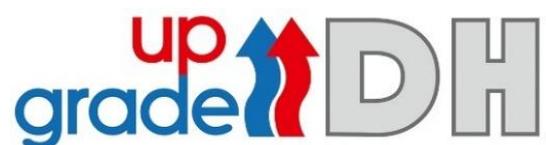




Report on the DH knowledge sharing expert workshops



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(numbers in superscript refer to the project partners on page 3)

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Contents

Introduction	5
1 Workshop – Bosnia and Herzegovina	6
1.1 Minutes	6
1.2 Participant list	8
1.3 Summary	9
2 Workshop – Croatia	9
2.1 Minutes	9
2.1 Participant list	10
2.2 Summary	10
3 Workshop – Denmark	10
3.1 Minutes	10
3.2 Participant list	11
3.3 Summary	12
4 Workshop – Germany	13
4.1 Minutes	16
4.2 Participant list	17
4.3 Summary	19
5 Workshop – Italy	19
5.1 Minutes	20
5.2 Participant list	22
5.3 Summary	22
6 Workshop – Lithuania	22
6.1 Minutes	23
6.2 Participant list	24
6.3 Summary	24
Conclusions	24
Annexes (confidential)	25

Introduction

The overall objective of the Upgrade DH project, funded by the EU's Horizon2020 programme, was to improve the performance of inefficient district heating networks in Europe by supporting selected demonstration cases for upgrading, which can be replicated in Europe. The Upgrade DH project supported the upgrading and retrofitting process of DH systems in different climate regions of Europe, covering various countries. The target countries of the Upgrade DH project are: Bosnia-Herzegovina, Denmark, Croatia, Germany, Italy, Lithuania, Poland, and The Netherlands. In each of the target countries, the upgrading process is initiated at concrete DH systems of the so-called Upgrade DH demonstration cases (demo cases) (Figure 1). The gained knowledge and experiences were further replicated to other European countries and DH systems in order to leverage the impact.

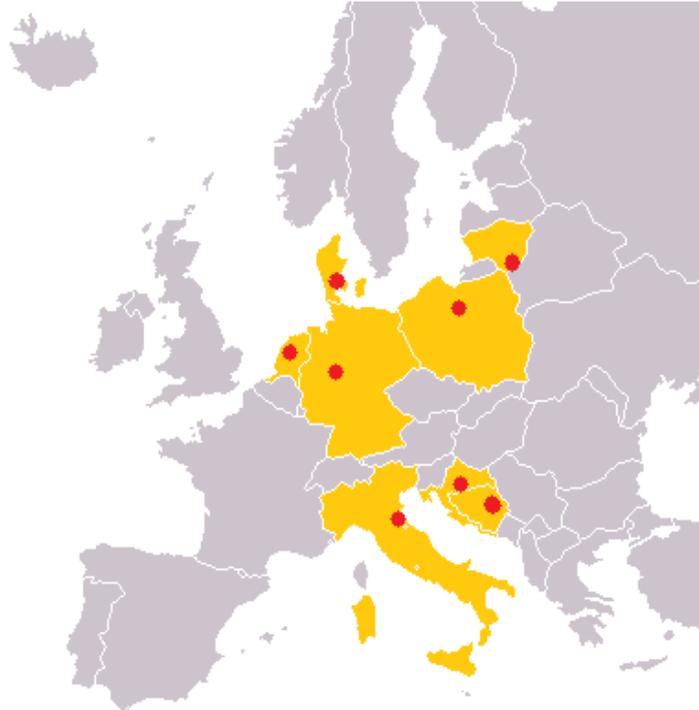


Figure 1: Upgrade DH target countries and demo cases

A series of DH knowledge sharing expert workshops were organised in each country of the Upgrade DH consortium members in order to **facilitate networking and knowledge sharing**.

In total, **6 workshops** were organised in close cooperation with the working group members (Task 3.1), as well as with the national DH associations:

1. Workshop in Bosnia and Herzegovina took place on 12 July 2021 at the premises of JP Elektroprivreda BiH d.d.- Srajevo and gathered 31 participants
2. Workshop in Croatia was organised on 8 July 2021 at the Hotel International in Zagreb and welcomed 39 attendees
3. Workshop in Denmark was held on 9 October 2019 at COWI Denmark's headquarter and was attended by 17 participants (22 participants in the study tour)
4. Workshop in Germany took place on 18 August 2021 online and gathered 63 registrations
5. Workshop in Italy was held digitally on 2 October 2020 and was followed by more than 400 people
6. Workshop in Lithuania took place on 24 May 2021 and had around 70 people constantly present online

The present report summarizes the discussions, contains minutes and participation rates of the above-mentioned workshops.

1 Workshop – Bosnia and Herzegovina

The knowledge sharing expert workshop for Bosnia and Herzegovina took place on the 12th of July 2021, from 10:30h to 14:30h at the premises of JP Elektroprivreda BiH d.d.- Sarajevo.

1.1 Minutes

Agenda



DH knowledge sharing expert workshop / Ekspertna radionica o sistemima daljinskog grijanja
Sarajevo, Bosnia and Herzegovina, 12.07.2021.godine

Upgrade DH: Upgrading the Performance of District Heating Networks in Europe
Upgrade DH: Poboljšanje performansi sistema daljinskog grijanja u Evropi
Horizon 2020 project / Horizont 2020 projekt

AGENDA

*Mjesto i datum /Place and date: Sarajevo, Vilsonovo šetalište 15, PTZ EPBiH (Amfiteatar) 12.07.2021.,
11:00 – 14:00 h*

Moderacija/ Moderation:

- Nihad Harbaš, stručni konsultat / technical consultant
- Zina Jusić, moderator događaja/ moderator

