KeepWarm
Renewing district heating

Improving the performance of District Heating Systems in Central and Eastern Europe

Report on support provided to DHS

Horizon 2020 (H2020-EE-2017-PPI)
Project N°784966

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List of Abbreviations

AT	Austria
CEE	Central and Eastern Europe
CoM	Covenant of Mayors for Climate and Energy
CZ	Czech Republic
DisComEx	Dissemination, Communication and Exploitation
DG	Directorate-General of the European Commission
DHS	District Heating System
EU	European Union
GHG	Greenhouse Gas
HR	Croatia
KPI	Key Performance Indicator
LV	Latvia
NGO	Non-Governmental Organisation
RES	Renewable Energy Source(s)
SI	Slovenia
SRB	Serbia
UKR	Ukraine
WP	Work Package

Summary of the project

The project “KeepWarm - Improving the performance of district heating systems in Eastern Europe” is funded under the EU Horizon 2020 programme. Its objective is to accelerate cost-effective investments in the modernisation of District Heating Systems (DHS) in Central and Eastern Europe (CEE). KeepWarm is most active in seven countries: Austria (AT), Croatia (HR), Czech Republic (CZ), Latvia (LV), Serbia (SRB), Slovenia (SI) and Ukraine (UKR). The project focuses on this region, and these particular countries, because in most cases DHSs are frequently still inefficient and for the most part overly reliant on fossil fuels (especially gas, coal or oil).

The aim of this initiative, launched in April 2018, is to modernise DHSs around the whole region in a more sustainable manner. By improving system operations and promoting a switch to less-polluting sources, like renewable energy sources (RES), KeepWarm will contribute to reducing greenhouse gas (GHG) emissions. The eleven project partners strive to ensure that best practices for environmentally friendlier heating and cooling will be taken up across Europe, replicating KeepWarm’s approach in other countries and regions, even beyond the end of the project in September 2020.

Project objectives

KeepWarm’s specific objectives are:

- At least 450 relevant stakeholders with increased capacities on technical, organisational, financial and managerial aspects – includes 150 DHS operators;
- At least 95 **DHS operators** are able to **develop business plans** and to identify the most suitable **financial model** for modernisation of their own DHS;
- At least 23 **business plans for the modernisation** of DHSs have been developed and **sources for investment** have been identified;
- DHS network **retrofitting** is addressed in at least 10 local **energy plans** and 7 regional or **national strategies** or plans;
- At least 23,300 **relevant stakeholders** (directly) and 125,000 (indirectly) **reached** across Europe in order to **replicate the project outputs** in primary and secondary target regions and ensure the project’s impact;
- **Support EU policies and initiatives**, such as the Covenant of Mayors for Climate and Energy (CoM) and DecarbHeat, by exploiting key lessons from KeepWarm activities and pilots to disseminate best practices across Europe.

KeepWarm consortium partners

LOGO	PARTNER NAME	SHORT	COUNTRY
	Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ) GmbH	GIZ	Germany
	University of Zagreb Faculty of Mechanical Engineering and Naval Architecture	UNIZAG FSB	Croatia
	Landeskammer für Land- und Fortwirtschaft in Steiermark	LWK	Austria
	Regionalna Energetska Agencija Sjeverozapadne Hrvatske	REGEA	Croatia
	Jožef Stefan Institute Energy Efficiency Centre	JSI	Slovenia
	ICLEI European Secretariat GmbH	ICLEI Europe	Germany
	Teplarenske Sdruzeni Ceske Republiky	TSCR	Czech Republic
	Biedriba Zemgales Regionala Energetikas Agentura	ZREA	Latvia
	Zavod Energetska Agencija za Savinjsko Salesko in Korosko	KSSENA	Slovenia
	LLC KT-Energy Consulting	KT-Energy	Ukraine
	Institut za Nuklearne Nauke Vinca	VINCA	Serbia

Content

Executive summary

The switch from a fossil fuel and inefficient DH system to clean and renewable alternatives with low level of losses is a challenging task. Other competitive heating solutions in heating sector make it difficult for heating alternatives, such as DH to compete. Besides, DH systems are often not able to provide appropriate value of their services from technical, environmental, societal as well as economic perspective. In other words, DH systems are often in a difficult position due to many reasons. As a result, on the one hand they often lack of ambitious plans and performing relevant activities such as development of feasibility studies, complicated public procurement procedures, evaluation of RES potential, successfully negotiation with existing and future end-consumers, identification and application to both local/regional/national and EU funds (lack of investment strategy). On the other hand, they often lack work force and capacity to achieve ambitious plans due to lack of financial funds or know-how. To foster modernization of above-mentioned DHSs, the KeepWarm project focuses on modernization of pilot DH systems in seven partner countries (Austria, Croatia, Czech Republic, Latvia, Slovenia, Serbia and Ukraine).

Investments in the pilot DHSs were planned and developed within previous KeepWarm project activities such as feasibility studies, business plans and selection of pilot DHSs for creating investment opportunities during and beyond project period. The project partners also committed to provide support to DHSs representatives throughout an interdisciplinary approach with the aim of achieving investments. After identification of the current state and barriers which hinder successful investments in DHSs, the KeepWarm consortium organized local working groups in each country with the aim of providing tailor-made assistance to remove barriers. The assistance is divided into five specific groups – technical support, financial support, potential grant support, legal support, negotiation support – to present a systematic overview of activities based on the current situation of each DHS.

This document gives a general overview on support provided to each previously selected DHS (Deliverable D4.1) from the start of the project. The overview consists of country-by-country activities per DHS achieved through collaboration between project partners, DHSs representatives and other stakeholders in order to boost energy transition towards low-carbon heating sector in seven countries.

In most of the pilot countries, following activities have been performed.

TECHNICAL SUPPORT
Additional calculations based on agreement with DHSs representatives - Boiler replacement and decommissioning - Integration of renewable energy sources - Analysis of current state of DHSs - Analysis of grid expansion - Calculation of emission of primary energy for DH sector
Assistance in negotiation with manufacturers/designers (preparatory activities, documents)
Organization of additional trainings to achieve capacity buildings
FINANCIAL SUPPORT
Organization of additional trainings to achieve capacity buildings
Identification of existing financial opportunities (both country and EU)
Development of financial analyses for planned investments
Assistance in development of comprehensive long-term strategies for DHSs
Assistance in application process for securing subsidies
POTENTIAL GRANTS SUPPORT
Organization of additional trainings to achieve capacity buildings
Identification of existing situation (both country and EU)
Identification of potential financial mechanisms (both country and EU)
Development of future investment strategies for DHSs based on potential mechanism
Assistance in application process for securing grants
LEGAL SUPPORT
Organization of additional trainings to achieve capacity buildings
Administrative activities in public procurement procedures
Organization of meetings with relevant public authorities
Assistance in obtaining necessary permits for achieving investments
Assistance in collaboration between designers/manufacturers and DHSs representatives
Assistance in creating legal documents such as development strategies and feasibility studies
NEGOATIATION SUPPORT
Organization of additional trainings to achieve capacity buildings
Development of promotional strategy and marketing activities
Communication with existing end-consumers
Communication with public authorities (public buildings' owners)
Communication with potential end-consumers
Organization of meetings

Introduction

This document provides an overview of performed activities of the KeepWarm project consortium in terms of supporting involved pilot DHS to achieve investments for their retrofitting plans. Throughout the project period, each national partner has organized local working group meetings with the purpose of strengthening collaboration between the consortium and DHS representatives (owners/operators) with the common goal – achievement of investments according to the business plans developed in WP3, promotion of DH sector in national/regional/local legislation, excessive promotional activities (increase of attractiveness, transparency and similar). During those meetings, the consortium has given support in different areas to DHS representatives. Therefore, this Deliverable D4.3 Report on support provided to DHS can be considered as a conclusion of achieved support throughout local working group meetings such as additional technical support, support in financial modelling and applying to different subsidy/grant schemes, support in negotiation process with either potential new customers or local authorities in terms of obtaining different permits or creating contracts. Each partner has individually coordinated activities in their respective countries with the help of the project consortium to provide a tailor-made support, remove barriers and achieve at least 15 investments in DHS retrofits including renovation of existing production and distribution systems and integration of renewable energy sources. It should be mentioned that DHS were previously selected in Deliverable D4.1 Selection of DHS to be retrofitted based on activities performed in Work Package 3 (scenario analysis, feasibility studies, business models), while the focus of support was defined based on the needs of each DHS representative (owner/operator).

This deliverable is divided into several sections, each aiming at different areas of activities:

- Technical support
- Financial support
- Support and guidance in preparation and application for potential (EU) grants
- Legal support
- Negotiation support with customers

The purpose of this document is to track all performed activities throughout the project period in order to show that continuous collaboration can be effective if it is performed in a coordinated manner to remove existing barriers and achieve investments in line with previously defined business models.

Report on support provided to Austrian pilot DH systems

According to Deliverable D4.1, the following retrofit scenarios are considered by the Austrian pilot DHS and supported by LWK Steiermark as well as by Bioenergie Service:

DHS Eibiswald

DHS Eibiswald decided to start with the implementation of scenario 3 of the elaborated feasibility study, which dealt with the takeover of a grid in Aibl and a further expand of Eibiswald owns grid, connecting the grids of Aibl and Eibiswald as well as to rebuild their boiler house.

The DHS Eibiswald decided to start with different optimisation projects simultaneously, as a result of KeepWarm activities. Based on their intentions, LWK Steiermark and Bioenergie-Service has provided support to DHS representatives in several different fields with the aim of achieving investments, modernising DH production and heat network, as well as to expand the grid by connecting new customers. These activities have been described below per field of activity

DHS Ligist

DHS Ligist decided to start with the implementation of scenario 3 of the elaborated feasibility study, which dealt with the replacement of their old biomass boilers with new ones as well as a small grid expansion to connect some new customers. The DHS Ligist decided to start with the optimisation projects step by step, as a result of KeepWarm activities. The DHS Ligist started by replacing their boilers first. The grid expansion is planned in a second step. Based on their intentions, LWK Steiermark and Bioenergie-Service has provided support to DHS representatives in several different fields with the aim of achieving investments, modernising DH production as well as to expand the grid by connecting new customers. These activities have been described below per field of activity

Technical support

After finalizing Work Package 3 activities where three scenarios and a business plan have been created, the Austrian pilot district heating systems decided to start with the implementation of the optimisation steps.

Due to similar needs of the DHS Eibiswald and Ligist the provided technical support turned out to be similar as well.

