator had to find new supplier of biomass. The operator decided to make every year a new tender for selecting the biomass supplier for the next season.</p> <p>This system has advantage to obtaining biomass in the best price. So far, this system has worked well and there was never lack of biomass of the required quality. The yearly tendering is more suitable from the financial point of view, as Grijanje is municipal organisation and the budget is agreed on yearly basis.</p> <p>In the season 2016/2017 the biomass was supplied from the local saw mill at the price 18,6 BAM/m³ (there is need for 3.000 m³ of biomass/year).</p> <p>When there was contract with Natron Hayat (3 seasons) they needed only 2400 m³/year as the biomass was of better quality.</p>
<p>5.5-2 Does the quality of supplied biomass fuel comply with technological requirements of the boiler house?</p>	<p>Availability of the biomass fuel is in the required quality. The humidity is 40 – 45 %. The only problematic period was in 2014 after the flooding, where there was lack of any biomass as the biomass from the region was mostly flooded off.</p> <p>There can be a technical problem if the biomass is bigger than required. It happened only once during the 2014 season after flooding, since there was lack of quality biomass.</p>
	<p>5.6. How did the additional reconstruction after 2014 floods strengthen the overall project sustainability?</p>
<p>5.6-1 What aspects of the reconstruction contributed to increased sustainability of the project?</p>	<p>The speed of repair – it was possible to reconstruct the damaged part of the heating plant and majority of the network before the next heating season.</p> <p>Readiness of the Czech partner and CZDA to ensure the reconstruction in the necessary scope to allow standard operation.</p> <p>The damaged parts of the network were replaced and placed deeper in the ground. V místech s vyšší pravděpodobností ke zvýšeným tlakům na potrubí za extrémních podmínek počasí bylo potrubí vyztuženo ocelovými trubkami (např. přechod přes potok na konci západní větve).</p>
<p>5.6-2 What flood protection measures were introduced to ensure operation of the boiler house and heat distribution network?</p>	<p>As listed above – placement of the heating network deeper and strengthening the network tubes by steel tube in risky parts.</p> <p>The operator had insured the technology against flooding.</p>

5.7. Does the recipient/beneficiary have the financial, human and organizational capacity to further operate and maintain the project facilities?	
5.7-1 Does the staff trained under the project continue to work in boiler house operation?	Only the manager and one worker, the rest of the staff has changed. (the third person is retired)
5.7-2 To what extent does the income cover the cost for operation, maintenance, repairs, depreciation, and other related cost?	<p>Income from heating fees cover only about 50 % of the operational cost. (See financial data at the end).</p> <p>The tariff for households was till 15.10.2017 58,5 BAM/MWh incl. VAT (about 30 EUR/MWh) which was the lowest in the region. The tariff level is set by the council of the Zenica City. In other municipalities and towns there are tariffs normally 80, 90 or 100 BAM/kWh.</p> <p>From 15.10.2017 the tariff increased to 76 BAM/MWh + 17 % VAT. Tariff for organisations incl. School and health care centre is 117 BAM/MWh.</p> <p>The local authority provides water from the public water pipeline for free to the heating plat.</p> <p>Customers have been satisfied with the price, no problem with delayed payments.</p>
5.7-3 How does the division of responsibilities and rights cover the needs for further operation and maintenance?	<p>Grijanje d.o.o. appointed the operational manager (Mr. Babic) who takes care about all issues related to operation and manages the four workers. His work in Nemila does not require full time involvement, so he partly also works on operation in Zenica.</p> <p>The workers are engaged full time during heating season. Out of season they are responsible for maintenance and operational repairs. Out of season they can be also involved in helping with other work for Grijanje.</p> <p>The billing and communication with customers is ensured from the sales/accounting department of Grijanje.</p>
8. Cross-cutting principles of Czech development cooperation	
8.1. To which extent the project contributed to improvement of environment in Nemila village, Zenica municipality?	
8.1-1 To what extent the project contributed to improvement of environmental components in Nemila village and Zenica municipality?	<p>The impact on air quality can be only calculated. Although there are protocols from the monitoring of air emissions from the heating plant, it is not possible to compare it with situation before putting into operation i.e. when the former coal fired boilers were used.</p> <p>EERL20: Degree of contribution to the decrease of concentrations of major air pollutants: it is expected the main local improvement is in decreasing the dust concentrations during heating season. The monitored pollutants include: Dust, NOx, CO, SO2)</p> <p>EERL21: Evidence of use of technologies installed that lower emissions: the current heating plant has installed technology for minimizing release of air emission in contrary to previous coal boilers.</p>

	<p>EEO40: Evidence of measures put in place to ensure efficient use of water in project activities: there are no water losses from the heating system; it is necessary to add only 0,5 l of water to the heating system per 24h.</p> <p>EER53/54: Evidence of correct handling of all waste: the ash is disposed to the landfill.</p> <p>EEO71/ EER71: Extent, to which a project relied on renewable sources of energy: 100 % of the fuel is biomass.</p> <p>EER73: Change in energy/heat use patterns in project affected communities: change of fuel to biomass - all public buildings were fired by coal including some households.</p> <p>EEO13: Project used local resources: the supplied biomass comes from local resources.</p>
<p>8.3. To what extent were key actors involved in decision making during the project preparation and implementation?</p>	<p>8.3. To what extent was in the project reflected the principle of good (democratic) governance?</p> <p>The plant manager started to work in the heating plant in spring 2013; thus, he did not take part in decision making during project preparation and he participated only at the end of the project implementation.</p>
<p>8.4. To what extent was in the project reflected the principle of equality between men and women?</p>	<p>8.4. To what extent was in the project reflected the principle of the respect for the human rights of beneficiaries, including equality between men and women?</p> <p>There is no evidence of any discrimination. Due to physically heavy work, the workers in the heating plant have to be man. Women are employed in the area of administration, accounting and customer care.</p>
<p>8.4-1 How was the principle of equality between men and women reflected in the project cycle?</p>	



Situation in Nemila: in total, there are 250 households (about 200 houses). 10 households which are connected to the network do not installed pipes inside their houses, so they cannot consume the heat yet.

Every connected house has one or two Exchange stations since in some bigger houses there are more families as they wished to have separate heating bill.

The local contribution to the project was investment in the amount 1,5 mil BAM.

The total area of the heating plant is 1200 m².

Biomass – currently wood cutting is not regulated. During the last tender, they received 5 or 6 proposals.

The operational need is several m³/hour depending on the demand for heat. The loading starts usually at the end of September. The storage has capacity 600 m³.

The technology is perfect – very big scope of biomass which can fit into the firing chamber, simple maintenance. MEVOS has ensured regular revision of the heating network.