TIME	ACTIVITY / AKTIVNOST
10:30 - 11:00	Arrival and registration of participants / Dolazak i registracija učesnika
11:00 - 11:05	Welcome speech / Govor dobrodošlice prof.dr. Mustafa Musić EPBiH
11:05 - 11:10	Introductory on the project and workshop / Uvod o projektu i radionici dr..Anes Kazagić, Development Dept./ Sektor za strateški razvoj EPBiH
11:10 - 11:15	Speech on behalf MOFTER/ Obraćanje u ime MOFTER dr. Admir Softić, Minister Deputy / Pomoćnik Ministra MOFTER
11:15 - 11:20	Speech on behalf FMERI/ Obraćanje u ime FMERI Halko Balavac Minister Deputy / Pomoćnik Ministra FMERI
	PANEL I – strategy and planning / strategija i planiranje
11:20 – 11:55	Overview of district heating sector in BiH - status, perspectives and roadmap for decarbonization / Pregled sektora daljinskog grijanja u BiH – stanje, perspektive i mapa puta za dekarbonizaciju MSc. Nihad Harbaš, prof.dr. Azrudin Husika, nLogic Advisory

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement N°785014



11:55 – 12:05	DHC activities and plans of Tuzla City - Demo case UPGRADE DH Grad Tuzla / Centralno grijanje Tuzla
12:05 – 12:10	DHC activities and plans of Sarajevo City - Replication case of UPGRADE DH Mr sci. Mirza Musić Toplane Sarajevo
12:10 – 12:15	DHC activities and plans of Kakanj City - Replication case of UPGRADE DH MSc.Senad Bajrić Grijanje Kakanj
12:15 – 12:20	Green Energy Park Livno Best practice example / Najbolji primjeri iz prakse Vanja Curin DVOKUT
12:20 – 12:35	Discussion / Diskusija
12:35 – 12:45	Coffee and refreshment / Kafa i osvježenje
	PANEL II – development and realization / razvoj i realizacija
12:45 – 13:00	UPGRADE DH approach and methodology / Poboljšanje SDG – pristup i metodologija dr. Anes Kazagić. EPBiH
13:00 – 13:15	Mjere retrofita Sistema DG Tuzla i ekonomsko-okolinski pokazatelji / DH Tuzla Upgrade measures and KPI dr. Ajla Merzić EPBiH
13:15 – 13:30	Activities of Heat Distribution utility Tuzla / Aktivnosti Centralnog grijanja Tuzla i status realizacije Upgrade DH Mr.sci. Suljo Sarić CG Tuzla
13:30 – 13:45	Draft of national Action Plan for upgrade DHS / Prijedlog akcionog plana poboljšanja SDG u BiH dr. Ajla Merzić / Elma Redžić EPBiH
13:45 – 14:00	Discussion / Diskusija
14:00 – 14:30	Coffee and refreshment / Kafa i osvježenje

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement N°785014

INTRODUCTORY:

- i. In his welcome speech, prof. dr. Mustafa Musić, Deputy of general manager of JP Elektroprivreda BiH for Development, highlighted need of energy transition and importance of adequate response of all stakeholders in energy sector, including heating sector. Challenges of energy transition are big while role of experts is key. Projects like Upgrade DH open and start to resolve the issue, he said.
- ii. In the introductory speech, Dr Anes Kazagić, head of strategic development dept. of JP Elektroprivreda BiH and team leader on Upgrade DH project, talked about the project, its composition and structure, as well as explained the purpose of the expert Workshop.
- iii. PhD. Admir Softic, Ministry Assistant at Ministry of Foreign Trade and Economic Relations of the State Ministry Counsel (Government of Bosnia and Herzegovina), talked on plans and activities of Ministry on energy transition, technical assistance and support of World Bank.

PANEL I:

- iv. Representative of nLogic, Mr. Nihad Harbaš talked about status, perspectives and roadmap for decarbonization in District heating and Cooling sector in Bosnia and Herzegovina.
- v. PhD professor Azrudin Husika put the focus on high-efficient co-generation and utilization of industry waste heat by heat pumps.
- vi. The City of Tuzla representative Mr. Kemal Kurević talked about plans of Tuzla City in further modernization of Tuzla DHS.
- vii. Sarajevo Toplane heat utility representative Mr. Siniša Jovanović talked about status and plans of Toplane Sarajevo and perspective and launched activities of use of geothermal energy as RES module for heat supply. Toplane Sarajevo is one of the replication cases within the Upgrade DH project.
- viii. Kakanj distribution utility representative Mr. Senad Bajric talked about activities of their company, projects of expansion of DH network in Kakanj and modernization of existing network. Grijanje Kakanj is one of the replication cases within the Upgrade DH project.
- ix. Vana Ćurin, on behalf of DVOKUT Sarajevo, co-owner of Green Energy Park Livno, one of the Best Practice Examples within the Upgrade DH project, talked about this project and plans for further upgrade.
- x. Mr. Semin Petrović, expert for gas talked about status and importance of adopting the Law of thermal energy in FBiH.

PANEL II:

- xi. PhD. Anes Kazagic highlighted the importance of establishment of a local working group for the process of development and realisation of upgrading projects, to cover all segments: production, distribution and consumption of heat. Dr Kazagić said that such infrastructure projects with integration modules of RES, need involvement and support of government level, regulatory bodies, politicians, planners, experts, R&D institutions, and eventually consumers as final users. He emphasized benefits of cooperation with Upgrade DH partners, particularly AGFW, SOLITES, OPTIT and WIP.
- xii. PhD. Ajla Merzić presented results of Upgrade DH. She talked about the particular measures for Tuzla DH and its techno-economical parameters, as well as environmental indicators incl. CO2 emissions cut. All developed projects and measures are feasible, while solar thermal project would require some portion of grant support to be feasible.
- xiii. Representative of Centralno grijanje Tuzla, Mr. Suljo Sarić, talked about realized measures in Tuzla DHS, as well as plans for further modernization. He highlighted cooperation with EPBiH and Upgrade DH partners AGFW and SOLITES.
- xiv. PhD. Merzic presented at the end the Draft of National Action Plan for retrofitting DH networks in Bosnia and Herzegovina, which was developed through WP6 of Upgrade DH project in cooperation with Euroheat & Power from Belgium. National Action Plan will be forwarded to relevant ministries in Bosnia and Herzegovina to be used for their planning of heat sector.

1.2 Participant list

The participants at the event represented a large variety of organisations: nLogic Sarajevo (Co-organizer, consultancy), EPBiH (organizer and partner), Tuzla Distribution utility (Demo-case), Toplane Sarajevo and Kakanj Distribution utility (replication cases), Dvokut (owner of Green Energy Park Livno - best practice example), Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, International organizations, district heating companies in Bosnia and Herzegovina.