Firstly, a series of meetings were organized between DHS operators and companies relevant for planning and necessary technical equipment (manufacturers/designers) as well as the municipality. Suitable technologies, grid expansion as well as the subsidy process were discussed in those local working group meetings. Based on those discussions it was possible to identify the most suitable technology especially in terms of boilers, boiler house installations, filter systems and flue gas condensation systems.

Furthermore, the tendering process was supported, as it was especially difficult to find suitable construction companies, as the companies had full order books.

DHS Eibiswald

LWK Steiermark and Bioenergie-Service also provided technical assistance in the evaluation of taking over the nearby grid in Aibl. Furthermore, there were discussions on how potential new customers in Eibiswald, which are quite far away from the grid, could be connected, since those were required to receive the full amount of subsidies. Therefore, the economical point of few was borderline. From the economical point of view such considered grid extension to those above-mentioned customers was not optimal therefore LWK Steiermark and Bioenergie-Service recalculated different options to optimize those extension plans. Additionally, potential for new customers, which might connect in a couple of years, was also included.

DHS Ligist

In Ligist LWK Steiermark and Bioenergie-Service provided technical assistance in adjusting the control settings of the new boiler. Therefore, the boiler can operate at a high efficiency with low emissions. The support was also about the evaluation of new connection areas. Some potential new customers where too far away to connect them for an economical point of view. Therefore, calculation have been done, if the connection can be feasible in future. However, those borderline potential customers will not be connected yet. It is just planned to connect five new buildings.

Financial Support

The financial support of the KeepWarm project for the DHS Eibiswald and DHS Ligist just focused on support in getting subsidies, which is described in the next chapter. Additional financial support was not necessary, as the DHS Eibiswald and DHS Ligist have chosen a traditional financing with their house bank. Furthermore, a part of the costs, which will occur in relation to those retrofitting plans, where covered by the connection fees of new customers.

Potential Grant Support

LWK Steiermark and Bioenergie-Service supported the Austrian pilot district heating systems in applying for national environmental subsidies for optimising renewable district heating plants (Umweltförderung im Inland). This subsidy supports the optimisation of renewable district heating systems with up to 35% of net investment costs. This application process is often seen as quite complicated by the district heating operators, as plenty of documents are necessary for getting the subsidy. Therefore, the project support was given by preparing a guideline on how to apply for this specific subsidy for now but also for further subsidy applications. Furthermore, a plan was elaborated, when and which documents are necessary.

For DHS Eibiswald it turned ot that a specific issue is the so-called CO_2 cap as the subsidy in Austria, which is about 35% of net investment, are capped with CO_2 savings. Therefore, the DHS Eibiswald must prove additional CO_2 savings to get subsidies. The best way to prove savings is by connecting new customers. It was considered to reach those additional CO_2 savings also due to the takeover of DHS Aibl and its existing customers, but it didn't count as additional savings in the first place, as the customers are already using renewable district heat. But in case that the DHS Eibiswald cannot connect the customers of Aibl, the DHS in Aibl would have been shut down and the customers would have installed their own central heating, which might have been a fossil heating. After some talks with the funding agency a solution was found in a way, that the customers of Aibl partly counted as CO_2 savings.

In contrast to DHS Eibiswald the optimisation project in Ligist is quite straight forward, also the applying process for the subsidy had no problems at all.

To support those actions, LWK Steiermark had meetings with the Styrian Government to get additional regional subsidies for optimising district heating. There are no specific funding programs from the regional Government. However, the Government sometimes grants additional subsidies for very innovative cases. In those specific cases of Eibiswald and Ligist no additional subsidies where granted.

Legal support

In order to promote the DH sector, LWK Steiermark has organised a meeting with the responsible office of the Styrian government in order to discuss priority areas for district heating. In priority areas new buildings are forced to connect to district heating. Also, existing buildings are forced to connect to district heating in case their old central heating must be changed. Municipalities should have the possibility to declare priority areas, especially in areas with high fine dust emissions. One additional thing, which could be achieved during discussions with the Styrian Government, is that there will be no subsidies for individual central heating if district heating is potentially available.

Furthermore, LWK Steiermark supported the Austrian pilot district heating systems in evaluating their heat contracts and adapting them to the current laws and regulations. This new heat contract template was applied for the new connected customers.

Additionally, a new CO_2 saving calculation tool for the DHS Eibiswald and Ligist but also for their individual customers was developed accordingly to the national calculation standard to support DHS actions.

In line with those support actions meetings with the municipality Eibiswald and Ligist where organised to discuss the municipal energy strategy and the importance of the district heating systems to create a greater awareness and strengthens the municipal support for the district heating systems.

Negotiation support with customers

DHS Elbiswald

During the optimisation process, the DHS Eibiswald nearly doubled its customers. The new customers came mainly from private houses and apartment buildings but also from newly connected commercial businesses. Most of those buildings were using oil heating before. As Austrian government forces to change of oil boilers by renewable option by 2025, it was quite easy to get additional customers. Furthermore, the price for district heating is cheaper as an individual oil heating. Regarding public buildings the DHS Eibiswald already reached out to the existing ones and therefore reached its potential.

The LK Steiermark support the DHS Eibiswald by providing info brochures about district heating, where the advantages are shown. Furthermore, calculations where provided to compare the costs of district heating with other forms of individual heating. Additionally, documents about subsidies, which customers could additionally get, if they connect to district heating, were provided by the project.

DHS Ligist

During this optimisation process, the DHS Ligist plans to connect five new customers. However, the connection of those is a bit delayed due to Corona virus. The new customers are two restaurants and three buildings, which belong to the church. The public buildings already were customer before.

In both cases dialogs were necessary with all customers to present project advantages of heating within the district heating sector. Those advantages were presented through brochures, created with the help of LWK Steiermark, and calculations, which compared costs of district heating with forms of individual heating. That argumentation structure was underlined with additional information regarding subsidies which customers could receive.

Report on support provided to Croatian pilot DH systems

According to Deliverable D4.1, the KeepWarm consortium selected three pilot project cities for further development of business plans with the aim of achieving investments. HEP Toplinarstvo (national DHS owner/representative) decided to evaluate the possibility of integration of solar energy in three pilot projects – DHS Velika Gorica, DHS Samobor and DHS Zaprešić. Solar energy potential assessment will be carried out simultaneously for all three pilot cities in a cooperation between HEP Toplinarstvo and REGEA. Following HEP Toplinarstvo needs identified in previous KeepWarm's activities, REGEA and UNIZAG FSB have provided support to HEP Toplinarstvo representatives in several different fields with the aim of achieving investments, modernising DH production and heat network, as well as to expand the grid by connecting new customers. These activities have been described below per field of activity for all three pilot projects (Velika Gorica, Samobor and Zaprešić). Since all three systems are either owned or operated (concession on i.e. heat distribution network) which expressed their interest in integrating solar energy, most of activities are repeatable which directly gives input for D4.5 Report on replication models. Apart from technical area, Croatian partners have provided adequate assistance in legal aspects (development of strategic documents and legislative proposals), negotiation with customers and identification of available financial support mechanisms.

Technical support

After finalizing Work Package 3 activities three scenarios and a business were created for ahh three pilot projects which resulted with a further investigation of potential for integration of solar energy.

Firstly, a series of meetings were organized between HEP Toplinarstvo and companies relevant for solar collectors and necessary technical equipment (manufacturers/designers). HEP Toplinarstvo has participated in an educational meeting where manufacturers/designers presented their technology and methodology for evaluating a potential for solar energy which will be applied in all Croatian pilot projects.

As a part of meetings with manufacturers/designers, REGEA has organized virtual meetings and agreed on continuous collaboration beyond project period which will support the efforts to maximize the implementation of renewable energy sources all three cities which depends on negotiation process with public authorities and available financial funds.

Lastly, REGEA, UNIZAG FSB and HEP Toplinarstvo has started to collaborate on a long-term strategy for future plans for DHS Velika Gorica in which all boiler rooms should be connected into a single DH network and will be based on higher share of renewables.

DHS Velika Gorica

Technical assistance in evaluating the potential has been given to select final locations in the city of Velika Gorica which will be considered further in additional feasibility studies (Boiler Room Cibljanica). Furthermore, additional calculations were provided for two locations (elementary schools) which are potential new customers, identified throughout the Work Package 3. Abovementioned schools will be included as a scenario in the feasibility study along with other areas (parking lot, rooftops, green field). HEP Toplinarstvo has delegated the creation of these studies to REGEA and their external consultants if needed. REGEA has prepared data collection sheet which will be filled by HEP Toplinarstvo.

DHS Samobor

Technical assistance in evaluating the potential has been given to select final locations in the city of Samobor which will be considered further in additional feasibility studies (boiler room Andrije Hebranga 26). This feasibility study will evaluate three different scenarios (different selected areas such as rooftops and green fields). HEP Toplinarstvo has delegated the creation of these studies to REGEA and their external consultants if needed. REGEA has prepared data collection sheet which will be filled by HEP Toplinarstvo.

DHS Zaprešić

Technical assistance in evaluating the potential has been given to select final locations in the city of Samobor which will be considered further in additional feasibility studies (boiler room Mokrička 61). This feasibility study will include evaluation of two scenarios (installation on green field). HEP Toplinarstvo has delegated the creation of these studies to REGEA and their external consultants if needed. REGEA has prepared data collection sheet which will be filled by HEP Toplinarstvo.

Financial Support

While providing technical assistance, HEP Toplinarstvo has reached to REGEA to identify potential financial schemes, especially through different EU mechanism in order to apply for various available funds to cover the share of capital costs for the implementation of solar collectors. After screening and evaluating the internal conditions of HEP Toplinarstvo, REGEA presented several different approaches for HEP Toplinarstvo which will be further targeted in the ongoing and future collaboration.

As for now, current financial situation and technical characteristics in all three cities (in HEP Toplinarstvo in general), as well as requirements of future EU mechanism partially limited implementation of scenarios – in case of acquiring sufficient external funds, large-scale implementation of solar energy should take place by following more optimistic scenarios presented in feasibility and engineering studies. According to the newest requirements, these studies are crucial for successful applications to grants. These studies will be made in next period by REGEA as explained in Technical support section since HEP Toplinarstvo

do not have specific required capacity to develop those projects by themselves.

It should be mentioned that, in case of application to various financial mechanisms, it will include capital projects in all three cities. In other words, HEP Toplinarstvo have intention of creating a large strategic project for decarbonization and modernization with the general support by REGEA and UNIZAG FSB. In case of acquiring external funds, business plan will be adjusted in line with selected scenario or its alternative for all three pilot projects.