Future development: it would be good to extend the heating network, to cover more residential houses. The households are interested to connect, the capacity of the plant allows it and increase in production would improve the economics of the operation. But there are no available funds from the state/canton (maybe possibility to apply for the new energy efficiency funds from the Federal EPF). The estimated cost for extension as 0,5 mil BAM.

The priority for the Grijanje company is to ensure heating in Zenica as there has been big operational problems and failures during last season.

Additional information discussed on 23.10. with Mr. Babic:

- Electricity breaks happen because of instable network; they may last several hours. In such cases heating plant is automatically connected to reserve source of energy (diesel aggregate) with capacity 22kVA. It was not part of the supply from CZDA. EVECO supplied only alternative source for the automated control system, but not a source which can supply the boiler. The diesel aggregate was purchased additionally by Grijanje. Local transmission stations are in case of energy breaks out of operation. But the heat is partly transmitted through the pipes thanks to the functioning of the pumps in the heating plant (tepelný spád). In case the break last longer, the objects which are far way from the source and which are connected through the narrow pipes receive less warm water, or can be out of heat.
- The contract for biomass for the season 2017/2018 was signed at the beginning of October; the supplier if the local saw mill, the contracted amount is 5.000 m³ the price is the same as last year.

During the transect walk, there was a visit of the elementary school, which is the biggest heating plant customer. The school has 1380 children (biggest school in the county). The heating comfort is incomparable better, as it is possible very easily to control the temperature and the system heat without problem all school premises which are connected to the internal network. The school managed to replace the old windows for new isolated windows and also repaired the roof – adding isolation. Thus, the bill for heating decreased.

Additional information discussed on 24.10. with Mr. Veledar:

The heating tarrif was increase due to increasing losses from operation and also because in Zenica there has been much higher tarrif for heating (96 BAM/MWh + VAT). But in Zenica only some households have calorimeters. Others pay based on m².

The problem with low heat consumption in Nemila is related to economic situation of the customers. Retired people receive only 200 EUR/month. And if they can get free wood, why they would pay for heat. Also, the electricity price is relatively low, so some people are using electricity for heating.

There has been an idea to construct the swimming pool in Nemila, which would be connected to the heating plant, but so far, no investor is interested in.

**Basic financial data of Nemila heating plant for 2015 and 2016**

r.br.	Elementi/godina	2015	2016
1.	Total incomes	252.916,-	235.939,-
2.	Total expenditures	335.206,-	352.048,-
	Loss/Profit	-82.290,-	-116.109,-

Struktura pojedinih vrsta troškova data je u narednom tabelarnom pregledu:

r.br.	Elementi/godina	2015	2016
1.	Energy and material costs	75.982,-	79.594,-
2.	Service costs	37.998,-	57.131,-
3.	Depreciations	124.187,-	126.468,-
4.	Personal costs and transport	97.039,-	88.855,-
	Total expenditures	335.206,-	352.048,-

Struktura ostvarenog ukupnog prihoda je slijedeća:

r.br.	Elementi/godina	2015	2016
1.	Incomes from flats	36.362,-	33.862,-
2.	Incomes from organisations	90.484,-	78.373,-
3.	Tax incomes	-	-
4.	Postponed incomes from donations	126.070,-	123.705,-
	Total income	252.916,-	235.940,-

Količina isporučene toplotne energije MWh:

r.br.	Elementi/godina	2015	2016
1.	Heat energy	1.615,-	1.412,-



E. Local authority Nemila

Date and time: 4.7. 12.00h

Contact: Nijaz Lužic, head of the local authority and Mirsad Tufekcic

2. Efficiency	
2.2. How did the involvement of Czech and of local capacities in the project function?	
2.2-1 How did the cooperation function between Czech and local partners in BaH?	Spolupráce fungovala výborně. P. Lužic byl v koordinačním výboru při realizaci teplárny. Všechny důležité věci se řešily na koordinačních poradách. Na poradách se obvykle účastnili zástupci realizátora, MÚ Zenica, RAZ (p. Ahmetspahic), Grijanje, případně ČRA a místní občané.
2.2-2 How did the communication function between Czech and local partners in BaH?	Komunikace fungovala dobře.
2.2-3 How did the coordination function between Czech and local partners in BaH?	Hlavním koordinátorem byl p. Ahmetspahic. MÚ koordinoval stavební práce při pokládání rozvodů.
4. Actual and anticipated impacts	
4.1. What are the final objectively verifiable impacts of the project in relation to the intended impacts?	
4.1-2 Why do people and organizations still use their traditional heating?	Lidé používají dřívější způsob topení doplňkově, především pokud si chtějí přitopit mimo topnou sezónu. K ohřevu užitkové vody se používají elektrické nebo kombinované boilers.
4.2. To what extent did the project help to reduce environmental pollution in the area of Zenica?	
4.2-1 To what extent has air quality improved in Nemila and its surroundings?	V topné sezóně je viditelné zlepšení místní kvality ovzduší – zejména prachu a SO ₂ . 3 veřejné budovy na hlavní ulici, které jsou nyní připojené na CZT topily uhlím bez čištění spalin. Takže se při bezvětrí dalo jen obtížně dýchat. Nyní bez problémů. Tyto budovy stopily za sezonu asi 500 t uhlí. Nemila leží v údolí, takže při špatných rozptylových podmínkách byl problém s kvalitou ovzduší v celé obci.
4.2-2 Do the inhabitants in Nemila and its surroundings register any decrease in odour?	Ano, zápach spojený se spalováním uhlí je již významně menší, protože hlavní velké zdroje přešly na CZT. Více viz výsledky dotazníků.
4.4. Did any other unintended positive or negative impacts occurred? (e.g. as to inhabitants' quality of life, employment improvement, economic growth of the region)	
4.4-1 To what extent has the project contributed to increased employment?	V průběhu realizace projektu byly do stavebních prací zapojeni místní lidé. MÚ Zenica dělala výběrové řízení na stavební firmu – vybrala lokální firmu, která nabrala na práci místní dělníky. Provoz uhelných kotelen ve škole, v poliklinice a na policii zajišťovali dříve 3 lidé + bylo třeba skládat uhlí. Nyní zaměstnává Grijanje 4 topiče a jednoho vedoucího.
4.4-2 How did the project contribute to economic development?	Vznikla poptávka po dodávce místní biomasy. Pokud dodávku získá jedna z místních pil, tak je to pro stabilitu fungování místních pil pozitivní.