In total 31 people participated.

Signature list is attached as a confidential document (Annex 1).

1.3 Summary

The following table summarizes the main outcomes of the discussions among the participating organisations.

Table 1: Main conclusions of the knowledge sharing expert workshop

Main outcomes	<ol style="list-style-type: none"> 1. Energy transition of heat sector is an ultimate. 2. Support of politicians for heat sector transition is essential. 3. Thermal energy law is urgent. 4. Establishment of DH companies association is needed. 5. Formation of the local working group for the DHC network retrofitting projects is essential. 6. Integration of RES modules into DHC networks is ultimate. 7. Possibilities for high-efficient co-generation and utilization of industry waste heat by heat pumps should be investigated in detail.
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2 Workshop – Croatia

The workshop was organised on 8.7.2021. on the location of Hotel International, Miramarska Cesta 24, 10000 Zagreb. The envisioned duration was from 10:00 until 12:30.

2.1 Minutes

The workshop started with an introductory presentation from Dr. Tomislav Pukšec, the Upgrade DH project representative in Croatia. After the general introduction about the main project objectives and performed activities, Borna Doračić provided a presentation of the main upgrading measure which was analysed in Croatia, i.e. thermal storage integration in the district heating system of Sisak. This was followed by the presentation of the business model developed for this measure, presented by Tomislav Pukšec. Since the project proved to be very feasible, an interesting discussion followed regarding the specifics of the investment and current operation. Questions from the audience were answered by the UNIZAG FSB team and the director of the Sisak DH distribution company. After a short coffee break, the workshop continued with the presentation of the DH upgrading action plan for Croatia, which was done in cooperation with the KeepWarm project. Therefore, as a representative of KeepWarm, Dr. Goran Krajačić held the presentation. This presentation also provoked an interesting discussion about the steps and supporting measures which need to be taken to foster the uptake of sustainable and renewable DH in Croatia, with the majority of audience agreeing that more should be done in this perspective by the national government. Some further upgrading opportunities were further presented by Hrvoje Dorotić, focusing on the low temperature DH networks and urban excess heat integration. Finally, one of the best practice examples in Croatia, Vukovar DH, was presented by its director Kristijan Lovrenšćak. The presentation focused on the first solar thermal DH system in Croatia, as well as other upgrading measures implemented in Vukovar. After the official program of the workshop, a networking session was opened, where all the participants discussed with each other and with the representatives of UNIZAG FSB regarding DH upgrading opportunities. Figure 2 shows some pictures taken during the workshop.



Figure 2 Workshop in Croatia

2.1 Participant list

The participants at the event represented a large variety of organisations: directors of some of the largest district heating systems in Croatia (Osijek, Sisak, Vukovar), representatives of Academia, national ministries, regional energy agencies, regulators, energy efficiency fund, chamber of commerce, national power (and district heating) utility, etc. In total 39 people attended the workshop. The signature list is attached as a confidential document (Annex 2).

2.2 Summary

The organisation of the workshop started as early as June 2020, however due to the COVID-19 pandemic it was continuously postponed since the partners at UNIZAG FSB wanted to have a physical conference rather than an online one in order to facilitate the live discussions between the relevant stakeholders. Due to the better epidemiological situation, the workshop was finally organised on 8.7.2021, as a physical on-site workshop. It gathered the most relevant stakeholders in the Croatian district heating sector, including the representatives of the academia, the directors of the largest DH systems in Croatia, representatives of relevant ministries, as well as of regional energy agencies, the chamber of commerce, and media among others. The main topics of discussion included the results of the Upgrade DH project, but also the best practice examples of upgrading DH in Croatia. Overall, 39 people participated at the workshop and it can be concluded that it was highly successful due to extensive discussions, which prolonged the workshop 30 minutes from the initial timeframe. The workshop ended with a networking session, which further facilitated lively discussions between relevant DH stakeholders in Croatia.

3 Workshop – Denmark

3.1 Minutes

On the 9th of October 2019, the innovation workshop was held at COWI Denmark's headquarter, where participants from the two EU projects Upgrade DH and COOL DH had the possibility to present and share the knowledge and innovative solutions introduced by the projects. The workshop was then followed by a study tour, which took place in the city of Lund in Sweden. Here, the new Örtofta Biomass CHP Plant was visited as well as the demonstration site of COOL DH project in Brunshög district.

Table 2: Program of the Innovation workshop

08:30 - 9:00	Registration and coffee – Innovation workshop	
09:00 - 9:15	COOL DH project - Welcome and Intro	COWI DK
9:15 - 9:35	New DH plastic pipes	Logstor
9:35 - 9:55	Solutions against Legionella contamination	Lund University
9:55 - 10:15	Local integration of RES / Waste heat	COWI DK
10:15 - 10:40	Discussion	Lund Municipality
10:40 - 11:00	<i>Coffee Break</i>	
11:00 - 11:15	UPGRADE DH project - Intro	WIP
11:15 - 11:35	Best Practice in Albertslund	COWI DK
11:35 - 11:55	Tools overview	OPTIT and SIG Solites
11:55 - 12:10	Discussion	
	<i>Break</i>	
13:30 - 16:30	Study tour in Lund	

3.2 Participant list

Participating Upgrade DH project partners: 17

External participants of the Study Tour: 22

The participants at the event represented a large variety of organizations (energy utilities, universities, research institutes, energy consultants, industrial manufacturers, DH associations) from 10+ countries in Europe.

The following table shows the names of the companies participating in the workshop (the names of the participants were omitted following GDPR regulation). Signature list is available in Annex 3.