DHS Velika Gorica

Based on future requirements, initial plans for application of modernization of DHS Velika Gorica have been made between REGEA and HEP Toplinarstvo. Those plans should result in a complete modernization of DHS Velika Gorica in terms of large-scale solar energy utilization, renovation, and connection into a single DH network. Initial plans were drafted based on KeepWarm's business plan for DHS Velika Gorica, created in cooperation between REGEA, UNIZAG FSB and HEP Toplinarstvo.

DHS Samobor

Same as for the DHS Velika Gorica, initial plans for application of modernization of DHS Samobor have been made between REGEA and HEP Toplinarstvo. Those plans should result in a complete modernization of DHS Velika Gorica in terms of large-scale solar energy utilization, renovation of existing DH network and expansion to uncovered areas in the city. Initial plans were drafted based on KeepWarm's business plan for DHS Samobor, created in cooperation between REGEA, UNIZAG FSB and HEP Toplinarstvo.

DHS Zaprešić

Same as for other two pilot projects, initial plans for application of modernization of DHS Zaprešić have been made between REGEA and HEP Toplinarstvo. Those plans should result in a complete modernization of DHS Velika Gorica in terms of large-scale solar energy utilization, renovation of existing DH network and expansion to uncovered areas in the city and lastly, in terms of creating a single DH network by connecting existing boiler rooms. Initial plans were drafted based on KeepWarm's business plan for DHS Zaprešić, created in cooperation between REGEA, UNIZAG FSB and HEP Toplinarstvo.

Potential Grant Support

REGEA and HEP Toplinarstvo agreed on collaboration in identifying and applying on different grants through the Operational Programme Competitiveness and Cohesion, Innovation Fund and in applying on additional EU projects. These applications will include capital reconstruction projects of the DH networks in all three cities as described below. In addition, those applications should support the integration of solar energy in further selected pilot locations derived from the KeepWarm project, the connection of boiler rooms into a single DH network per city, the expansion of DH network and a promotional campaign to attract new customers.

DHS Velika Gorica

According to long-term plans, throughout local working group meetings, HEP Toplinarstvo and REGEA agreed that DHS Velika Gorica (HEP Toplinarstvo) will be a first candidate for an Innovation Fund beyond project period. External financial funds will be identified for capital project of large-scale implementation of solar collectors if initial feasibility studies and relevant engineering studies show positive financial and technical indicators.

DHS Samobor

Apart from the long-term application plans, REGEA has assisted to HEP Toplinarstvo in application for external funds through EU projects where one of locations should be selected for implementation of thermal storage in the city of Samobor, while other pilot projects in KeepWarm project will also be targeted in future collaboration. REGEA will provide support in the application process. Despite of developing feasibility studies for the boiler room Andrije Hebranga 26, REGEA and UNIZAG FSB advised HEP Toplinarstvo to check static calculations of available roofs and available green field area (in ownership of the city of Samobor) before deciding on next steps. REGEA has been providing support in preparing and analysing necessary documents and agreed on provided specific support on additional information regarding Innovation Funds requirements.

DHS Zaprešić

As for DHS Zaprešić, REGEA and HEP Toplinarstvo agreed on collaboration for future applications of large-scale solar collectors' field next to the boiler room Mokrička 61 if initial feasibility studies show positive financial and technical indicators. Furthermore, REGEA has started to provide support in identification of necessary requirements for a successful application on Innovation Funds which will take place beyond project period.

Legal support

During local working group meetings REGEA and UNIZAG FSB agreed on collaboration with HEP Toplinarstvo to create a strategic document which will identify barriers resulted by current methodology for calculating factors of primary energy which put DH sector in unfavourable position in comparison to other sources when applying refurbishment of private and public building stock.

REGEA has furthermore assisted HEP Toplinarstvo in creating a "green" public procurement procedure for additional feasibility studies which will include detailed techno-economic calculations on three selected locations in the city of Velika Gorica, two selected locations in the city of Zaprešić and three location in the city of Samobor. These locations will set the tone for the future collaboration and enable application for different external funds.

Lastly, REGEA will support to HEP Toplinarstvo in communication with the city of Velika Gorica, Samobor and Zaprešić regarding permits for land use which will be obtained in the later phase of the project, as well as to communicate regarding possible connection of

public building end-users through a local working group. REGEA will provide support by organizing meeting and preparing necessary documentation.

DHS Velika Gorica

In order to promote DH sector, REGEA and UNIZAG FSB have organized meetings in which relevant measures for the creation of a Sustainable Energy and Climate Action Plan (SECAP) for the city of Velika Gorica were discussed. These measures include energy efficiency increase in distribution networks, integration of renewable energy sources, expansion of distribution network, ownership of heating stations at end-users' locations, promotion of DH sector as sustainable heating option. All stakeholders agreed on having additional meetings to discuss further steps such as building permits, usage of public land, etc.

DHS Samobor

REGEA provided legal support in terms of creating a general plan for promotion of DH sector in public legislative document such as SECAPs. In contrast to the situation in the city of Velika Gorica, a meeting with city of Samobor representatives has not been conducted. This meeting will take place until the end of project period in order to discuss relevant measures for the creation of SECAP for the city of Samobor. REGEA will provide support to HEP Toplinarstvo by organizing meetings, lobbying for promotion of DH sector and connection of public buildings to DHS Samobor. This meeting will include above-mentioned discussion about building permits for solar collectors' field and usage of public land.

DHS Zaprešić

REGEA provided legal support in terms of creating a general plan for promotion of DH sector in public legislative document such as SECAPs. In contrast to the situation in the city of Velika Gorica, a meeting with city of Zaprešić representatives has not been conducted. This meeting will take place until the end of project period in order to discuss relevant measures for the creation of SECAP for the city of Samobor. REGEA will provide support to HEP Toplinarstvo by organizing meetings, lobbying for promotion of DH sector and connection of public buildings to DHS Samobor. This meeting will include above-mentioned discussion about building permits for solar collectors' field and usage of public land.

Negotiation support with customers

Throughout the project period, REGEA has assisted HEP Toplinarstvo in identifying future end-consumers (such as public buildings) in the city of Velika Gorica, which is the base for future collaboration on promotional activities and successful expansion. REGEA will assist in all negotiation between the public building sector and HEP Toplinarstvo by organizing meetings, providing documents and consult both sides, as well as identify good practices which will be used for building capacity.

Also, REGEA and UNIZAG FSB have assisted in implement measure organizing meetings between the regional and local public authorities and HEP Toplinarstvo in order to create a common strategy in accordance with the SECAP of Velika Gorica. For instance, several strategic measures regarding connection of public buildings to DHS have been presented to HEP Toplinarstvo. Those are either integrated in the SECAP of Velika Gorica or will be integrated in a certain legislative act which will promote the connection of public buildings to DHS. Same procedure will take place with Zaprešić and Samobor.

Furthermore, REGEA has initiated a start of negotiation between the city of Karlovac, municipality of Brdovec and HEP Toplinarstvo and will support the negotiation process about future of their DHS plans. REGEA will assist the process in developing and providing.

DHS Velika Gorica

To connect two elementary schools in the city of Velika Gorica, HEP Toplinarstvo contacted the KeepWarm consortium to assist on performing additional calculations and communication procedure. UNIZAG FSB has created initial calculations, while REGEA assisted HEP Toplinarstvo in communication with relevant public authorities (the Zagreb County). Apart from that, REGEA has identified potential public end-users (such as elementary schools, high schools, public office buildings, health service buildings) which will be tried to connected to the DHS Velika Gorica in negotiation with the Zagreb County and the city of Velika Gorica. REGEA will support HEP Toplinarstvo by providing necessary instructions, documents and by coordinating the whole process of connection.

DHS Samobor

REGEA and HEP Toplinarstvo has agreed on identifying the most suitable public buildings as their future end-users. REGEA has identified potential public end-users (such as elementary schools, high schools, public office buildings, health service buildings) which will be tried to connect to the DHS Samobor in negotiation with the Zagreb County and the city of Samobor. REGEA will support HEP Toplinarstvo by providing necessary instructions, documents and by coordinating the whole process of connection.

DHS Zaprešić

REGEA and HEP Toplinarstvo has agreed on identifying the most suitable public buildings as their future end-users in the city of Zaprešić. REGEA has identified potential public end-users (such as elementary schools, high schools, public office buildings, health service buildings) which will be tried to connect to the DHS Zaprešić in negotiation with the Zagreb County and the city of Zaprešić. REGEA will support HEP Toplinarstvo by providing necessary instructions, documents and by coordinating the whole process of connection

Report on support provided to pilot DH systems in the Czech Republic

According to Deliverable D4.1, three pilot DHSs were selected for the Czech Republic - Brno, České Budějovice and Písek. Based on the procedures created by KeepWarm, pilot projects for retrofits are selected in individual DHS, for which business models have been created and which will be brought to the investment phase. DHS Brno is implementing a project to replace obsolete steam pipelines with modern and more efficient hot water pipelines and plans to operate only a purely hot water heating network by 2023. DHS České Budějovice wants to replace part of the coal with excess heat from the Temelín nuclear power plant, and thus contribute to improving the environment in the city. The third DHS Písek plans to replace the main coal-fired boiler with a biomass boiler and put it into operation in 2020.

TSCR provides participating DHS support in various areas to achieve planned investments, raise awareness of the benefits of district heating, thereby maintaining or expanding the customer network and negotiating sustainable conditions for the operation of the heating system in the Czech Republic at the national level. These support activities are described in more detail below.

Technical support

DHS Písek

TSCR has organised educational seminars and study visits for DHS representatives and other stakeholders focused on technical topics, such as current developments in heat exchangers, energy recovery of waste in heating, RES in district heating, district cooling, modern heat distribution, requirements for the best available technologies in terms of air protection, applications for large, medium and small heating systems, utilization of waste heat, etc.

TSCR analysed the current state of production sources, heat distribution system and the potential for the use of local renewable sources as part of a feasibility study. TSCR identified the barriers that DHS faces in the heat generation and supply process, such as unequal conditions in the heat market between local heat solutions outside the EU ETS and the DHS that is inside the EU ETS, low interest in technical education among the young generation, high legislative uncertainty particularly for infrastructure projects and therefore TSCR suggested solutions to overcome those by promotion campaigns and marketing activities helping to inform the public and make the right decisions about heating solution, to promote technical education and show its benefits, to negotiate about business conditions in the heating industry with national authorities.

As part of the modernisation process, TSCR analysed five basic options to cover future heat demand with regard to the type of fuel used and sources for heat production and distribution, assuming the maintenance of the central method of heating and the last option anticipating decentralisation of sources. For each variant, the savings of primary energy

sources, the share of renewable sources and the balance of CO2 emissions were quantified and compared with the current situation. TSCR helped in the selection of the optimal scenario with regard to the environmental goals of the city and the availability of financing for individual variants. Business model was prepared for the most suitable scenario.