<p>4.4-4 Did the project results has some other impacts on Nemila inhabitants' quality of life?</p>	<p>Topení CZT je účinnější, takže např. děti ve škole mají větší komfort. A dodávka tepla je stabilnější. Dříve se často každý den ráno znovu zatápělo v kotlích, zatímco nyní běží topení podle potřeby celou sezonu.</p> <p>Náklady na teplo jsou pro město přibližně stejné – dříve platila za uhlí a platy topičů. Nyní cenu za spotřebované teplo. Výhodné je, že MÚ není již zodpovědný za opravy kotlů.</p>
<p>4.5. What follow-up project's initiatives have the local governments or any other target groups implemented?</p>	
<p>4.5-1 What follow-up project's initiatives have been implemented by the local organisations?</p>	<p>So far none. They support the establishment of the local initiative organisation for biomass collection.</p>
<p>4.5-2 What follow-up project's initiatives have been implemented by Nemila population?</p>	<p>See the questionnaires.</p>
<p>5. Sustainability</p>	
<p>5.2. To what extent were local partners (or responsible state institutions) involved in the project preparation? What is the sustainability of the project from the perspective of its recipients' ownership?</p>	
<p>5.2-1 How did you participate in the project preparation?</p>	<p>Helping in communication with Nemila inhabitants during planning the heating network.</p>
<p>8. Cross-cutting principles of Czech development cooperation</p>	
<p>8.1. To which extent the project contributed to improvement of environment in Nemila village, Zenica municipality?</p>	
<p>8.1-1 To what extent the project contributed to improvement of environmental components in Nemila village and Zenica municipality?</p>	<p>Air quality improved locally. It does not have any impact in Zenice as they have their own huge sources of air pollution.</p>
<p>8.2. Have there been recorded any negative impact on the environment in relation to the projects realisation and its impacts?</p>	
<p>8.2-1 Have there been recorded any negative impact on the environment in relation to project implementation and its impacts?</p>	<p>EEO3: Land converted to other uses as consequence of the project: 1200 m² in zastavěné části obce v sousedství komerčních objektů.</p>
<p>8.3. To what extent was in the project reflected the principle of good (democratic) governance?</p>	
<p>8.3-1 To what extent were key actors involved in decision making during the project preparation and implementation?</p>	<p>Vedení obce:</p> <ul style="list-style-type: none"> - bylo zapojeno do specifikace objektů pro připojení k CZT (určilo prioritní veřejné objekty pro připojení). - svolalo veřejné shromáždění pro informování občanů o možnosti připojení k CZT. - odkoupilo pozemek pro stavbu teplárny.
<p>8.3-2 Have you been consulted during selection of private houses and municipal buildings for connection to central heating?</p>	<p>Pan Lužič se podílel na konzultacích (on sám připojen není).</p>



V průběhu projektu se na postup prací byl 3x podívat český velvyslanec.

V současnosti jsou další zájemci o připojení především z ulice Patriotské lige. Pro efektivní výrobu tepla by bylo třeba připojit ještě 150 dalších spotřebitelů.

Poplatek za přípojku na CZT – občané platily 750 EUR.

Obec Nemila poskytuje občanům vodu z vodovodu jen za paušál 5 EUR/rok.

Počet obyvatel v Nemile 3150.

Priority obce:

- zajistit základní infrastrukturu – cesty, osvětlení
- najít investora na výstavbu podniku na zpracování malin – export.



F. SIDA

Date and time: 5.7. 9.00

Contact: Aiša Bijedić, Environment & Climate change Programme Officer

The leading document: The strategy for Swedish support in Western Balkans, including BiH 2014 - 2020. (sent by email)

In BiH there are 3 main pillars of development actions: economic integration, good governance, environmental and climate change. Budget: 12 mil EUR in total divided by 3 for each pillar.

SIDA

- cooperates EBRD, UNDP, WB
- supports: WWT, WM – landfills,
- contributes to multilateral funds – in the area of energy and biomass project; at this moment, no running project
- contributed to the reconstruction of the District heating in Priedor
- Energy efficiency – institutional part – result – revolving fund to support the Federal EPF; starting with 2 mil BAM

The practical measures supported by the revolving fund include:

- investments into renovation of public sector buildings – cooperation with UNDP – 50 % grant/50 % contribution
- SIDA contribution: 5,5 mil EUR
- Selection of building – BiH Fed environmental fund – UNDP tendering public building
- EMiS – system – the system chooses the most potential
- The first phase has lasted from 2014 – 2017; UNDP prepares extension and including also public lighting system, solar energy

WB – project for public buildings in health and education sectors – energy efficiency measures.

SIDA considers to support the construction of heating plant in Bihac hospital – support/cooperation with CZDA.

Gradač – WWT plant – cooperation with EBRD and CZDA.

In the area of Energy Efficiency – 4 main donors USAID/GIZ/UNDP/SIDA; coordination meetings 1 - 2x year – chaired by Ministry of Foreign affairs



G. USAID

Date and time: 5.7. 10.30h

Contact: Ankica Gavrilovic-Altumbabic, Ognjen Markovic, Mak Kamenica, Fahrudin Kulic

Overview of activities related to biomass utilisation and energy efficiency

Energy efficiency activities since 2009 – first EE project with EU, GIZ

Energy Investment activity project – (EIA) 2014 – 6 major activities:

1. public outreach,
2. Emission reduction,
3. EE obligation scheme,
4. biomass,
5. energy market,
6. investment – building permit for new power plants.

On many EIA activities - cooperation with EBRD.

They have good contact with the Czech Embassy and welcome cooperation with CZDA.

Biomass

Mr. Kulic: specialist on biomass in agri and wood processing sectors – focus on combined heat and power (CHP)

Activities related to biomass utilisation: Identification of potential investors, catalog of applicable technologies; workshops, free-online SW for developing FS; developing PreFS

Agri – livestock farming (poultry farming), currently getting construction permit for biogas station at dairy farm (utilizing manure and green waste). (note: one already exist in republica Srpska with capacity of 1MW)

Lobbying – for energy from biogas to be accepted and included in quotas to allow selling to the energy network.

Technical assistance – prefeasibility study; letter of cooperation – helping to get the permits; they are working on guide for investors

Key obstacles for SME to build CHP –

- Bank – reluctant to borrow for some uncertain project
- The national plan for quotas for 2014 – 2020
- How to get building permit

Within their activities of PreFS, they visited 15 wood processing private companies;

Situation with biomass availability – demand is higher; increase of competition – plan to build CHP in Banja Luka; all this makes more pressure on the price, which is rising.

Cooperation with GIZ/UNDP

GIZ – study on availability of biomass

USAID micro credit loans for small project to assist Bosnian with biomass and combination with solar system.

Biomass boilers suppliers guarantee availability of biomass.

Legislation – the law on sustainable forestry is missing in the federation as is its waiting for its approval. In Republika Srpska – the law exist;

SW for pre-FS figures calculation – demonstration.