Table 3: List of companies

Company	Country
AGFW - Energy Efficiency Association for heating, cooling and CHP	Germany
AIRU - Italian District Heating Association	Italy
Alytaus būstas buildings service company	Lithuania
Cetetherm AB	Sweden
COWI Denmark	Denmark

Company	Country
COWI Polska Sp. z o.o.	Poland
COWI Sweden	Sweden
EHP – Euroheat and power	Belgium
EPBiH - JP Elektroprivreda BiH d.d.	Bosnia and Herzegovina
HERA Group	Italy
Kraftringen Energi AB	Sweden
Logstor A/S	Denmark
LSTA - Lithuanian District Heating Association	Lithuania
Lund Municipality	Sweden
Lund University	Sweden
OPEC-INEKO - heat production	Poland
OPEC-SYSTEM - heat distribution	Poland
OPTIT	Italy
Šalčininkai Municipality	Lithuania
Šalčininkų Šilumos Tinklai – District Heating	Lithuania
SIG SOLITES - Steinbeis Research Institute for Solar and Sustainable Thermal Energy Systems	Germany
UNIZAG FSB - University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture	Croatia
Vestforsyning A/S	Denmark
WIP Renewable Energies	Germany

3.3 Summary

The day began with a welcome to the Workshop and study tour by Reto M. Hummelshøj, project manager at COWI Denmark, which also introduced COOL DH project to all the participants. The following presentations focused on the innovative solutions introduced in the project, such as, the new plastic pipes, the Legionella research regarding the problem in low-temperature district heating (LTDH) and the integration of renewable energy sources (RES) for domestic hot water production (DHW) in LTDH networks.

In the second part of the workshop, participants of Upgrade DH project presented best practice examples and innovative tools used in the project, as innovation inputs for the participants.

As part of the workshop, some time was reserved for the discussion between the participants, which had the possibility to exchange ideas and considerations about the innovations. In this way, the dissemination of the innovative solutions was facilitated, in order to allow people to get ideas, which can be applied in the different participants' countries.



Figure 3: Welcome speech and introduction to the workshop at COWI (Source: COWI)



Figure 4. Presentation of the new plastic pipes introduced in COOL DH project (Source: COWI)



Figure 5. Presentation of the solutions for integration of RES for domestic hot water production (Source: COWI)

4 Workshop – Germany

Motivation:

Following a recent judgment by the German Constitutional Court (FCC), the federal government has revised the Climate Protection Act (Klimaschutzgesetz). In April, the FCC had declared parts of the present Climate Protection Act unconstitutional due to its missing clarity on the foreseen carbon reduction measures after the year 2030. As a consequence, the German government proposed an increase of the current climate targets from 55% to 65% by 2030, an additional target of 88% by 2040 and the achievement of climate neutrality by 2045 instead of 2050 previously.

This overall increase of ambitions also leads to a tightening of the sectoral sub-targets in Energy, Transport, Buildings and Industry: to reach the annual emission budget of 438 Mio. tonnes (from formerly 543 Mio. tonnes) in 2030, the energy sector will be required to reduce emissions by an additional 67 Mio. tonnes, while the target for the buildings sector will only be increased by a further 3 Mio. tonnes due to the sectors social impact. The revision of the Climate Protection Act was adopted by the federal cabinet on May 12th, 2021.

Idea of the expert workshop:

Of course, it is important for DHC sector to increase the share of renewable energy sources (RES) for heat generation. But how could savings of 39 million tonnes of CO₂ per year¹ be achieved, as identified in some studies? And which are most reliable and relevant possible RES solutions to reach those targets? These questions are currently driving the entire DH industry, so AGFW decided to invite multiple Experts on RES solutions for the DHC context to share their expertise and experience with representatives of the DH branch.

The workshop programme:

Within the “DH knowledge sharing expert workshop: Transformation of district heating generation - goals and the reality”, latest information on different RES opportunities was presented to the DH industry by national experts, together with details on practical experiences, collection of tools and supporting contacts and guidelines. Besides RES experts, the workshop also covered the role of heat storage and opportunities for sector coupling in general. Finally, a new alternative in the field of geothermal energy, already discussed with national and international experts and utilities within the Upgrade DH project, formed the closing lecture of the event.

Embedded in the digital workshop and lecture series "50 Years AGFW" (see Figure 6), focussing on target groups of DH utilities and DH industry, the information was widely disseminated in the German DH branch. Fitting perfectly in the topics of the EU founded H2020 project RES-DHC (No. 952873), the network of the German RES-DHC was invited to join the workshop.

In 2021, the AGFW department of urban development started the community network “Grüne Fernwärme”². Aim is to support and connect people, who are responsible for the supply of heating and cooling in cities and municipalities (e.g. employees from municipal administration, municipal utilities, energy suppliers and the housing industry), in sustainable urban planning and development. Due to the content of the Upgrade DH Expert Workshop, the members of this network were of course also invited.

As target groups and focus was on national stakeholder and boundary conditions, the workshop was promoted in German.

See programme flyer in Figure 7 or [here](#).

¹ AGFW| Der Energieeffizienzverband für Wärme, Kälte und KWK e.V. (Hg.), „Perspektiven der Fernwärme – Maßnahmenprogramm 2030 - Aus-und Umbau städtischer Fernwärme als Beitrag einer sozial-ökologischen Wärmepolitik“, (November 2020) verfügbar unter <https://www.agfw.de/strategien-der-waermewende/perspektive-der-fw-7070-4040/>

² <https://www.gruene-fernwaerme.de/>

Veranstaltungen



18.08.2021 09:00 - 18.08.2021 12:00

Upgrade DH - Transformation der Fernwärmerzeugung – Ziele und die Wirklichkeit

Ein wichtiger Puzzlestein für eine erfolgreiche Wärmewende stellen Fernwärmesysteme mit einem wachsenden Anteil von Wärmeerzeugung aus Erneuerbaren Energien (EE) dar.

[Details](#)

Figure 6: Announcement of the WS within the 50 years of AGFW event series (<https://www.agfw-50jahre.de/veranstaltungen>)

Programmhinweise

Datum:
18.08.2021

Zeit:
09:00 - 12:00 Uhr

Gebühr:
Für AGFW-Mitglieder kostenfrei.
Für Nichtmitglieder EUR 85,- zzgl. MwSt.

Leistungen:
Zugangslink zur Online-Veranstaltung

Anmeldung:
Bitte melden Sie sich online auf der Homepage <https://www.agfw-50jahre.de/veranstaltungen> an.