TSCR offered to continue organising professional seminars and study visits both in the Czech Republic and abroad and to ensure cooperation and mediation of experience with new technologies from foreign partners in the years to come.

DHS Brno

TSCR organized educational professional seminars for DHS representatives on agreed topics, such as current developments in heat exchangers, energy recovery of waste in heating, RES in district heating, district cooling, modern heat distribution, requirements for the best available technologies in terms of air protection, applications for large, medium and small heating systems, utilization of waste heat, etc. And also arranged field trips to modern successful heating plant operations.

As part of the modernisation process, TSCR analysed the current state of production sources, heat distribution system and the potential for the use of local renewable sources in DHS Brno. TSCR evaluated three scenarios for the development of production resources with respect to the fuel used (partial use of heat from NPP, increasing capacity of WtE source and replacing of the old gas boilers with a new biomass boiler). TSCR identified the barriers that DHS faces in the heat generation and supply process and suggested solutions. For each development variant, the savings of primary energy, the increase in the share of renewable energy sources and the balance of CO2 emissions were quantified and compared with the current situation. TSCR helped in the selection of the optimal scenario regarding the environmental goals of the city and the ability of DHS to finance individual variants. TSCR performed a detailed analysis of the distribution network optimization and the transition from steam to a hot water heat supply system and prepared a business model for this variant.

TSCR offered to continue organising professional seminars and study visits both in the Czech Republic and abroad and to ensure cooperation and mediation of experience with new technologies from foreign partners in the years to come.

DHS České Budějovice

As part of the modernisation process, TSCR analysed the current state of production sources, heat distribution system and the potential for the use of local renewable sources. TSCR evaluated three options for the development of production resources with respect to the fuel used (the first purely coal variant, the second variant using coal and heat from NPP and the third is possibility of using municipal solid waste as an alternative fuel). TSCR identified the barriers that DHS faces in the heat generation and supply process and suggested solutions. For each development variant, the savings of primary energy, the increase in the share of renewable energy sources and the balance of CO2 emissions were

quantified and compared with the current situation. TSCR helped in the selection of the optimal scenario regarding the environmental goals of the city and the ability of DHS to finance individual variants. Business model was prepared for the most suitable scenario.

TSCR organised educational seminars and study visits for DHS representatives and other stakeholders focused on technical topics, such as current developments in heat exchangers, energy recovery of waste in heating, RES in district heating, district cooling, modern heat distribution, requirements for the best available technologies in terms of air protection, applications for large, medium and small heating systems, utilization of waste heat, etc. TSCR offered to continue organising professional seminars and study visits both in the Czech Republic and abroad and to ensure cooperation and mediation of experience with new technologies from foreign partners in the years to come.

Financial Support

DHS Písek

TSCR has organised several training seminars focused on financial and economic topics, including investment case studies for DHS representatives.

Investment costs have been quantified for each of the basic options. For each of the variants, the annual fixed and variable costs attributable to heat production were quantified. For each of the variants, the future annual fixed and variable costs attributable to heat distribution were quantified. For each of the variants, the financing costs were quantified, assuming the co-financing of the calculated investment from 30 % from own resources or subsidies, and the rest by a bank loan with a maturity of 10 years and an interest rate of 2.0 % p.a. for the entire repayment period.

TSCR prepared a methodology for calculating primary energy savings and CO2 emissions for individual variants.

TSCR helped with the selection of the most optimal variant for the modernisation of DHS with regard to the economic condition of the company and the ability to finance individual variants.

The intensity of the year-on-year increase in heat prices for end customers was proposed on the condition that the city, as the owner of DHS, will refrain from paying dividends until 2025 to be able to generate sufficient funds to implement the transformation of the steam network to hot water by 2030. Business model was prepared for the most suitable scenario.

TSCR plans to hold other similar training seminars in the future and offers DHS representatives the opportunity to attend.

DHS Brno

TSCR has organised several training seminars focused on financial and economic topics, including investment case studies for DHS representatives. TSCR will organize other similar training seminars in the future and offers DHS representatives the opportunity to attend.

TSCR assessed financial and economic condition of the DHS and its investment plans and analysed the funding costs of each development option.

TSCR prepared a methodology for calculating primary energy savings and CO2 emissions for individual variants.

TSCR helped with the selection of the most optimal variant for the modernisation of DHS with regard to the economic condition of the company and the ability to finance individual variants. Based on development variants, an increase in heat prices for end customers was proposed. Business model was prepared for the most suitable scenario.

TSCR managed to reduce the VAT rate on heat from 15 to 10 % with effect from 1st January 2020. TSCR negotiates on support with national authorities for high-efficiency cogeneration.

DHS České Budějovice

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TSCR assessed financial and economic condition of the DHS and its investment plans and analysed the funding costs of each development option.

TSCR prepared a methodology for calculating primary energy savings and CO2 emissions for individual variants.

Three economic models for the proposed variants were prepared. TSCR helped with the selection of the most optimal variant for the modernisation of DHS with regard to the economic condition of the company and the ability to finance individual variants. Based on development variants, an increase in heat prices for end customers was proposed. Business model was prepared for the most suitable scenario.

TSCR managed to reduce the VAT rate on heat from 15 to 10 % with effect from 1st January 2020.

Potential Grant Support

DHS Písek

TSCR informed DHS about available project funding opportunities through the use of local, national, and European grant programs.

DHS in the Czech Republic can receive subsidies from the Operational Program Enterprise and Innovation for Competitiveness (OP EIC) and Operational program Environment (OPE) for the modernization of its facilities and increasing the use of renewable energy sources.

OP EIC gives the investor a possibility to meet the evaluation criteria in the priority axis 3, specific goal 3.2 “Increase of energy efficiency of the commercial sector”. The main criteria are CO2 emissions reduction and final energy consumption reduction. It offers a funding for small (50 % of eligible costs), middle (40 %) and large (30 %) enterprises (MIT, 2017). There is also a possibility to invest through the specific goal 3.4 “Use of low-carbon technologies in the fields of energy treatment and secondary raw materials usage” or specific goal 3.5 “Increase of the efficiency of the district heating systems”, where the main criteria are energy savings and CO2 reduction as well (MIT, 2017).

OPE, which is held by the Czech Ministry of Environment, offers the financial support to the potential investors through three priority axes (“Improving the quality of air in towns and cities”, “Waste and material flows, environmental burdens and risks” and “Energy savings”). The subsidy ranges between 35% and 70% depending on specific criteria.

At the national level, it is possible to use an economic instrument in the form of an investment subsidy provided by the IROP program. It can spend more than CZK 15 billion to support the improvement of the energy performance of apartment buildings and in specific cases can co-finance renovation costs up to about 1/3 of eligible expenses.

TSCR offered DHS assistance in preparing and submitting an application for support for selected projects. For the replacement of steam for hot water pipelines, it is possible to obtain investment support from the OP EIC in the amount of 30 – 40 % depending on whether the applicant will be considered as a medium or a large enterprise. If an investment subsidy is obtained, the replacement of the steam pipelines will have a reasonable return (definitely shorter than the expected lifetime of the heat distribution system) and will mean economically efficient energy savings without significant impact on the price of heat for end consumers.

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Legal support

DHS Písek

TSCR organised several seminars on legal topics (e.g. permitting processes for energy constructions, the Construction Acceleration Act, the process of expropriation in practice, obligations in the field of heat measurement, the requirements of the Energy Efficiency Directive, etc.) for DHS representatives. TSCR plans to identify future needs and hold other similar training seminars in the future and offers DHS representatives the opportunity to attend.

The TSCR analysed the national legislative framework and identified key barriers, opportunities, and supporting instruments for the DHS modernisation process.

TSCR regularly organises members' meetings, where it presents an overview of legislation in the field of energy and related areas and informs about the obligations for district heating companies.

TSCR regularly holds meetings with national authorities, promotes the interests of the DH sector, seeks to enforce measures against DHS disadvantage over other sources and economic discrimination, participates in the drafting of energy legislation (Amendment to the Energy Management Act, the Metrology Act, the Waste Act, the amendment to the

Construction Acceleration Act, the National Emission Reduction Program of the Czech Republic, NECP, the ERO price decision, the new Energy Act, the preparation of the OPE 2021-2027, etc). TSCR managed to reduce the VAT rate on heat from 15 to 10 % with effect from 1st January 2020.

TSCR participates in the preparation of the Comprehensive assessment of the potential for the application of high-efficiency CHP and DHC for the Czech Republic.

DHS Brno

TSCR organized local working group meetings with relevant local authorities to provide support for DHS modernisation process.

TSCR organised several seminars on legal topics (e.g. permitting processes for energy constructions, the Construction Acceleration Act, the process of expropriation in practice, obligations in the field of heat measurement, the requirements of the Energy Efficiency Directive, etc.) for DHS representatives.

TSCR plans to identify future needs and hold other similar training seminars in the future and offers DHS representatives the opportunity to attend.

The TSCR analysed the national legislative framework and identified key barriers, opportunities, and supporting instruments for the DHS modernization process. TSCR promotes the interests of district heating operators at the governmental and legislative levels to make district heating competitive.

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TSCR participates in the preparation of the Comprehensive assessment of the potential for the application of high-efficiency CHP and DHC for the Czech Republic.

Negotiation support with customers

DHS Písek

TSCR analysed and evaluated the current state of DHS's relationship with existing customers and DHS's plans to acquire new customers. TSCR has designed a new end-customer strategy for DHS to maintain existing satisfaction while seeking to gain new customers (increase of supplies to the regional hospital, newly built shopping gallery, apartment building in the city center, meat processing plant, etc.).

TSCR has proposed to the municipality's management which is the owner of DHS several measures to save thermal energy. 1) Gradually renovate apartment buildings connected to DHS; 2) Gradually renovate all buildings owned by the city; 3) Implement a city-wide energy management system

TSCR helped promote the modernization of district heating by preparing an information section on the DHS's website.

TSCR has prepared a decree for municipal authorities, according to which anyone who wants to disconnect from district heating and build a new source will have to compare the economics of individual solutions and prove that its variant is more environmentally friendly than district heating.

TSCR recommends implementing advanced services for DHS-connected customers. This goal is based on the efforts of the city management to introduce the concept of "smart city", which is characterised by intelligent systems and services that in some respects streamline and facilitate existing systems. In the case of DHS, it seems optimal to offer customers connected to DHS a higher quality service consisting of a customer web portal where customers can find and track historical heat consumption within their customer accounts and use this portal for fast communication with DHS, for example when raising requirements for adjusting the parameters of the heat supply provided. These advanced customer services can be further enhanced to improve customer relationships.