Energy efficiency (EE)

EE scheme – financing system with obligation to invest in measures in EE for final customers. (EE obligaton



schemes)

EU directive for EE – BiH is currently creating relevant fund

EBRD established mechanism for residential buildings (households and SMEs) -

GIZ have a catalog of houses energy consumption - Building typology

UNDP focusses on public buildings

Strategic documents and legislation in EE

- National Energy strategy shall be published in August
- Push for EE legislation – getting attention from 6 embassies ...
- GIZ – EE action plan in Federation and Republika Srpska.
- National Renewable Energy Action plan

2. Efficiency	
2.1. Were the implementer's procedures cost-effective, namely in comparison with similar procedures of other donors' projects?	
<i>2.1-1 Which are any alternative/cheaper procedures used by other donors for heating systems based on sustainable energy sources?</i>	USAID supports CHP together with other donors. But the investment cost is significantly higher; CHP suitable for bigger capacities.



H. UNDP

Date and time: 5.7. 14.00

Contact: Amila Selmanagic Bajrovic – GEF project manager, Sanjin Avdic – Energy and Environment sector leader

Example of past activities:

- 2009 start of GEF project;
- 2013 – cooperation with CZDA; -
- Pilot biomass project

Current activities focus more on policy issues

- Regular project board with participation of Czech Embassy, informing CZDA;
- Coordination with other donors from 2012
- Financial mechanism – 22 mil USD into revolving fund (2 % interest on loans) focussed on SMEs, district heating companies,
- Fuel switch towards biomass project:
 - supported also by CZDA + follow up project
 - Cooperation with the Ministry of Agricultural

Low carbon projects

- Catalysing finance for low carbon development of new projects in the area of waste, transport, public sector building and maybe district heating – funding 300.000 EUR
- Probably 46 municipalities (certain criteria – depending on their interest, co-financing) – can be increased if CZDA interested
- Cooperation with CZDA technical assistance - 180 energy audits (EE SW) – 600 public buildings –
- Now switching to public lighting with air to reduce CO2
- Technical assistance and for harmonisation of legislation in energy efficiency between Republika Srpska and the Federation
- Planning to strengthen polluter pay mechanism.
- Czech consultant worked for UNDP – Enviro s.r.o. (J. Pavlík, M. Donkelaar)

Situation of biomass supply

- Export of the best biomass to Italy/Austria - reason for price increase.
- There is more biomass fired boilers – e.g. 160 public building (every 5th project included fuel switch)
- Focus on energy and forestry legislation (gap analysis)
- In BiH there are 3-4 companies producing biomass pellets and boilers; it is possible to get long term guaranteed price (for 5 years) from suppliers which has direct access to wood.
- Unregulated market – last year almost lack of biomass (absence of forestry regulation).
- High employment in the value chain - 1mil investment – 90 people employed.
- Mapping exercise of biomass supply and the chains – forestry - production facility – utilisation potential; the main question is how to influence the stability of the market?

Bihac project

- hospital heating plant reconstruction after fire in 2013
- Kantonal hospital - complex of 6 – 7 buildings; the management wanted expand the heating plant
- Plan to retrofit from LTO/coal to wood chips;
- There were three donors interested in the support - based on Nemila experience it was agreed to selected CZDA support; CZDA gave 1 mil EUR, UNDP – solar collector
- There was a problem with suitable land for the heating plant (private land, sloping land)
- Coordination with SIDA - Czech vs. Swedish solution; different tendering procedure of CZDA
- Storage facility – different technical design; 20 % 2x 1,5 MW



UNDP Recommendation:

- Continue work on biomass projects.
- Potential work on waste disposal Pre-FS



I. GIZ

Date and time: 5.7. 16.00

Contact: Mr. Harbas, local GIZ expert

Joint program – GIZ is coordinator of energy efficiency and renewable energy sources (RES) areas

GIZ 4 main activities focus on:

- 1) Strategy, reporting, monitoring
- 2) Support schemes
- 3) Small hydro power sector support,
- 4) Biomass- bioenergy sector

Promotion of RES under GIZ since 2016, the promotion of RES includes: support schemes – currently feed in tariff – support only electricity; quotas for solar energy are fulfilled.

District heating projects - only the Priedor project is working CHP.

Biomass sector needs improvement: biomass overview study is being prepared for the Ministry, focus on biomass potential in BiH (German consultants are developing methodology); UNDP is also involved – online biomass plan;

Bioenergy coordination body (BeCB) – 4 ministries are decision makers; working group for the data collection – 4 ministries + forest management companies, statistical data.

Joint activity - UNDP/USAID – capacity buildings for different stakeholders – training on public/private partnership (PPP).

Problem with long term contracts - if the operator is PPP – possible to have long term contracts.

Promising SMEs – producing pellets for fuel and pallets,....

Potential for CZDA – GIZ is developing new financial model – feeding premium/auction.

Biomass district heating projects

- CHP – in public buildings – Priedor,
- SMEs, district heating system – (2-3 FS for various technologies – help with EBRD); presentation to BeCB – they will select what will be supported.
- Banja Luka – FS (UNDP) – 56x4 MW – now LTO (communication with EBRD) - plan to switch to biomass.
- Gradiška – District heating fired by biomass since 2014 – more on: <http://www.coolheating.eu/en/2016-02-22-13-33-53.html>

Current biomass prices

Pellets – 120 - 150 EUR/ton; last year over 200 EUR/ton due to strong winter.

There are about 50 producers of pellets in BiH. Nobody certifies the quality.

Quality of Bosnian boilers is questionable.

Application of ESKO models – energy performance

Green Energy cooperative (GEC) mechanism - support with establishing NGO - community based model; GIZ hired GEC from Croatia to help with establishment in BiH

Round table – organized District heating companies - general discuss.

Other GIZ activities



- catalogue of houses energy consumption - Building typology
- EE action plan in Federation and Repuplika Srpska.
- Sustainable energy action plan for City of Zenica, 2015

2. Efficiency	
2.1. Were the implementer's procedures cost-effective, namely in comparison with similar procedures of other donors' projects?	
<i>2.1-1 Which are any alternative/cheaper procedures used by other donors for heating systems based on sustainable energy sources?</i>	<i>Hybrid Solar Collector/ Biomass Heating, CHP</i>
2.5. Is it possible to identify any good practice examples (e.g. in comparison with other donors' projects)?	
<i>2.5-1 To what extent is the project approach replicable?</i>	<i>There are several district heating plants fired by biomass in BIH.</i>



J. Municipality Zenica

Date and time: 6.7. 9.30h

Contact: Muhamed Husremović – deputy mayor, Jasmin Čabaradić – Head of sector for environment (department for environment, communal and inspection affairs), Kemal Veledar – technical director of Grijanje Zenica, Amra Mehmedić – Head of department for local economic development

Řízení a péče o lesy

- Zajišťují kantonální úřady, tzn. MÚ nemá na těžbu v lese a jeho obnovu žádný vliv.
- Problém nelegálního kácení lesů soukromníky, kteří mají palivo zdarma a je problém s placením za teplo.
- Všichni starostové měst a obcí chápou problémy s nelegální těžbou – uskutečnilo se jednání s vedením ministerstva zemědělství, lesů a vodního hospodářství Zenicko-Dobojského kantonu. Cílem bylo najít, jak zabránit nelegálnímu kácení lesů.