Organisation:
AGFW | Der Energieeffizienzverband für Wärme, Kälte und KWK e. V.
Stresemannallee 30
60596 Frankfurt

Durchführung:
AGFW-Projekt-GmbH
Stresemannallee 30
60596 Frankfurt

Kontakt:
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Tel.: 069 6304-200,
E-Mail: s.grimm@agfw.de


www.agfw-50jahre.de

Das Upgrade DH Projekt

Das „Upgrade DH“ Projekt unterstützt und initiiert die Modernisierung von acht Fernwärmenetzen in Europa in den folgenden Ländern: Bosnien-Herzegowina, Dänemark, Kroatien, Deutschland, Italien, Litauen, Polen und den Niederlanden. Dadurch wird eine Grundlage für die Modernisierung in anderen Städten gelegt. Zu den Hauptaktivitäten des Projekts Upgrade DH gehört die Darstellung von Best-Practice-Beispielen für kürzlich nachgerüstete FW-Netze. Auch Best-Practice-Instrumente zur Diagnose und Modernisierung werden gesammelt. Innovative Geschäfts- und Organisationsmodelle werden angewandt, Modernisierungsprozesse für ausgewählte Fernwärmenetze werden unterstützt, Fortbildungsmaßnahmen zu Finanzierung, Geschäftsmodellen und Modernisierung durchgeführt, sowie nationale und regionale Aktionspläne werden erarbeitet. Darüber hinaus wird eine Imagekampagne für moderne Fernwärmenetze durchgeführt.

RES-DHC

Das EU-Rahmenprogramm für Forschung und Innovation, „Horizont 2020“, fördert Wege zur Lösung gesamtgesellschaftlicher Herausforderungen wie des Klimawandels. Das gerade gestartete Projekt „RES-DHC“, kurz für Renewable Energy Sources in the District Heating and Cooling (Fördernummer: 952873), beschäftigt sich in den kommenden Jahren mit der Steigerung des Anteils erneuerbarer Energien in der Fernwärme und -kälte. 15 Projektpartner aus 8 Ländern haben sich zusammengeschlossen, darunter in Deutschland das Solites Steinbeis Forschungsinstitut für solare und zukunfts-fähige thermische Energiesysteme aus Stuttgart, das Hamburg Institut sowie der Energieeffizienzverband AGFW mit Sitz in Frankfurt am Main. Das EU-Projekt soll Branchen-akteure und Politik dabei unterstützen, die Ziele der Erneuerbare-Energien-Richtlinie RED II zu erreichen. Dazu zählt unter anderem die Erhöhung des Anteils erneuerbarer Energien in der Fernwärme um jährlich mindestens ein Prozent.

AGFW| Der Energieeffizienzverband für Wärme, Kälte und KWK e.V. (Hg.), „Perspektiven der Fernwärme – Maßnahmenprogramm 2030 - Aus-und Umbau städtischer Fernwärme als Beitrag einer sozial-ökologischen Wärmepolitik“, (November 2020) verfügbar unter <https://www.agfw.de/strategien-der-waermewende/perspektive-der-fw-7070-4040/>

AGFW| Der Energieeffizienzverband für Wärme, Kälte und KWK e.V. (Hg.), „40/40-Strategie – Unser Konzept für die Wärmewende“, (November 2020) verfügbar unter www.agfw.de/strategien-der-waermewende/perspektive-der-fw-7070-4040/

Online-Seminar 

Transformation der Fernwärmerzeugung – Ziele und die Wirklichkeit

18.08.2021


 Co-funded by the Horizon 2020 programme of the European Union

www.agfw.de

Programmbeschreibung

Ein wichtiger Puzzestein für eine erfolgreiche Wärmewende stellen Fernwärmesysteme mit einem wachsenden Anteil von Wärmeerzeugung aus Erneuerbaren Energien (EE) dar. Doch wie lassen sich die in Studien identifizierten Einsparpotentiale von jährlich 39 Millionen Tonnen CO₂ erreichen und was sind mögliche Erzeugungsalternativen, um bis 2050 möglichst nah an die 73% EE in der Fernwärme heranzukommen? Mit dieser Frage beschäftigen sich derzeit zahlreiche Fernwärmeversorgungsunternehmen auf unterschiedlichen Ebenen.

Mit der Veranstaltung „Transformation der Fernwärmeerzeugung – Ziele und die Wirklichkeit“ möchten wir zeigen, was die Ziele der Wärmewende in Deutschland bedeuten und einige Erzeugungsalternativen, -komponenten und -konzepte vorstellen. Erfahren Sie von den Experten aktuelle Details zu praxisnahen Erfahrungen, Hilfsmittel und allgemein Wissenswertes zu bereits bekannten Erzeugungsalternativen, die Rolle der Wärmespeicher und Chancen der Sektorkopplung. Eine neuartige Alternative im Bereich der Geothermie bildet den Abschlussvortrag der Veranstaltung.

Nutzen Sie die Veranstaltung der digitalen Workshop und Vortragsreihe „50 Jahre AGFW“, um sich ohne Reiseaufwand zu informieren und mit den unterschiedlichen Experten zu vernetzen. Die Veranstaltung ist Teil des EU geförderten Projekts „Modernisierung von Fernwärmenetzen in Europa - UpgradeDH“ (www.upgrade-dh.eu).



Weitere Informationen zum Thema „Renewable Energy Sources in the District Heating and Cooling“ finden Sie auch über das Forschungsvorhaben RES-DHC (www.res-dhc.com).