TSCR organised training seminars for marketing and PR staff of individual DHSs, where they presented tools for communication with existing customers and shared successful methods and procedures for gaining new customers.

DHS Brno

TSCR analysed and evaluated the current state of DHS's relationship with existing customers and DHS’s plans to acquire new customers.

TSCR organised training seminars for marketing and PR staff of individual DHSs, where they presented tools for communication with existing customers and shared successful methods and procedures for gaining new customers. These seminars were considered as very useful, so TSCR plans to continue with these activities.

TSCR helped promote the modernization of district heating by preparing an information section on the DHS's website. TSCR promotes district heating as a highly efficient, convenient, affordable and reliable way of heating, and thus helping to attract new customers. TSCR has prepared a decree for municipal authorities, according to which anyone who wants to disconnect from district heating and build a new source will have to compare the economics of individual solutions and prove that its variant is more environmentally friendly than district heating.

TSCR is preparing a new DH association website, which will be followed by the websites of individual DHSs and which is focused on the promotion of district heating as a reliable, ecological and sustainable source of heating.

TSCR informs on its website about the modernization activities of the DHS and in professional energy magazines. TSCR invites DHS’s representatives to energy conferences to report on successful approaches in the process of modernization and environmental protection.

DHS České Budějovice

TSCR analysed and evaluated the current state of DHS's relationship with existing customers and DHS's plans to acquire new customers.

TSCR organised training seminars for marketing and PR staff of individual DHSs, where they presented tools for communication with existing customers and shared successful methods and procedures for gaining new customers. These seminars were considered as very useful, so TSCR plans to continue these activities.

TSCR proposed to the municipality's management, which is the owner of DHS, several measures to optimize the range of services and expand the portfolio, for example, by the supply of cold for air conditioning of buildings and for industrial cooling.

TSCR helped promote the modernization of district heating by preparing an information section on the DHS's website. TSCR promotes district heating as a highly efficient, convenient, affordable and reliable way of heating, and thus helping to attract new customers. TSCR has prepared a decree for municipal authorities, according to which anyone who wants to disconnect from district heating and build a new source will have to compare the economics of individual solutions and prove that its variant is more environmentally friendly than district heating.

TSCR informs on its website about the modernization activities of the DHS and in professional energy magazines. TSCR invites DHS's representatives to energy conferences to report on successful approaches in the process of modernization and environmental protection.

Report on support provided to Latvian pilot DH systems

In result of activities implemented under WP 4 ZREA together with one of its pilot DHS – "Jekabpils C13A" has selected specific scenario for pilot DHS retrofitting facilitation (task 4.1) and together with interested stakeholders support has been provided to remove barriers and achieve investments in pilot DHS (task 4.2) within regular communication and also within meetings conducted. Since January 2020 within implementation of KeepWarm project activities, regular support activities to pilot DHS Jekabpils C13A have been conducted.

In result of activities implemented under WP 4 ZREA together with one of its pilot DHS – "Lielauce" has selected specific scenario for pilot DHS retrofitting facilitation (task 4.1) and together with interested stakeholders support has been provided to remove barriers and achieve investments in pilot DHS (task 4.2) within regular communication and also within meetings conducted. Since January 2020 within implementation of KeepWarm project activities, regular support activities to pilot DHS Lielauce have been conducted.

In result of activities implemented under WP 4 ZREA together with one of its pilot DHS – "Bene" has selected specific scenario for pilot DHS retrofitting facilitation (task 4.1) and together with interested stakeholders support has been provided to remove barriers and achieve investments in pilot DHS (task 4.2) within regular communication and also within meetings conducted. Since January 2020 within implementation of KeepWarm project activities, regular support activities to pilot DHS Bene have been conducted.

Technical support

DHS Jekabpils C13A

Technical support provided to pilot DHS has started with participation of pilot DHSs specialists in ZREA organized trainings on Technical issues (November 2018). In parallel individual consultations with experts took place on best technical solutions for boiler house automation (i.e. expert from company "Filter", Ltd.). Within elaboration of Feasibility study and business plan under WP3, consultations between pilot DHS and professor of Riga Technical university (RTU) were organised for assisting to pilot DHS Jekabpils C13A in deeper assessment of elaborated feasibility study (additional calculations for chosen scenarios). Several direct consultations between expert and pilot DHS were organised. The selected scenario foresees: to replace the existing AK-1500S wood chip boiler (1,5 MW) to new fully automated wood chip boiler with capacity of 1,5 MW; to install new automated 0,5 MW gas boiler (for summer load) and to automate existing old RK-1,6 gas boiler. The main interest of pilot DHS is to find best technical solution for boiler house operation without permanent staff involvement and for high efficiency boiler house`s operation. In result of conducted consultations with RTU professor and "Filter", Ltd. it was decided to start implement chosen pilot project gradually as soon as possible, due to high costs of operation and low efficiency of pilot DHS Jekabpils C13A. The first step to implement on own company`s costs - change of gas boiler (it was decided to make changes

in the project – to dismantle the old gas boiler) and installation of additional gas boiler for summer loads has started. On May, 2020 contract with equipment supply and installation company (“Filter”, Ltd.) was signed in accordance with it two new gas boilers shall be installed within 10 weeks and their operation shall be started within 7 weeks since installation of boilers (by the end of August, 2020). Gas boiler GREENOX.e 140 (power 1400 kW 6 bar, energy efficiency at 100% load >95.36%) will be installed instead of an existing old gas boiler (RK-1,6) and gas boiler GREENOX.e 40 (power 420 kW 6 bar, energy efficiency at 100% load >95.36%) will be additionally installed. Next step – regarding change of wood chips boiler (the main heat production source of this boiler house) is planned to implement within next 1-2 years, depending on availability of the EU funds.

DHS Lielauce

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DHS Bene

Technical support provided to pilot DHS has started with participation of pilot DHSs specialists in ZREA organized trainings on Technical issues (November 2018). Within elaboration of Feasibility study and business plan under WP3, consultations between pilot DHS and professor of Riga Technical university (RTU) were organised for assisting to pilot DHS Bene in deeper assessment of elaborated feasibility study (additional calculations for chosen scenarios). Several direct consultations on technical solutions between expert and pilot DHS were organised. In result of conducted consultations with RTU professor it was decided to elaborate best scenario, which foresees: to install new pellet boiler (total capacity of 0,8-1 MW) or two boilers (with capacity of 0,4/0,5 MW each) with an automated pellets delivery system, in which as fuel might be used also wood chips.

Financial Support

DHS Jekabpils C13A

Within implementation of KeepWarm project activities ZREA has provided also regular support to pilot DHS Jekabpils C13A on financial support. Calculations for all selected scenarios were made with assistance of attracted professor, who suggested the most suitable calculations method to use. Regular updates on available EU funding, state loans or private investment offers were conducted as within local working group`s meetings as remotely. In order to provide such updates, ZREA has contacted responsible institutions and informed accordingly pilot DHS. Also conducted trainings on financial issues, where pilot DHS representatives were involved was certain form of support.

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DHS Bene

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Potential Grant Support

DHS Jekabpils C13A

Regular analysis on ongoing EU funded programs calls has been conducted in order to provide pilot DHS with newest information. In 2019 The EU Cohesion Funded program “Growth and employment” according to strategic support objective 4.3.1. “To promote energy efficiency and the use of local renewable energy sources in district heating systems” planned 3rd call was cancelled, meaning that pilot DHS plans for implementation of selected scenario were burdened. Therefore ZREA made research on alternative funding options, like governmental financial institution`s ALTUM offer on energy efficiency loan,

loan for energy performance contracting and Grant for the development of energy-efficiency projects – but in opinion of pilot DHS company, which is municipal company, costs for this institution`s services are to high and some type of services are not suitable for them due to their judicial form. Therefore ZREA continued consultations with state institutions responsible on EU funds administration in Latvia, in result it is known, that pilot DHS will might apply for EU support within 2021-2027 funding period program`s call`s (will be announced earliest on 2021) in order to realise the part of business plan in relation to change of old biomass boilers to the new one. There will be chance to apply for EU funds for improvement of heat supply systems (installation of boilers with load of 0,2-1MW or to reconstruct heat transmission and distribution networks). ZREA plans to support pilot DHS in application process.

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in Latvia. In result it is known that pilot DHS will might apply for the EU support within 2021-2027 funding period program`s call`s (will be announced earliest on 2021) in order to realise selected scenario. There will be chance to apply for the EU funds for improvement of heat supply systems (installation of boilers with load of 0,2-1MW or to reconstruct heat transmission and distribution networks). ZREA plans to support pilot DHS in application process.

Legal support

DHS Jekabpils C13A

There was no need for ZREA support to Pilot DHS regarding cooperation with regulatory institutions concerning tariff regulation, public procurement, permissions, etc., because the main chosen focus of support was on technical, financial, and potential grant support. Nevertheless, ZREA has provided legal support to pilot DHS with regards to policy and planning documents at local and regional level. In cooperation with Jekabpils municipality based on ZREA recommendations, certain activities regarding DHS development/modernization were included in the Sustainable energy and climate action plan of Jekabpils city 2030. At regional level, the same recommendations were given to Zemgale planning region, in which territory also Jekabpils city is located. Another form of support regarding legal issues provided by ZREA – were organised lectures (within conducted trainings) on legislation regulating DHS in Latvia, where pilot DHS also participated.

DHS Lielauce

There was no need for ZREA support to Pilot DHS regarding cooperation with regulatory institutions concerning tariff regulation, public procurement, permissions, etc., because the main chosen focus of support was on technical, financial and potential grant support. Nevertheless, ZREA has provided recommendations on certain activities regarding DHS development/modernization what could be included in Sustainable energy and climate action plan of Zemgale planning region, in which territory`s also Auce county (with Lielauce parish) is located. Another form of support regarding legal issues provided by ZREA – were organised lectures (within conducted trainings) on legislation regulating DHS in Latvia, where pilot DHS also participated.

DHS Bene

There was no need for ZREA support to Pilot DHS regarding cooperation with regulatory institutions concerning tariff regulation, public procurement, permissions, etc., because the main chosen focus of support was on technical, financial and potential grant support. Nevertheless, ZREA has provided recommendations on certain activities regarding DHS development/modernization what could be included in Sustainable energy and climate action plan of Zemgale planning region, in which territory`s also Auce county (with Bene parish) is located. Another form of support regarding legal issues provided by ZREA – were organised lectures (within conducted trainings) on legislation regulating DHS in Latvia,

where pilot DHS also participated.