Při přípravě projektu bylo v Nemile třeba vysvětlit jaké má připojení na CZT výhody (ekologické – lepší vzduch, komfort, omezení ilegálního kácení).

Ke snížení nákladů na topení je třeba doporučit zateplení domů.

Město Zenica je připojeno na slabý CZT systém, více než 40 let starý. Sídliště v Zenici by mohly mít stejný systém jako v Nemile, ale jsou tlačeni do napojení teplárny na továrnu Accelor Mittal (využití koksárenského plynu pro spalování v teplárně.)

CZT v Nemile je jeden z mála projektů, který má viditelné pozitivní výsledky. Pokud by byly peníze na rozšíření teplovodní sítě, pak by měl projekt lepší účinnost. Potřebná investice na rozšíření pro cca 150 domů asi 350.000 EUR

Podle odečtů tepla je zřejmé, že domy v Nemile, které mají velmi nízkou spotřebu tepla, pravděpodobně dotápějí jiným způsobem.

Porovnání cen v Zenici a v Nemile (50 BAM/KWh vs 94 BAM/KWh) – cena za teplo v Nemile je nízká, aby přilákala lidi se připojit a iniciovala se spotřebu tepla z CZT. Když se lidé v Nemile rozhodovali, kdo se připojí k CZT, původně byl zájem od větších objektů, např. bytový dům s 9ti byty, ale při vyjasnění kolik to bude stát někteří zájemci couvli.

Zlepšení kvality ovzduší v Nemile – je to vidět v topné sezóně na 3 hlavních ulicích – cca 100 m².

Náklady na topení jsou pro veřejné budovy přibližně stejné jako dříve, ale efektivita je lepší (více tepla).

Nezaměstnanost v okrese Zenica – oficiálně 35 – 40 % - ale reálná je 20 – 25 % důsledek práce v zemědělství – prodej výpěstků.

Amra Mehmedić – informace o rozvojovém projektu „Energy Union“ – podpora sběru biomasy a zemědělství s cílem, aby mladí lidé neodcházeli do měst, ale zůstali ve vesnicích (např. 60 ha malin – velké množství biomasy z obnovy malin)

Podrobnější informace poslala pí. Mehmedić emailem 11.8. – kontakt na Vedada Suljice (ředitel NGO REIC, který vede přípravu tohoto projektu. V srpnu připravují FS pro projekt v Nemile a v Prijedoru.

2. Efficiency	
2.2. How did the involvement of Czech and of local capacities in the project function?	
2.2-1 How did the cooperation function between Czech and local partners in BaH? Very well	
2.2-2 How did the communication function between Czech and local partners in BaH? Very well	
2.2-3 How did the coordination function between Czech and local partners in BaH? Very well	



2.5. Is it possible to identify any good practice examples?	
2.5-1 To what extent is the project approach replicable? <i>It would be good to replicate such heating plant in Zenica town.</i>	
3. Effectiveness	
3.2. In which way have been the objectives and results of the project achieved?	
3.2-2 What were the selection criteria for connections to the central heating system? <i>Interest of inhabitants and operators of nonresidential buildings, ability to pay the initial fee and willingness to pay heating payments.</i>	
4. Actual and anticipated impacts	
4.1. What are the final objectively verifiable impacts of the project in relation to the intended impacts?	
4.1-2 Why do people and organizations still use their traditional heating? It maybe cheaper if the fuel (wood) gained for free.	
4.3. Which external factors affected the results and impacts of the project in positive/negative ways? Were those effects anticipated in the risk analysis of the project?	
4.3-1 Which external factors helped to achieve objective and results of the project? Good communication with Nemila inhabitants – beneficiaries.	
4.4. Did any other unintended positive or negative impacts occurred? (e.g. as to inhabitants' quality of life, employment improvement, economic growth of the region)	
Comfort in heating	
4.5. What follow-up project's initiatives have the local governments or any other target groups implemented?	
4.5-1 What follow-up project's initiatives have been implemented by the local organisations? So far nothing, but the energy union organisation is under preparation.	
5. Sustainability	
5.2. To what extent were local partners (or responsible state institutions) involved in the project preparation? What is the sustainability of the project from the perspective of its recipients' ownership?	
5.2-1 How did you participate in the project preparation? <ul style="list-style-type: none"> Community members were consulted in selection of objects to be connected to the heating system. (GGO6) 	
5.2-2 How has been ensured the ownerships of the supplied technology, operational procedures, and gained knowledge of how to operate the boiler house? <ul style="list-style-type: none"> As specified in předávací protokol. 	
5.2-3 What is the readiness of local partners to continue operation of the heating system? <ul style="list-style-type: none"> The operators have funds to subsidise the operation. Connected households and LA are paying the heating bills. 	



8. Cross-cutting principles of Czech development cooperation	
8.1. To which extent the project contributed to improvement of environment in Nemila village, Zenica municipality?	
<i>8.1-1 To what extent the project contributed to improvement of environmental components in Nemila village and Zenica municipality?</i> <i>Ambient air quality has been improved during heating season only in Nemila village</i>	
8.2. Have there been recorded any negative impact on the environment in relation to the projects realisation and its impacts?	
<i>8.2-1 Have there been recorded any negative impact on the environment in relation to project implementation and its impacts?</i> No	
8.4. To what extent was in the project reflected the principle of the respect for the human rights of beneficiaries, including equality between men and women?	
<i>8.4-3 How is poverty orientation mainstreamed in the project?</i> <ul style="list-style-type: none">• No evidence of prioritisation of Nemila population in possibility to being connected to the heating network.	



K. Ministry of Economy in Zenica-Doboj kanton

Date and time: 6.7. 11:00

Contact: Zlatko Jelić - minister, Amir Abazović – assistant minister

Ministry activities:

- Supporting concrete projects for local people focused on future development
- New law on PPP was adopted; follow up – visiting villages and town to collect project ideas – catalogue of potential projects seeking support. Can be used in future also by CZDA
- *This ministry is not responsible for energy or forestry issues*

The minister has opinion, that there is enough biomass in the canton for similar (like Nemila) future projects; pellet production is developing in the canton.