Programm Mittwoch, 18.08.2021

Abwärmernutzung (EU Projekt ReUseHeat)
Oliver Rosebrock, Veolia Energie Deutschland GmbH, Braunschweig

Pause

Neuartige Geothermie
Robert Winsloe, EAVOR Technologies Inc., Calgary

Diskussion und Abschluss
Sebastian Grimm, AGFW e. V., Frankfurt am Main

09:00 Uhr Begrüßung und Einführung
Sebastian Grimm,
AGFW e. V., Frankfurt am Main

Ausgangslage / Motivation
Daniel Heiler,
AGFW e. V., Frankfurt am Main

Großwärmepumpen in der Praxis
Dr.-Ing. Jens Kühne,
AGFW e. V., Frankfurt am Main
(Praxisleitfaden)
Andrej Jentsch,
AGFW e. V., Frankfurt am Main
(Reallabor)

12:00 Uhr Ende der Veranstaltung

Stromnetzdienliche Wärmenetze: Chancen für die Sektorkopplung
Markus Euring,
ENERPIPE GmbH, Hilpoltstein

Pause

Praktische Hilfestellungen für Solarthermie in der Fernwärme
Kibriye Sercan,
AGFW e. V., Frankfurt am Main

Die Rolle der Wärmespeicher bei der Dekarbonisierung
Michael Klöck,
solites Steinbeis Forschungsinstitut für solare und zukunftsfähige thermische Energiesysteme, Stuttgart

www.upgrade-dh.eu | www.res-dhc.com



www.agfw-50jahre.de

Figure 7: Programme flyer of Expert WS

4.1 Minutes

After a brief introduction, Daniel Heiler from AGFW Upgrade DH team started as first speaker. The general overview of the current targets and the resulting RES heat generation capacities until 2030 (see Figure 8), that are quite ambitious within the remaining nine years, were the motivation and starting point of the workshop.

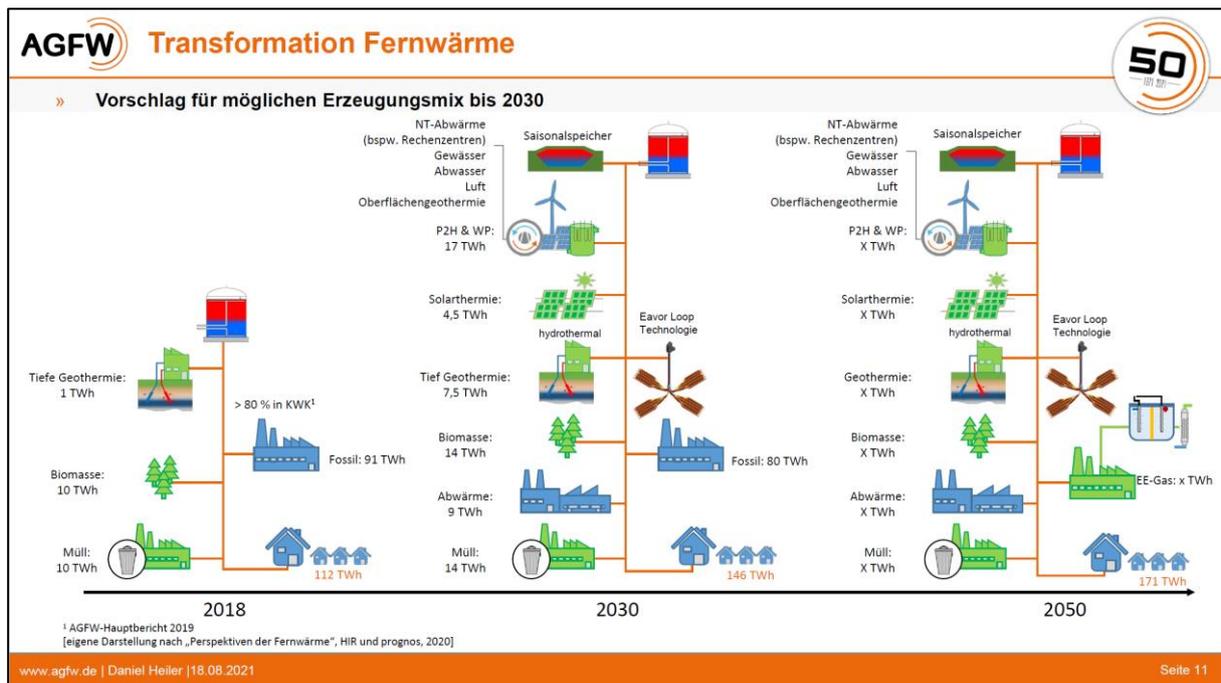


Figure 8: Today and possible generation mix for 2030

With practical guide to large scale heat pumps (LSHP) the AGFW department of “heat generation, sector coupling & storages”³ published in June 2020 a high-quality overview on all relevant topics. Within the workshop, the head of the department presented the structure and most relevant key performance indicators (KPI) for LSHP. This was followed by a status report of the running national R&D activity “Reallabor Großwärmepumpen” (Real laboratory LSHP), where multiple utilities in Germany will implement and operate some LSHP. The first session closed with an industry presentation from ENERPIPE GmbH giving an overview on “Heat grids that serve the electricity grid: opportunities for sector coupling”.

Kibriye Sercan-Çalışmaz from AGFW R&D team opened the second part with an overview on “Practical assistance for solar thermal in district heating”. The presentation contained also some information on running and upcoming SDH projects in Germany. Michael Klöck, working for the Upgrade DH partner Solites, followed with a presentation, focussing on the role of heat storage in decarbonisation and gave exciting insights into the different technologies and concepts for the use of heat storage. The second part ended with a presentation by Oliver Rosebrock (Veolia Energie Deutschland GmbH), who presented the results of the EU-funded research project ReUseHeat⁴ (H2020 Programme under grant agreement No. 767429) on the use of waste heat in heating networks.

The final session focussed on a new approach for geothermal energy development by Eavor, which was also discussed within some Working Groups of the Upgrade DH project. Robert Wisnlow (EVP Origination) gave a broad overview on that new technology with detailed insights and relevant KPIs. Afterwards, the participants had some extra time for a short Q&A session with all speakers.

4.2 Participant list

In total 63 people registered to the Upgrade DH Expert Workshop “Transformation der Fernwärmeerzeugung – Ziele und die Wirklichkeit”. For technical reasons it was not possible to match the registrations with the actual participants.