Negotiation support with customers

DHS Jekabpils C13A

Regarding negotiation support with customers, ZREA has not involved directly, as it is more internal competence of pilot DHS. ZREA support concerning work with customers – was in form of provided trainings, within which the coach on public relations and on customer services was attracted. Also, within project implementation activities ZREA provided support to pilot DHS in form of elaboration of questionnaires for their customers and potential customers within T3.3. to find out customers opinion on provided district heating services in Jekabpils city.

DHS Lielauce

Regarding negotiation support with customers, ZREA has not involved directly, as it is more internal competence of pilot DHS. ZREA support concerning work with customers – was in form of provided trainings, within which the coach on public relations and on customer services was attracted. Also, within project implementation activities ZREA provided support to pilot DHS in form of elaboration of questionnaires for their customers and potential customers within T3.3. in order to find out customers opinion on provided district heating services in Auce county (also in Lielauce parish).

DHS Bene

Regarding negotiation support with customers, ZREA has not involved directly, as it is more internal competence of pilot DHS. ZREA support concerning work with customers – was in form of provided trainings, within which the coach on public relations and on customer services was attracted. Also, within project implementation activities ZREA provided support to pilot DHS in form of elaboration of questionnaires for their customers and potential customers within T3.3. to find out customers opinion on provided district heating services in Auce county (also in Bene parish).

Report on support provided to Serbian pilot DH systems

As a result of the activities carried out under WP 4, VINČA, together with its DHS pilots (Priboj, Nova Varoš, Bajina Bašta and Šabac), selected a specific FS scenario, for each of the DHS individually (for DHS Priboj, scenario 3 from the feasibility study was selected and developed, for DHS Nova Varoš scenario 3, for DHS Bajina Bašta - scenario 2, and for DHS Šabac scenario 2). Efforts were also focused on facilitating the implementation of the DHS pilot (Task 4.1) and together with stakeholders, Vinca pointed to guidance on removing barriers and achieving investment in the DHS pilot (Task 4.2).Since 2019, regular support activities (technical, of choosing optimal financial approach and business model for pilot DHS, of identifying potential subsidies/grants etc.) in the framework of regular communications & consultations and through the working group meetings, have been carried out as part of the implementation of WP4 KeepWarm activities.

Technical support

Technical support provided to pilot DHS has started with participation of pilot DHSs specialists in VINČA organized trainings on Technical issues (1st and 2nd April 2019.). Within elaboration of feasibility study and business plan under WP3, consultations between pilot DHS and VINČA were organised for assisting to pilot DHSs in deeper assessment of elaborated feasibility study (additional calculations for chosen scenarios). After finalizing Work Package 3 activities three scenarios and a business model were created for all four pilot projects.

DHS Priboj

The Laboratory for Thermal Engineering and Energy of the Vinča Institute provided technical support for the development of the Feasibility Study and Business Model. From the three offered scenarios in the feasibility study for the development of the Business Model, scenario 3 was chosen: Construction of a new 8.0 MW boiler, extended operation including night shift, network integration (WP3). These activities were done in cooperation with the technical and managerial staff of DHS Priboj, the energy manager of the municipality of Priboj as well as representatives of the authorities of this municipality - within the Local Working Group (Task 4.2). No additional activities were requested by DHS from Vinca's representatives. Within the Feasibility Study all the necessary technical documentation and procedures necessary to obtain an investment for biomass plants in order to produce thermal energy, has been presented.

DHS Nova Varoš

The Laboratory for Thermal Engineering and Energy of the VINČA Institute provided

technical support for the development of the Feasibility Study and Business Model. In the Local Working Group meeting (meeting in November 20, 2019, Task 4.2) as well as through remote consultations, Vinča in cooperation with the technical and managerial staff of DHS Nova Varoš, as well as representatives of the authorities of this municipality developed scenario 3 (construction of a new 3.0 MW boiler on wood chips with, extended operation including night shift, integration of grid) for DHS Nova Varoš.

No additional activities were requested by DHS from Vinca's representatives. Within the Feasibility Study all the necessary technical documentation and procedures necessary to obtain an investment for biomass plants in order to produce thermal energy, has been presented.

DHS Bajina Bašta

The Laboratory for Thermal Engineering and Energy of the VINČA Institute provided technical support for the development of the Feasibility Study and Business Model. In the Local Working Group meeting (meeting in December 2, 2019, Task 4.2) as weel as through remote consultations, Vinča in cooperation with the technical and managerial staff of DHS Bajina Bašta, as well as representatives of the authorities of this municipality developed scenario 2 (construction of two new 3.0 MW boilers on wood chips) for DHS Bajina Bašta.

No additional activities were requested by DHS from Vinča's representatives. Within the Feasibility Study all the necessary technical documentation and procedures necessary to obtain an investment for biomass plants in order to produce thermal energy, has been presented.

DHS Šabac

The Laboratory for Thermal Engineering and Energy of the Vinča Institute provided technical support for the development of the Feasibility Study and Business Model. From the three offered scenarios in the feasibility study for the development of the Business Model, scenario 2 was chosen: Construction of a new 10 MW boiler on wood chips, extended operation to include night shift (WP3). These activities of choosing the most optimal scenario in terms of cost-effectiveness and technical feasibility, were done in cooperation with the technical and managerial staff of DHS Šabac, within the Local Working Group (November 29, 2019, Task 4.2). No additional activities were requested by DHS from Vinča's representatives. Within the Feasibility Study all the necessary technical documentation and procedures necessary to obtain an investment for biomass plants in order to produce thermal energy, has been presented.

Financial Support

Within implementation of KeepWarm project activities VINČA has provided also regular support to pilot DHSs on financial support. Calculations, i.e. cost-benefit analysis for all selected scenarios were made as part of a feasibility study. Regular updates on available funding, state loans or private investment offers were conducted as within local working group`s meetings as remotely consultations. Also conducted trainings on financial issues (April 22nd and 23rd, 2019), in which pilot DHS representatives participated, was certain form of support.

DHS Priboj

In the last four years, in the municipality of Priboj, fossil fuel boilers have been replaced with biomass boilers with a total capacity of 3MW, so it can be said that the energy staff of this municipality is well acquainted with financing schemes and ways to support biomass and energy efficiency projects. Moreover, at the end of September 2019, the Mayor of Priboj (as a guarantor of the Priboj heating plant) signed an agreement with the Ministry of Mining and Energy and the German Development Bank KfW on the construction of a combined city heating plant on wood biomass (8 MW wood-fired boiler) and heating oil (15 MW). It is planned that the works will include the complete reconstruction of heating pipelines and substations in Priboj.

DHS Nova Varoš

During the consultations and work of the working group, the DHS team was introduced to the "Renewable Energy Stimulus Program: Development of the Biomass Market in the Republic of Serbia", and the financing from the loan approved by the German Development Bank kfW to our country. Also, to other funds were pointed as those the Public Investment Management Office of the Government of the Republic of Serbia (PIMO).

DHS Bajina Bašta

During the consultations and work of the working group, the DHS team was introduced to the "Renewable Energy Stimulus Program: Development of the Biomass Market in the Republic of Serbia", and the financing from the loan approved by the German Development Bank kfW to our country. Also, to other funds were pointed as those the Public Investment Management Office of the Government of the Republic of Serbia (PIMO).

DHS Šabac

Šabac is the only city in Serbia that participates in the activities of the so-called "smart cities" due to the measures taken on energy efficiency. Šabac has placed among the world’s smart cities (global platform for sharing ideas to solve urban challenges that enable living in more resilient, sustainable, safe, and prosperous environments) thanks to the projects of residential building insulation, replacement of non-ecological light-bulbs with LED lighting, construction of the city pool using three types of energy and participative

budgeting. Therefore, Šabac has a strong and active team that deals with finding finances for the implementation of projects from RES and EE.

Potential Grant Support

Regular analysis on ongoing national funded programs calls has been conducted in order to provide pilot DHSs with newest information. Funds available for EE projects and RES implementation are:

WEBSEFF (Western Balkans Sustainable Energy Financing Facility), has a credit line for the exploitation of sustainable energy sources for the Western Balkans, provided by the EBRD through local banks.

EBRD (European Bank for Reconstruction and Development), cooperates with domestic banks through which it implements credit lines for the implementation of projects in the field of energy efficiency in the Western Balkans.

WBIF (Western Balkans Investment Framework),a joint initiative of the EU Commission and partner international financial institutions (EIB, EBRD and the Council of Europe Development Bank and KfW Bank), to support socio-economic development and the accession of the Western Balkans to EU through EE investment; through the Joint Grant Fund and the Joint Credit Fund.

GEF (Global Environmental Facility), Independent world organization finances projects related to climate change, persistent organic pollutants and other, of which significant support for the development of biomass for Serbia.

KfW (Kreditanstalt für Wiederaufbau), is one of the largest foreign banks which in cooperation with domestic banks provides favourable loans and approves loans to the R. Serbia to finance agriculture, EE, renewable energy and municipal infrastructure.

IFC (Internacional Finance Corporation), it is the largest global institution that is oriented exclusively to the private sector of developing countries, but also manages various funds. They cooperate with other institutions within the World Bank but are legally and financially independent.

IPA (Instrument for Pre-Acession), provides non-refundable financial assistance to candidate and potential candidate countries for accession to the EU. These are pre-accession funds of the European Union, from which about 70 million euros are allocated annually for projects in the field of environmental protection, for bilateral donors and credit lines in Serbia.

GGF (Green for Growth Fund), a public-private partnership between the German Development Bank (KfW) and the European Investment Bank (EIB), with financial assistance from the European Commission, the European Bank for Reconstruction and Development (EBRD) and the German Federal Ministry for Reconstruction and Development. Its area of activity is the promotion of EE and the use of RES.

ENVIRONMENTAL PROTECTION FUND, money earmarked for environmental projects.

ENERGY EFFICIENCY FUND, budget fund provided by the Law on Efficient Use of Energy.

DHS Priboj

On June 17, 2020, a contract was signed with the consortium "Južna Bačka" from Novi Sad (selected contractor at the tender), in the Ministry of Mining and Energy in Belgrade. The construction of the heating plant will cost 5,250,000 Euro, with the replacement of heating pipes and substations. The total value of the project is close to seven million Euro, of which the German and Swiss governments finance 16.5%, while the rest is a long-term loan from the German Development Bank KfW with a minimum interest rate 1.1% and a grace period of 2 years.

DHS Nova Varoš

On January 29, 2020, the councillors of the Novi Varoš Parliament voted on the Decision to give up the loan for the construction of the central city biomass heating plant, considering that the loan in the amount of 2,979,000 Euro is currently too expensive for "Energija Zlatar NV" and the municipality. Instead, they apply to the Public Investment Management Office (PIMO) for a grant to build a heating plant. Funds from PIMO have been withdrawn for now due to the current epidemiological situation.