Heating price is regulated by municipalities;

The Law on Energy efficiency approved in May 2017, there will be developed cantonal plan for EE, waiting for instructions.

In 2013 there was project focused on energy efficiency (EE) in public buildings – together with the Ministry of education – they funded reconstruction of 5 schools. There is a plan to spread this EE project on hospitals and other public buildings. Ministry of education plans to use WB loan and Env. Protection Fund for reconstruction of additional 15 schools.

These EE projects consist in 4 steps: energy audit, action plan, refurbishment, certification.

Municipality Jela – would be suitable for next biomass heating plant project; population of 10.000 – 15.000

Loan for reconstruction of Zenica hospital – insulation project.

ZEPS – cooperation with Brno fairs; participation of CZDA in Zenica fairs.

1.1. What are the main priorities of BaH in the area of sustainable economic growth and sustainable management of natural resources?	
1.1-2 What are the main BaH priorities in the area of the sustainable management of natural resources related to the sector of energy production and supply?	Energy efficiency
7.2. Are there any system recommendations as to the focus adjustment or as to the effectiveness increase of the further development projects in Bosnia and Herzegovina?	
7.2-2 What can be options to the current "CZDC Concept for 2010 - 2017" for further CZDC prioritization?	In future, the catalogue of potential projects which is being developed by the Ministry of Economy can be used in the identification phase.



L. Ministry of land use planning, transport, communication and environment in canton Zenica-Doboj

Date and time: 6.7. 12.30

Contact: Amra Pojskić – Senior Advisor for Environment, Nada Mišić - Secretary of the Ministry

Environmentální povolení pro teplárnu Nemila:

- Vydáno 18.6.2012 na období 5 let. (tzn. vypršelo v červnu 2017), je třeba zajistit obnovení povolení do začátku topné sezóny.
- Obsahuje podmínky pro ochranu ovzduší a vody, nakládání s odpady a hlukem;
- Stanovuje požadavky na monitoring – měření emisí do ovzduší – 1x za rok.
- Plnění kontroluje inspekce, která dostává zprávy z měření

Povolení k uvedení do trvalého provozu 10/2015.

Významné lokální zlepšení kvality ovzduší – dříve 400 tun uhlí/sezonu spotřebovaly 4 objekty – nyní jsou tyto objekty připojeny na CZT.

Legislativa a strategické dokumenty:

- Oblast ochrany ovzduší reguluje Federální zákon o ochraně ovzduší č. 914 (kontroluje inspekce, která má 3 inspektory na ovzduší, 3 na vodu a další na lesní hospodářství).
- National Emission Reduction Plan (NERP) ještě není zpracovaný
- Oblast vody – zákon o vodách – vodoprávní úřad + inspekce
- Další zákony na:
http://www.mvteo.gov.ba/registry/fbih/zenicko_dobojski_kanton/registry/default.aspx?id=1080&langTag=en-US
- Pro Kanton je zpracovaný Environmental Action Plan na 2017 – 2025

Monitorovací stanice kvality ovzduší v Zenici:

- 4x stabilní + 1x mobilní stanice (používá institut pro metalurgii),
- aktuální data jsou na portálu města Zenica a na webu Hydrometeorologického ústavu:
<http://www.fhmzbih.gov.ba/latinica/AKTUELNI/A-zrak.php>

V Zenici je špatná kvalita ovzduší hlavně díky továrně Acceloru Mittal – má sice integrované povolení, a investuje do projektů na snížení emisí, ale je třeba to významně zlepšit.

Federální fond životního prostředí:

- Zenica-Doboj nemá kantonální fond, ale mají speciální položku v rozpočtu na životní prostředí;
- 70 % poplatků se vrací do obcí, od nichž pochází znečišťovatelé. (poplatky za odběr vody se využívání na ochranu vod,...)
- 30 % poplatků obdrží ministerstvo, které je může využít na projekty na ochranu ŽP.

4. Actual and anticipated impacts	
4.2. To what extent did the project help to reduce environmental pollution in the area of Zenica?	
4.2-1 To what extent has air quality improved in Nemila and its surroundings? <ul style="list-style-type: none">• Decrease of air pollution in emissions of dust, SO₂, NO_x, CO, CO₂, organic substances	Significant decrease of pollution thanks to elimination of at least 300 t of coal per year (replaced by biomass fuel).
8. Cross-cutting principles of Czech development cooperation	
8.1. To which extent the project contributed to improvement of environment in Nemila village, Zenica municipality?	
8.1-1 To what extent the project contributed to improvement of environmental components in Nemila village and Zenica municipality? <ul style="list-style-type: none">• Impact on air - Indicators listed under subquestion 4.2-1	<ul style="list-style-type: none">• EERL20: Contribution to the decrease of concentrations of major air pollutants,



	<ul style="list-style-type: none">• EERL21: Evidence of use of technologies installed that lower emissions,• EERL22: Perceived improved quality of air;
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M. Former project coordinator

Date and time: 6.7. 15.00

Contact: Naidin Ahmetpahic Former project coordinator (who used to work in the Zenica development Agency and coordinated the project on behalf of Zenica authority)

Historie výběru objektů pro připojení na CZT – předběžný zájem vyjádřilo 40 rodinných domů (RD) a 9 větších budov (veřejných objekty, bytovky). Po konkrétních jednáních, kdy už byla známá cena za přípojku a cena tepla se struktura změnila na 89 + 4. (severní větev rozšíření)

Projekt pro stavbu byl připravován ve spolupráci s Veřejnou společností pro uzemní plánování, české podklady musely být nostrifikovány.

Před instalací CZT byli ve třech připojených veřejných budovách zaměstnáni sezóně 4 topiči; původní systém vytápění byl nedostatečný (nízká efektivity) např. v některých částech školy i zimě i mrzlo.

Realizace a monitorování projektu:

- Stavební dozor a stavební deník – zajišťoval místní specialista
- Stavební firma vybraná v tendru MV Nemila, vybraná místní firma Kongradzi je z 35 % městská organizace. 30 % stavebních prací financoval MV Nemila.
- Smlouva mezi Mevosem a Zenicí

Zásobování biomasou – s papírnou Natron Maglaj byly stabilní dodávky; když si papírna postavila svůj kotel na biomasu, tak od té doby není stabilní dodavatel.

Grijanje by mělo efektivněji využívat instalovanou technologii – např. připojit zájemce o přípojky v ulicích, kde vede teplovod a postupně síť rozšiřovat; dlouhodobá dotace provozu není udržitelná. O provoz teplárny se nestará již nikdo, kdo byl u projektu od jeho přípravy po celou dobu realizace.