³ https://www.agfw.de/praxisleitfaeden/?logintype=logout&pid=69%2C+599&tx_felogin_pi1%5Bnoredirect%5D=0

⁴ <https://www.reuseheat.eu/>

Table 4: Overview of the registrations

Category/ Profession	Number
(Public-) Utility, DH industry	39
Urban planning, Energy consulting, Energy agency	14
R&D	10
<u>Total</u>	<u>63</u>

The following table shows the names of the companies registered for the workshop (the names of the participants were omitted following GDPR):

Table 5: List of companies

Company Name
AGFW
BET Büro für Energiewirtschaft und technische Planung GmbH
EEB ENERKO
EnBW Energie Baden-Württemberg AG
Energie AG Oberösterreich Erzeugung GmbH
Energieagentur Kreis Ludwigsburg (LEA) e.V.
Energieagentur Landkreis Göppingen gGmbH
Energieagentur Landkreis Tuttlingen gGmbH
Energieversorgung Rochlitz GmbH
ENO (Energienetze Offenbach)
Entega AG
FairEnergie GmbH
Fernwärme Niederrhein
GREENoneTEC Solarindustrie GmbH
Hertener Stadtwerke GmbH
HTWK Leipzig
infra fürth gmbh
Johnson Controls System and Service GmbH
JUMO GmbH & Co. KG
KEA-BW
Lagom.Energy GmbH
meteointelligence
MVV Netze GmbH
Netz Leipzig GmbH
Rödl GmbH RAG StBG
SachsenEnergieBau GmbH (ehem. DREWAG)
Solites - Steinbeis Forschungsinstitut
Stadtwerke Bernburg GmbH
Stadtwerke Bielefeld Netz GmbH
Stadtwerke Cottbus GmbH
Stadtwerke Flensburg GmbH

Stadtwerke Greifswald GmbH
Stadtwerke Jena Netze
Stadtwerke Ludwigsburg-Kornwestheim GmbH
Stadtwerke Metzingen
Stadtwerke Münster GmbH
Stadtwerke Neuburg
Stadtwerke Neuss Energie und Wasser GmbH
Stadtwerke Osnabrück AG
Stadtwerke Pforzheim
Stadtwerke Ratingen
Stadtwerke Sondershausen GmbH
Stadtwerke Wernigerode GmbH
STEAG Fernwärme GmbH
swa Netze GmbH
SWN Stadtwerke Neumünster GmbH
SWP Stadtwerke Pforzheim GmbH & Co KG.
Verband Thüringer Wohnungs- und Immobilienwirtschaft e.V.

4.3 Summary

The DH knowledge sharing expert workshop was successful as the number of participants was good, especially considering that it was still holiday season in most parts of Germany. This indicates that the workshop concept and the topic reflect very well the needs of German DH industry. This is also confirmed by the positive participant's feedback. For this reason, the event is already being considered for future inclusion in the AGFW seminar and workshop programme in a similar format and content. Other heat generation alternatives, cross-sectional technologies and updated information can also be included and regularly updated. The international networking from the Upgrade DH project and the exchange with other H2020 projects also ensures that new trends and findings from the entire EU can be considered.

5 Workshop – Italy

On October 2nd, 2020, the Event “THE FUTURE OF DISTRICT HEATING IN ITALY”, organized by AIRU, Utilitalia and the Upgrade DH project consortium was held digitally. The Digital Event was an opportunity to present to a wide audience the Study made by the Polytechnic of Milan and Turin regarding the potential of District Heating in Italy and the Upgrade DH project, with a walkthrough of best practices for upgrading District Heating networks around Europe.

The Italian NECP and the most recent European Directives identify the development of efficient district heating as one of the main tools for achieving the decarbonisation objectives by 2030, in particular district heating that recovers waste heat from production activities, from the tertiary sector and power plants energy production, to renewable sources such as geothermal and solar thermal.

The Digital Event final purpose showed to national governmental institutions representatives, to industrial sector and to common citizens the importance of District Heating in Italy for the central role it can play in the transition towards a more sustainable Italian energy system.

5.1 Minutes

The Digital Event welcomed the participants with the opening video "We are all connected", subsequently we went into the heart of the arguments.

The scientific Study commissioned by AIRU to the Polytechnic of Milan and of Turin was presented during the Digital Event. The Study focuses on the **development potential of efficient district heating in Italy** and on the environmental and energy benefits for Italy deriving from the implementation of this technology.

Nowadays the national demand for heat is about 330 TWh and more than 400 existing district heating networks in Italy currently distribute about 9.3 thermal TWh to end users, with 1.7 million tons of CO₂ emissions avoided every year. The Polytechnics Study estimates that nationally **there are over 100 TWh of waste heat** ready to be conveyed through efficient district heating, with a real **potential of approx. 38 TWh, more than 4 times the size of the current district heating systems.**

In this context it was essential to integrate the results of the Study with the objectives of the Upgrade DH project. The implementation of the various improvement measures, that the project aims, creates the conditions for significant impacts, measured on the key indicators:

- Saving Primary Energy Demand
- GHG reduction
- Increasing Waste Heat share
- Increasing RES share

It was essential to show the results of the Study and the objectives of the project in order to create **concrete synergies for the energy transition**, in which **district heating plays a key role.**

The Upgrade DH project showed how it is possible and necessary to act on existing district heating systems and, in a sustainable way, achieve higher levels of performance, enhancing existing assets. The Study showed the real possibility of exploiting waste heat and RES in district heating systems.

Both demonstrated that supporting district heating is an opportunity not to be missed for decarbonisation

Following the first more technical part, the Digital Event hosted two panel discussions with the representatives of national and international Governmental institutions, industrial and consumer associations. The first panel discussion topic was about "District Heating in the context of the current energy and market transition", the second about "Possible actions for Italian Industry".

Here the full programme of the Digital Event:



THE FUTURE OF **DISTRICT HEATING** IN ITALY

2nd October 2020

Programme

MODERATOR

Celestina Dominelli, *Il Sole 24 Ore*

10.00 am
Opening video

10.05 am
Welcome

Giordano Colarullo, *General Director Utilitalia*

10.10 am
Objective of the study about District Heating potential

Lorenzo Spadoni, *President AIRU*

10.20 am
Potential of District Heating in Italy: results from the joint study performed by the Polytechnic Universities of Milan and Turin

Alice Dénarié, *PhD Department of Energy Polytechnic University of Milan*

Fabrizio Fattori, *PhD Department of Energy Polytechnic University of Milan*

Vittorio Verda, *Prof. of Technical Physics Polytechnic University of Turin*

11.00 am
Upgrade and renovation of existing District Heating networks: presentation of UpgradeDH

Matteo Pozzi, *General Manager OPTIT*

11.20 am

PANEL DISCUSSION

District Heating in the context of the current energy and market transition

Panelists:

Stefano Saglia, *Board Member of ARERA*

Chiara Braga, *Member of Parliament and Environmental Commission Chamber of Deputies*

Luca Squeri, *Member of Parliament and Business Activities Commission Chamber of Deputies*

Alessandro Provaggi, *Euroheat & Power, Head of DHC+ Technology Platform*

12.00

PANEL DISCUSSION

Possible actions for Italian Industry

Panelists:

Alessia Morani, *Under-Secretary of State for Economic Development*

Luca Barberis, *Director - Energy Efficiency and Promotion of Sustainable Development Department GSE*

Monica Tommasi, *President Amici della Terra*

Luisa Crisigiovanni, *General Secretary Altroconsumo*

Lorenzo Spadoni, *President AIRU*

12.40

RQ&A AND CHAT INTERACTION



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segreteria.generale@airu.it

www.airu.it

5.2 Participant list

Due to the pandemic, the event was broadcasted in live streaming, and this has made it possible to reach a very wide audience, even beyond national borders.

More than 400 people attended the Digital Event.

In order to allow anyone interested to watch (or watch again) the event, the recording of the Digital Event has been published on AIRU website (and on the AIRU Youtube channel). Demonstrating the public's interest in the topic, the **video of the Digital Event had more than 245 views**.

5.3 Summary

It is interesting to report some statements that emerged from the world of institutions.

The Under-Secretary of State for Economic Development, Alessia Morani, underlined the fundamental role of district heating in achieving decarbonisation objectives, especially in urban centers. The Undersecretary - recalling the most recent EU provisions on energy efficiency - renewed the Government's commitment to update the tools to support the development of efficient district heating and to complete the regulatory framework for DHC operators. Among the issues for attention, the hoped-for correction of the Superbonus 110% recently introduced by the Relaunch decree law (DL Rilancio) which limits access to 110% only to mountain municipalities not subject to infringement in case of efficient district heating connection.

Member of parliament Luca Squeri in his speech focused on the opportunity for district heating to be fully eligible and without restrictions for the whole national territory among the interventions admitted to 110%: "the limitation to mountain municipalities only - Squeri said - is a contradiction because efficient district heating is more effective precisely in urban contexts where the problem of local pollutants has a higher impact"

Member of Parliament Chiara Braga defined efficient district heating "an emblem of the circular economy", stating that this technology could play an important role in our cities especially for the related environmental benefits, also in anticipation of a national strategy of urban areas as an important element for the promotion of environmentally sustainable policies.

6 Workshop – Lithuania

The Upgrade DH project Local Knowledge Sharing Expert Workshop focusing on Lithuania, Salcininkai demo case upgrading measures implementation process and replication possibilities in the country took place on May 24th, 2021. Due to the Covid-19 situation it was not possible to hold a physical meeting, therefore event was held by Microsoft Teams remote meeting platform as shown in one of the event recordings in figure below.



Figure 9: Screenshot of the event

The event consisted of the following topics:

Topic	Presenter
UpgradeDH project measures - Šalčininkai demo case	Evaldas Čepulis
DH network optimization	Vytautas Šiožinys
Large scale solar thermal collector installations in DH systems	Klaus Kucher
Discussions	All participants

6.1 Minutes

Evaldas Čepulis

A presentation about the Upgrade DH project activities, upgrading measures and deliverables in Salcininkai demo case was given. The presentation introduced all local workshop participants to the problems of high technological heat loss and low summer season heat demand, possible solutions that the project analysed and further implementation.

Vytautas Šiožinys, Energy advice

Presenter discussed in detail upgrading measure of network optimization in Salcininkai DH system. Energy advice implemented network optimization solution into the network that helped company create instant savings due to heat loss reduction and possible further implementation that could increase freshly appeared benefits even more.

Klaus Kucher, GREENoneTEC

Presenter in detail discussed about upgrading measure analysed in Upgrade DH project – solar thermal implementation with heat storage, which would cope with low summer season

demand problems. Europe's leading solar thermal manufacturer presented large-scale solar collector projects. Advantages of combining biomass with solar thermal. Economic analysis was shown considering effect of investment funding and CO2 pricing.

6.2 Participant list

The participants at the event represented a large variety of organisations: District heating companies, Lithuanian Energy Institute, Lithuanian Energy Agency and various district heating experts.

In total 87 people registered and around 70 participants were constantly online.

The participant's list is attached as a confidential document (Annex 4).

6.3 Summary

After the overview of Upgrade DH upgrading measures of Salcininkai demo case, discussion was categorised by the interest of all district heating companies. Similar solutions can be possibly replicated in multiple similar size district heating systems including not only Upgrade DH project replication case – Sirvintai DH company who's representatives participated. Participants agreed that the implementation of solar thermal solution highly depends on upcoming investment period subsidy schemes. As for network optimization, more significant savings can be achieved at those DH companies which up to this day have not invested into DH network digitalization solutions.

Conclusions

The DH knowledge sharing expert workshops organised in each country of the Upgrade DH consortium members achieved the expected impact.

Facilitate networking and knowledge sharing: Workshops were attended by project partners, consultancies, demo cases, replication cases, DH companies and associations, academia, national ministries, regional energy agencies, regulators, international organisations, who had an opportunity to exchange experiences and create new connections.

Capacity building and trigger replication: Representatives of Upgrade DH replication cases joined the workshops (e.g. Toplane Sarajevo and Kakanj Distribution utility, Høje Taastrup and Næstved DH companies, Gradska Toplana Karlovac, Sirvintu siluma, AGSM Verona), increased their knowledge of the district heating upgrading opportunities, benefitted from the discussions and newly created contacts.

Engage 200 participants: This target was overreached, as over 600 people attended the workshops in 6 countries (with more than 400 attendees at the Italian Digital Event only). 3 workshops took place physically (Bosnia and Herzegovina, Croatia and Denmark), while 3 other workshops were held digitally (Germany, Italy, Lithuania) due to the COVID-19 restrictions.

Annexes (confidential)

Annex 1 – Signature list – workshop in Bosnia and Herzegovina

Annex 2 – Signature list – workshop in Croatia

Annex 3 – Signature list – workshop in Denmark

Annex 4 – List of participants – workshop in Lithuania