DHS Bajina Bašta

Funds for the construction of a biomass heating plant were obtained from the Public Investment Office. The tender for and design, procurement, delivery and installation of equipment for the reconstruction of the existing coal boiler room for work on wood chips and construction of a new heating pipeline and heating substations was published on the Public Procurement Portal and the procuring entity on March 6, 2020. Further activities were suspended due to the current epidemiological situation caused by the Covid-19 virus.

DHS Šabac

Due to large investments and unfavourable political and financial situation, the Šabac heating plant has refocused its efforts to obtain the investment for a 10 MW biomass boiler with investments in improving the energy efficiency of DHS and buildings (on DHS grid), as well as focusing on smaller biomass boilers (≤0,5 MW) in suburban areas.

Legal support

There was no need to support Pilot DHS regarding cooperation with regulatory institutions in terms of tariff regulation, public procurement, permits, etc. because these matters are regulated by law at the national level. The main chosen focus of Vinča's support to the heating plants was, above all, technical, then financial and potential support of grants. Nevertheless, VINČA made recommendations on certain activities related to the development/modernization of DHS on what could be included in the action plan for sustainable energy and climate. This activity was carried out within WP5, by developing draft D5.2_Action plans for retrofitting of DHS. Another form of support for legal issues provided by VINČA - were organized lectures (within the conducted trainings, especially those related to management topics, held on May 21 and 22) on the legislation regulated by DHS in Serbia, which was also attended by DHS pilot staff.

- On local level- VINČA have an agreement with the representatives of the Šabac heating plant to implement the KeepWarm guidelines from D5.2_Action plans for retrofitting of DHS, in the revised document Energy Policy of the City of Šabac; VINČA also made a commitment to provide the municipal energy manager of the municipality of Priboj with KeepWarm guidelines for local SECAP, in accordance with the document D5.2_Action plans for retrofitting of DHS
- On regional level- Zlatibor Regional Development Agency and the Biomass and Energy Efficiency Working Group, which also includes DHSs Priboj, Nova Varoš and Bajina Bašta, are preparing for participation in the EUKI 2020 project, and VINČA provide them with KeepWarm guidelines for regional SECAP according to KeepWarm D5.2_Action plans for retrofitting of DHS.
- The relevant Ministry of Energy, as well as representatives of the Business Association of DHS Serbia, representatives of banks (EBRD) and the Standing Conference of Towns and Municipalities, through the review of document D5.2 were involved in creating recommendations for the revitalization of Serbian district heating systems, which can be treated as legal support at the national level.

Negotiation support with customers

Regarding negotiation support with customers, VINČA has not involved directly, as it is more internal competence of pilot DHS and their owner-municipalities. VINČA support concerning work with customers – was in form of provided trainings, within which persons who are not DHS staff, but are also their users was attracted. Also, within project implementation activities VINČA provided support to pilot DHS in form of elaboration of questionnaires for their customers and potential customers within T3.3. in order to find out customers opinion on provided district heating services in seven Serbian DHS. Vinca also participated in the work of regional and national working groups (see D.4.2), as well as in numerous national conferences and gatherings, panel discussions where the benefits of modernization and use of DH system services were promoted.

Report on support provided to Slovenian pilot DH systems

Technical support

DHS Slovenj Gradec

KSSENA prepared a feasibility study and business plan for the development of Slovenj Gradec district heating system. Employees of DHS Operator – Komunala Slovenj Gradec (hereinafter KPSG) and Municipality of Slovenj Gradec attend the training where they increase their capacity in technical concerns and preparation of project documentation. The investment on biomass boilers is very demanding and subsequently, KPSG has been outsourcing most services for project design and technical documentation. In the scope of technical support, KSSENA provided several documents and training seminars on sustainable and secure biomass supply with an emphasis on Quality assurance. In coming months, KSSENA will prepare Quality management guides for operating the biomass DHS.

DHS Ptuj

District heating system in the city of Ptuj will be renovated in two steps. In the first step, the operator (Javne službe Ptuje – municipal-owned company) will install a biomass boiler and build all necessary infrastructure. The second step is the enlargement of the existing network and connection to several new consumers. New investments will lead to an environmentally friendly heat supply with a low carbon footprint. Use of biomass as the main heating source will have a positive impact on the local economy and job creation.

Kssena supported JSP Ptuj in several steps. First, KSSENA have had several very well excepted training seminars where KSSENA focused on the use of biomass in the DH, technical adaptation of the DH network and other accompanying activities such as preparation of feasibility studies, business plans cost-benefit analyses, marketing of sustainable biomass DHS, consumer relations and financing of investment.

Kssena provided technical support in several activities for investment in biomass boilers for DHS Ptuj.

First, KSSENA prepared a detail feasibility study and business plan where KSSENA describe the investment and define further steps. Then KSSENA advise JSP Ptuj in preparation of technical documentation such as Project main design and technical studies where KSSENA work closely with engineering companies. The result of this cooperation was successfully obtained Building Permit for new boiler house and respective infrastructure, together with the end of the tendering process for technology supplier, this had been a major milestone in the preparation phase for the investment.

Upcoming activities will contain an application for national co-financing and securing the loans for the rest of the investment.

DHS Velenje

Project partner KSSENA prepared several documents for future development, modernization, decarbonization and optimization of Velenje district heating system. Within KeepWarm project, KSSENA conducted training for key employees of Velenje utility company (Komunalno podjetje Velenje, hereinafter KPV), where KSSENA focused on organizational issues, preparation of feasibility studies and business plans with an emphasis on short summaries for decision-makers. Since employees of KPV have tremendous technical knowledge and their own engineering and design group KSSENA did not prepare training for technical areas. Regarding technical issues, KSSENA prepared a pre-feasibility study on alternative energy sources, and a feasibility study with a comparison of the most interesting technical solution. Both studies are key documents for further development of DHS.

Kssena supported KPV in preparation of partial investment in grid renovation and modernization. KSSENA have been involved in economic calculation and calculation of monetary and CO2 savings.

Utility company Velenje is a large electricity consumer, KSSENA prepared a detailed study of the possible installation of PV power plants or solar thermal collectors on facilities owned by KPV. These facilities are intended for DHS operation and water treatment (which is also the job of KPV). The study consists of estimation of PV potential regarding the size and output of PV plants and a comparison of PV and thermal solar collectors. KSSENA concluded that thermal solar collectors cannot provide significant added value to the DHS, so our solution is to place solar PV plants on the roof of the KPV facilities. Altogether KSSENA analysed six buildings' potential total output is more than 300 kW.

Financial Support

DHS Slovenj Gradec

In the feasibility study, KSSENA prepared several scenarios and cost-benefit analyses. The investment in new biomass boilers is the first step in the comprehensive renovation of DHS. The pipeline and heat substation are quite obsolete and need renovation. Currently, KSSENA is working on local energy concept for the municipality of Slovenj Gradec, where ambitions plan for further investment in the grid will be implemented.

DHS Ptuj

Kssena prepared a detail list of potential financial resources for DHS investments. Within the feasibility study, KSSENA analysed the financial impacts of the investment and proposed optimum combination of financial sources. In case of JSP Ptuj, KSSENA connected company financial officer and CEO with Slovenian investment and development bank (SID Bank) where they had presented the project and find an optimum loan for the investment. By financial analyses, the combination of grants by MZI and loan from SID bank will be the most suitable way of financing investment in a new boiler and grid expansion. The loan will be repaid in seven years.

In WP two KSSENA prepared a training on topic financing, and preparation of business plans and cost and benefit studies, with that knowledge employees of DHS Ptuj, were able to prepare sufficient documentation for the financial institutions as well for municipal officers. Moreover, they have the capacity to explain the calculations and to defend the business plan.

DHS Velenje

Kssena prepared a detail list of potential financial resources for DHS investments. Since founds for grid renovation and modernization are reserved with companies and municipal budget, KSSENA focused on larger investment described in the feasibility study.

According to national and EU funding schemes, there is potential to combine grants and EIB loans for carbon-free heat generation. Available funds and stable political environment will have a large impact on the decision-making process. Currently cost optimum heat generation forms thermal power plant Šoštanj and even with the rising price of CO2 all other solutions are more costly, even if KSSENA consider environmental impact.

Potential Grant Support

DHS Slovenj Gradec

The operator applied for the national grants, that have been distributed under the Ministry of infrastructure call for co-financing. The application process has been quite complex and knowledge gain within KeepWarm projects helped the KPSG, to successfully apply for the grants.

For future financial support through grant and incentives, is very important that the municipality has all the necessary strategic documents, and one of them is the Local energy concept. KSSENA is directly involved in the developing of the Local energy concept (similar document as SEAP), where KSSENA will define concrete measures to renovate the district heating network and provide the list of possible financial instruments that might be used

DHS Ptuj

KSSENA helped JSP Ptuj in the application for national Grants. Ministry of infrastructure published call for co-financing of investment in DHs with a focus on the use of renewable energy sources in DHS. The maximum grant is up to 40 % of the investment costs. The documentation for application for these grants its quite complex, so potential investors usually hire an outside consultant to prepare the documentation. With the action taken in KeepWarm project, KSSENA increase the capacity of employees in DHS Ptuj to the level, that they have been able to prepare their application. Of course, KSSENA offered them support in the process of application.

DHS Velenje

In addition to the described activities in previous chapters, project partners should clarify the guidance provided to DHS in terms of identifying potential subsidies/grants and 2. In preparing and applying to those. For instance, EU structural funds, Integrated Territorial Investment mechanism, Operation Programme Competitiveness and Cohesion, local/regional/national funds in each country, etc.

Legal support

DHS Slovenj Gradec

KSSENA prepared the legal basis for including private investors in the modernization of DHS. This document remains on the table in case other means of financing cannot be obtained. KPSG successfully finished very demandingly and challenging public procurement process where they have selected the technology – biomass boiler and construction work, provider. KSSENA will prepare a framework for sustainable biomass supply and Quality management standards.

DHS Ptuj

In case if DHS Ptuj KSSENA were involved as an advisor in the preparation of public procurement procedure for selection of technology (boiler) supplier, which has to be selected before application for National Grants. KSSENA are helping JSP Ptuj with the preparation of the application form for the national co-financing call, which is issued by the Ministry of infrastructure.