3. Effectiveness	
3.2. In which way have been the objectives and results of the project achieved?	
3.2-1 To what extent was central heating introduced in Nemila?	89 private houses + 4 public buildings connected to DHS
4. Actual and anticipated impacts	
4.3. Which external factors affected the results and impacts of the project in positive/negative ways? Were those effects anticipated in the risk analysis of the project?	
4.3-1 Which external factors helped to achieve objective and results of the project?	Interest of beneficiaries; availability of funds for construction part
4.4. Did any other unintended positive or negative impacts occurred? (e.g. as to inhabitants' quality of life, employment improvement, economic growth of the region)	
4.4-1 To what extent has the project contributed to increased employment?	Limited – the same number of workers, but now they are employed the whole year.
4.4-2 How did the project contribute to economic development?	Increased demand for biomass, but on the other hand decrease of demand for coal.
4.4-3 Did the activities or impact of the project reached the target group beyond the original intention?	No



4.5. What follow-up project's initiatives have the local governments or any other target groups implemented?	
4.5-1 What follow-up project's initiatives have been implemented by the local organisations?	So far nothing
5. Sustainability	
5.1. Did the project have an elaborated phase-out strategy?	
5.1-1 Has a sustainability plan/phase-out strategy including time frame been agreed with partners and reflected in the project?	Only training in operation of the heating system.
5.2. To what extent were local partners (or responsible state institutions) involved in the project preparation? What is the sustainability of the project from the perspective of its recipients' ownership?	
5.2-1 How did you participate in the project preparation?	Involved from the beginning till the end as coordinator.
5.2-2 How has been ensured the ownerships of the supplied technology, operational procedures, and gained knowledge of how to operate the boiler house?	Technology and operational procedure ownership is confirmed by the „předávací protokol); gained knowledge has only Mr. Babic, who can pass it on.
5.5. To what extent did the project succeed as to the risk reduction on market development of fuel (biomass/wood chips)? To what extent has the boiler house operator managed to ensure sufficient amount of suitable fuel considering the biomass market development?	
5.5-3 Is there a systematic management mechanism for reforestation in place to sustain the resource?	No
6. Follow-up cooperation	
6.2. Have any other municipalities or any other public institutions shown their interest in implementation of the same technology, e.g. interest based on the direct experience of the Zenica town with this project?	
6.2-2 Have any parties shown interest in replicating the technology on a commercial basis?	Yes, e.g. Zenica city and Grijanje d.o.o.
8. Cross-cutting principles of Czech development cooperation	
8.3. To what extent was in the project reflected the principle of good (democratic) governance?	
8.3-1 To what extent were key actors involved in decision making during the project preparation and implementation?	Sufficient involvement of beneficiaries, LA and other local partners.
8.3-2 Have you been consulted during selection of private houses and municipal buildings for connection to central heating?	Yes, on public meeting.
8.4. To what extent was in the project reflected the principle of the respect for the human rights of beneficiaries, including equality between men and women?	
8.4-1 How was the principle of equality between men and women reflected in the project cycle?	No discrimination applied, just common sense.



9. External presentation (visibility)

9.1. Were the requirements for the project visibility in BaH fulfilled?

<i>9.1-1 How was ensured the external presentation of the project?</i>	Project billboard on the building of heating plant, visibility activities listed in the yearly and final reports.
<i>9.1-2 How did you get to know about the project (central heating system)?</i>	I was the coordinator.



N. EKO-TOPLANE d.o.o. Gračanica

Date and time: 6.7. 15.00, and 25.10.

Contact: Admir Avdagic, director

Installed in 2008 – from the beginning is biomass fuel; before 2008 Gračanica did not have district heating; before this district heating the common fuel was coal.

Heating plant characteristic:

1. Boiler capacity
 - 6MW + 4MW from biomass, 100 m³ fuel storage
 - for security oil – 11 MW boiler; in preparation additional 6 MW
 - biomass fuel from own sources, the related company produces pallets and panels; all waste from the production is used as fuel;
2. Operated capacity – 4 – 5 MW; in the coldest period operation in full capacity, consumption of 15.000 m³ per season (5000 tons) (kůra a dřevní odpad). Last winter was very cold – no break downs; normally they operate 6 month per year.
3. energy efficiency 98 %
4. 16 km heating network.
5. number of connected households – 370 households; some commercial organisations, 25 public buildings incl. schools, some residential multi flat building;

There are some industrial installations/buildings which needs heating the whole year;
New potential customers in development – shopping centre – max 30.000 m², new residential building with 40 flats

There are needs to widen the network; there are also interest from private houses to newly connect (about 400 households); they plan new cogeneration for hot water; the necessary investment for widening the network are 1mil BAM (because they are private company, they cannot reach subsidies for communal services, only standard bank loans); problem where to get funding?

6. Heating prices for households, commercial organisations/ public organisations – in attached price list; payment morale – 99% customers pay; all customers have calorimeter; when people cannot pay, they can negotiate delayed payment, but all debts have to be paid by the beginning of next heating season.

They cannot change the prices, because they are set by Municipal council.

7. Characteristics of the biomass fuel (maximum size) – bark and waste from pellets and desks production; they have their own mobile shredder.
8. Biomass boiler investment cost – the buying price in 2014 was 8 mil EUR.
9. Funding source investment cost - Originally investment from Austrian private company, the current owner bought it 3 years ago, with loan from Unicredit; last two years they increased the number of customers compared to the Austrian management thanks to local approach. The current owner was supplying the Austrian operator with fuel. No subsidy from the municipal budget.
10. Air emissions from the boiler house (results from air emission measuring).

Air emissions are minimized by electro filter.

Air emission monitoring by certified body - 2x per year, at the beginning and at the end of the season; results comply with permit. Environmental permit was issued by the Federal Ministry.

Regular visits from environmental inspectors

11. Other operational issues:

- Water is supplied from public water supply network



- Amount of ash - 1 container per week, disposed on public landfill in price 25 EUR/container.

O. Souhrn informací ze schůzky s REIC

Datum a čas: 23.10. 2017, 14:00 –15:40

Místo: Sarajevo

Zástupci REIC: Azrudin Husika – REIC president, Benjamin Cekic – oddělení energetiky, spolupracující expert (CETEOR)

Regional Education and Information Centre for Sustainable Development in South-east Europe (REIC) dokončilo v září 2017 studii proveditelnosti na založení a provoz Energetického družstva po vzoru obdobných center v Německu. Studii financovala nadace Heinrich Bill Stiftung. Evaluační tým dostal studii k dispozici.

REIC plánuje představit závěry studie proveditelnosti zástupcům Nemily a Orahovice začátkem listopadu 2017.