In the scope of KeepWarm project, KSSENA prepared a legal opinion on private investors investing in public infrastructure. Slovenian legislation and the regulatory framework make it possible for a private investor to invest in public infrastructure through various type of legal agreements. Public-private partnership and energy supply contracting are most used. In the feasibility study, KSSENA analysed in which areas of the operation KSSENA could attract private investors. The operation and maintaining of the grid/pipeline are well operated by KPV, and by our calculation, this is not a profitable activity. On the other hand, investment in renewable heat, production might be interesting for large specialized companies, which have experience with technology, large infrastructure and operation of the renewable heating plans. KSSENA will continue to develop a sustainable environmental and financial project with added value for the community.

DHS Velenje

In the scope of KeepWarm project, KSSENA prepared a legal opinion on private investors investing in public infrastructure. Slovenian legislation and the regulatory framework make it possible for a private investor to invest in public infrastructure through various type of legal agreements. Public-private partnership and energy supply contracting are most used. In the feasibility study, KSSENA analysed in which areas of the operation KSSENA could attract private investors. The operation and maintaining of the grid/pipeline are well operated by KPV, and by our calculation, this is not a profitable activity. On the other hand, investment in renewable heat, production might be interesting for large specialized companies, which have experience with technology, large infrastructure and operation of the renewable heating plans. KSSENA will continue to develop a sustainable environmental and financial project with added value for the community.

Negotiation support with customers

DHS Slovenj Gradec

Within the Local energy concept, the Municipality will define main heating sources for the urban area of Slovenj Gradec. The goal is, to set a regulation where district heating system will be recognized, as the main option for space heating in the central town area.

Regarding new investment, (in biomass boilers), the main concern of local inhabitants is the road to the heating plant, which now passes through a residential area. Building a southern Slovenj Gradec bypass is one of the main priorities of the municipal administration, should start in coming months, subsequently, the access to the plant and storage facilities should be guaranteed. Anyhow, the new road has been promised for several years now and the residents are quite sceptical about it. KSSENA address this issue, with direct communication to a civil initiative, where KSSENA design the protocol, for using the road that goes through the residential area.

Municipality of Slovenj Gradec and KPSG establish a working group to inform citizens about the positive effect of the investment and to attract more potential consumers to connect on the DH network. This is a continuous process and with increased boiler capacity, the room for new connection exists.

KSSENA will help main stakeholders, to prepare effective and interesting communication campaigns.

DHS Ptuj

JSP Ptuj prepared a clear and succinct communication strategy, regarding the installation of biomass boilers near the town centre. The effect of biomass burning will be minimized and will have small or no influence on life quality. The operator will decrease potential air pollution by using filters and quality (dry) biomass fuel. The plant location is on the windy area and it is highly unlikely to have an impact on PM pollution, especial in the winter and autumn when the concentration of PM particles is higher than usually.

Clear and efficient communication is crucial for raising awareness among citizen and users, to avoid any dispute in the time of construction of new boiler houses and more important in the coming operational years. As usual in this type of projects, there is some resistance among citizens, which JSP Ptuj try to address as clear and open as possible and try to minimize the partial interest with presenting a bigger picture of CO2 reduction and the local job and added value creation. For now, the majority of citizen have supported and have a positive view of the investment.

DHS Velenje

Kssena prepared a case study comparing different energy sources for end consumers. Aside DHS KSSENA take into consideration heat pumps (air-water) and biomass. DHS network is obvious the main choice for the citizen, but national legislation opted out that citizens have rights to switch to renewable energy sources. Biomass and Heat pumps are the most popular choices, but they have technical and environmental shortcomings. For biomass, shortcomings are obvious flue gasses and air pollution, and municipality has rights to not allow these installations within urban areas. Heat pumps (or electricity) has problems with noise pollution and they must be considered as huge load in power (electricity) grid. Mass use of heat pumps might have a negative impact on the secure power supply and power network stability. Anyhow, our study shows that form economic, environmental and comfort for the need users DHS is still the best way of space heating. Results of this study KPV will use in their consumer relations and marketing materials.

Report on support provided to Ukrainian pilot DH systems

Technical support

DHS Bila Tserkva

KT-Energy has supported DHS Bila Tserkva in preparation of feasibility studies and business models for priority modernization projects (WP3), as well as organizing two trainings on technical concerns (WP 2). Further contacts between the DHS and experts involved in trainings have been facilitated.

Besides, additional support has been provided for shaping the priority project on replacement of main pipeline between DHS and Bilotserkivska CHP. KT-Energy participated in a meeting with design documentation developer to clarify technical parameters of the project and investment needs.

DHS Zhytomyr

KT-Energy has supported DHS Zhytomyr in preparation of feasibility studies and business models for priority modernization projects (WP3), as well as organizing two trainings on technical concerns (WP 2). Further contacts between the DHS and experts involved in trainings have been facilitated.

DHS Ternopil

KT-Energy has supported DHS Ternopil in preparation of feasibility studies and business models for priority modernization projects (WP3), as well as organizing two trainings on technical concerns (WP 2). Further contacts between the DHS and experts involved in trainings have been facilitated.

DHS Khmelnytskyi

KT-Energy has supported DHS Khmelnytskyi in preparation of feasibility studies and business models for priority modernization projects (WP3), as well as organizing two trainings on technical concerns (WP 2). Further contacts between the DHS and experts involved in trainings have been facilitated.

Financial Support

DHS Bila Tserkva

Financial support to the DHS have been provided via the training on financial aspects, including business plans development and financial model preparation (WP2), as well as preparation of feasibility studies and business models for priority modernisation projects with calculation of key financial indicators under different scenario (WP3). The business model includes a detailed overview of potential financing sources for district heating modernization projects in Ukraine.

KT-Energy has supported DHS Bila Tserkva in preparing applications for the Global Climate City Challenge contest run by European Investment Bank and IFC's platform ECA Cities to attract investment for one of the priority actions identified (replacement of pipeline between Bilotserkivska CHP and Bila Tserkva DHS, estimated investment EUR 8.7 million)).

KT-Energy initiated and supported the preparation of the application for financing priority modernization project on replacement of pipeline between Bilotserkivska CHP and Bila Tserkva DHS via the State Regional Development Fund.

KT-Energy advised Bila Tserkva DHS and representatives of the city council on the procedural aspects of the approval of the potential modernisation project (DemoUkraine DH) by the city council.

DHS Zhytomyr

Financial support to the DHS have been provided via the training on financial aspects, including business plans development and financial model preparation (WP2), as well as preparation of feasibility studies and business models for priority modernisation projects with calculation of key financial indicators under different scenario (WP3). The business model includes a detailed overview of potential financing sources for district heating modernization projects in Ukraine.

DHS Ternopil

Financial support to the DHS have been provided via the training on financial aspects, including business plans development and financial model preparation (WP2), as well as preparation of feasibility studies and business models for priority modernisation projects with calculation of key financial indicators under different scenario (WP3). The business model includes a detailed overview of potential financing sources for district heating modernization projects in Ukraine.

DHS Khmelnytskyi

Financial support to the DHS have been provided via the training on financial aspects, including business plans development and financial model preparation (WP2), as well as preparation of feasibility studies and business models for priority modernisation projects with calculation of key financial indicators under different scenario (WP3). The business model includes a detailed overview of potential financing sources for district heating modernization projects in Ukraine.

KT-Energy conducts continuous communication with partnering DHSs and potential providers of financing resources on securing investment for pilot projects.

Potential Grant Support

DHS Bila Tserkva

The business model developed under WP3 includes an overview of potential grants and subsidies sources for district heating modernization projects in Ukraine.

DHS Zhytomyr

The business model developed under WP3 includes an overview of potential grants and subsidies sources for district heating modernization projects in Ukraine.

DHS Ternopil

The business model developed under WP3 includes an overview of potential grants and subsidies sources for district heating modernization projects in Ukraine.

Draft application proposals for two projects have been prepared for Ternopil DHS for potential application to the USAID's Energy Security Project. The applications were devoted to increasing resilience of DHS operation and the conditions of COVID19 pandemic and other emergency situations, as well as implementation of smart heat energy consumption management systems in buildings.

DHS Khmelnytskyi

The business model developed under WP3 includes an overview of potential grants and subsidies sources for district heating modernization projects in Ukraine.

Legal support

Legal assistance has not been covered by KeepWarm project activities with specific DHSs in Ukraine.

Promotion of DHS sector in the field of local/regional/national legislation has been performed via the development of the proposals for the National Action Plan for District Heating Modernization in Ukraine taking into account several rounds of stakeholder consultations, including consultations with partnering DHSs and local authorities within the framework of local working groups established by KeepWarm project, as well as discussions state authorities, national Regulator, DHS operators, businesses and expert community during the webinar organized as a part of Inspire series events.

KT-Energy has submitted to the State Energy Efficiency and Energy Saving Agency of Ukraine proposals for the inclusion of district heating modernization support measures (i.e. financing sources for DH modernization and approval of minimum requirements for modernization projects) into the National Energy Efficiency Action Plan for the period till 2030, which is planned to be finalized in 2020.

Besides, for Zhytomyr DHS and Zhytomyr city council proposals for the incorporation of district heating modernization measures into the updated Sustainable Energy and Climate Action Plan of the city have been prepared.

Also, advise was provided to Zhytomyr DHS on new methodological requirements for the preparation of district heating development schemes that has been developed by the Ministry of Communities and Territories Development of Ukraine.

Negotiation support with customers

Negotiation support with customers has not been covered by KeepWarm project activities in Ukraine. Measures to increase attractiveness of district heating to final consumers and communication activities promoting best practices in district heating have been included in the proposals for the National Action Plan for District Heating Modernization in Ukraine developed within KeepWarm project.

In addition to support provided to Ukrainian pilot DH systems, DHS Bila Tserkva has strengthened their cooperation with Ukrainian KeepWarm partner and signed a letter of commitment for Global Climate City Challenge. The letter is attached below.

БІЛОЦЕРКІВСЬКА МІСЬКА РАДА
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Керівнику проекту
«KeepWarm – покращення
ефективності систем теплопостачання в
Центральній та Східній Європі»
Томляку К. О.

Шановний Кириле Олександровичу!

Від імені виконавчого комітету Білоцерківської міської ради дозвольте засвідчити високу повагу та вдячність проекту «KeepWarm – покращення ефективності систем теплопостачання в Центральній та Східній Європі» за допомогу у підготовці заявок на конкурс GLOBAL CLIMATE CITY CHALANGE Європейського інвестиційного банку (далі - ЄІБ) та на Платформу IFC «ECA Cities», щодо виконання комплексу робіт по заміні магістральної труби «ТЕЦ - міст».

Сподіваємось на подальшу підтримку та співпрацю.

З повагою

Міський голова Г. Дикий

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