Cílem aktivit Energetického družstva má být sběr či výkup odpadní biomasy z lesů a sadů, a obecní zeleně z Nemily a okolních obcí, její drcení, skladování a doprava do teplárny v Nemile. Předpokládá se, že by družstvo zaměstnalo několik místních lidí a že díky neziskovému charakteru družstva by mohla být výkupní cena biomasy pro teplárnu nižší než od komerčních dodavatelů.

Studie proveditelnosti předpokládá, že by se na založení a vybavení družstva potřebnou technikou mohli složit jeho členové, nicméně jak podle autorů studie, tak podle zástupců Nemily není tento způsob financování motivující pro vstup do družstva. Studie předpokládá investiční náklady ve výši min. 142.000 BAM, což zahrnuje výstavbu skladu biomasy, pořízení traktoru, drtičky, motorové pily a přívěsu za traktor. Finanční analýza předpokládá rentabilitu 11 % a návratnost přibližně 10 let. Zástupci REIC uvedli, že kdyby bylo možné sehnat částečnou dotaci pro pořízení potřebné techniky, pomohlo by to se zapojením místních obyvatel.

Mezi potenciálními donory byl zmíněn GIZ a projekt UNDP⁴³ (Biomass Energy for Employment and Energy Security), které spolufinancuje ČRA.

Zástupci REIC vznesli dotaz, zdali by mohla pomoci s financováním také ČRA s ohledem na zájem o udržitelný provoz teplárny.

⁴³ Follow Up Project:

http://www.ba.undp.org/content/bosnia_and_herzegovina/en/home/operations/projects/environment_and_energy/bosnia_and_herzegovina_biomass_energy_for_employment_and_energy_security_project/ a <http://www.czechaid.cz/projekty/vyuziti-biomasy-pro-rozvoj-ruralnich-oblasti-bosny-a-hercegoviny/>



P. Souhrn informací z jednání s Inspekcí životního prostředí kantonu Zenica-Doboj

Datum a čas: 24.10. 2017, 11:00 – 12:00

Místo: Zenica

Zástupkyně inspekce:

- Draženka Filipović, zástupkyně ředitele
- Elvedina Delić, environmentální inspektorka

Pro celý kanton jsou jen tři inspektoři pro životní prostředí.

Paní Delić, je odpovědnou inspektorkou pro teplárnu v Nemile.

Dosud proběhly tři kontroly z hlediska ochrany životního prostředí:

- První v roce 2013 před vydáním environmentálního povolení;
- Další po ukončení zkušebního provozu, tj. v roce 2016;
- Poslední 10.10.2017.

Na žádné z kontrol nebyla zjištěna žádná porušení. Pouze při poslední kontrole, bylo konstatováno, že provozovateli vypršela platnost stávajícího povolení, ale protože včas požádal o nové povolení, které mělo být již vydáno, tak neporušil žádné zákonné požadavky. Předpokládá se, že povolení bude vydáno v průběhu listopadu.

Měření emisí do ovzduší probíhalo podle povolení (po uvedení do zkušebního provozu) a dále po ukončení zkušebního provozu každý rok, tj. v roce 2016 v říjnu 2017. Měření dělají jen autorizované organizace. Výsledky měření ukazují, že provozovatel splňuje emisní limity.

Emisní limity v novém povolení budou stejné, jako v původním povolení, neboť nedošlo ke změně příslušné právní úpravy. Nově je vyžadován plán odpadového hospodářství, který provozovatel předložil ke schválení spolu s žádostí o nové povolení.



Q. Shrnutí hlavních bodů diskuse na debriefingu

Datum a čas: 24.10. 2017, 14:00 –15:40

Místo: Zenica, Městský úřad Zenica

Účastníci debriefingu:

- Monika Příbylová, Lejla Šuman, Jan Štejfa – za evaluační tým,
- Fuad Kasumović – starosta Zenice
- Amra Mehmedić, Jasmin Čabaravdić - Městský úřad Zenica
- Kemal Veledar – Grijanje
- Nijaz Lužić – Místní úřad Nemila
- Sead Čizmić – Ministerstvo územního plánování, dopravy a životního prostředí Zenicko-Dobojského kantonu
- Selma Bašić – Ministerstvo Ekonomiky Zenicko-Dobojského kantonu
- Naidin Ahmetpahić – dřívější koordinátor projektu
- Senad Pašalić – ředitel ZEDA

Připomínky k presentovaným zjištěním:

Starosta Nemily upozornil na větší úspory uhlí než presentovaných 150 t/rok. Podle jeho názoru mohou být úspory až 300 t/rok. Závěr diskuse k tomuto bodu: s ohledem na fakt, že přechodem školy a zdravotního střediska na CZT se ročně uspoří min. 165 t a další úspory z přechodu domácností na CZT lze vyčíslit na úrovni cca 35 t, celkové úspory dosahují přibližně 200 t uhlí za rok.

Vyjma školy je CZT velkým přínosem také pro okresní zdravotní středisko, pod které spadá 11.000 lidí. Tepelná pohoda pacientů při návštěvě střediska je důležitá ze sociálních důvodů.

Připomínky k presentovaným doporučením:

P. Ahmetpahić navrhl přidat jedno doporučení: „připravit strategii udržitelného provozu teplárny s plánem na rozšíření teplovodní sítě“. Podle jeho informací má zájem o připojení min 100 domácností. Tuto informaci potvrdil starosta Nemily, který uvedl, že po zprovoznění teplárny v roce 2013 dělali dva průzkumy mezi nepřipojenými domácnostmi. Výsledky těchto průzkumů zájem potvrzují.

Zástupce Grijanje uvedl, že se rozšíření nebrání, ale nejsou schopni jej financovat z vlastních prostředků.

Zástupce Městského úřadu Zenica, p. Čabaravdić uvedl, že v souvislosti s novým českým programem rozvojové spolupráce pro BaH plánují (Město Zenica a Grijanje) požádat ČRA/ZÚ Sarajevo o přehodnocení možnosti navazujícího projektu s cílem získat kofinancování na rozšíření teplovodní sítě. Město Zenica uvítá zaslání finálních doporučení evaluace, které by rádi použili jako odůvodnění žádosti o dotaci z ČRA nebo od jiného donora a také by rádi obdrželi program rozvojové spolupráce pro BaH (až bude k dispozici v bosenské jazykové verzi).

Starosta Zenice na závěr diskuse informoval, že podporuje rozšíření teplovodní sítě v Nemile, a že zvažuje zákaz dovozu uhlí do města Zenica za účelem vytápění. Město Zenica je připraveno kofinancovat potřebné rozšíření sítě v Nemile.