KeepWarm
Renewing district heating

KeepWarm

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

This project is funded by the EU's Horizon 2020 research and innovation programme under grant agreement N°784966, and lasts from April 2018 – September 2020.

This project receives co-funding from the German Federal Ministry of Economic Cooperation and Development.

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KeepWarm Showroom

of

replicable and bankable DHS pilot projects

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About the KeepWarm project

KeepWarm supports **forward-looking district heating systems** (DHS) in seven countries of Central and Eastern Europe (CEE) to develop and implement pilot projects which **retrofit** their systems in a more **sustainable** manner.

To **overcome barriers** to DH deployment across the region, KeepWarm facilitates DHSs via a multi-stage approach:

Increased capacities of specialists working in DHS companies by offering training workshops

DHSs supported in the development of viable business plans

DHSs advised on how to mobilise funding for bankable pilot projects

Exhibit of replicable DHS demo cases

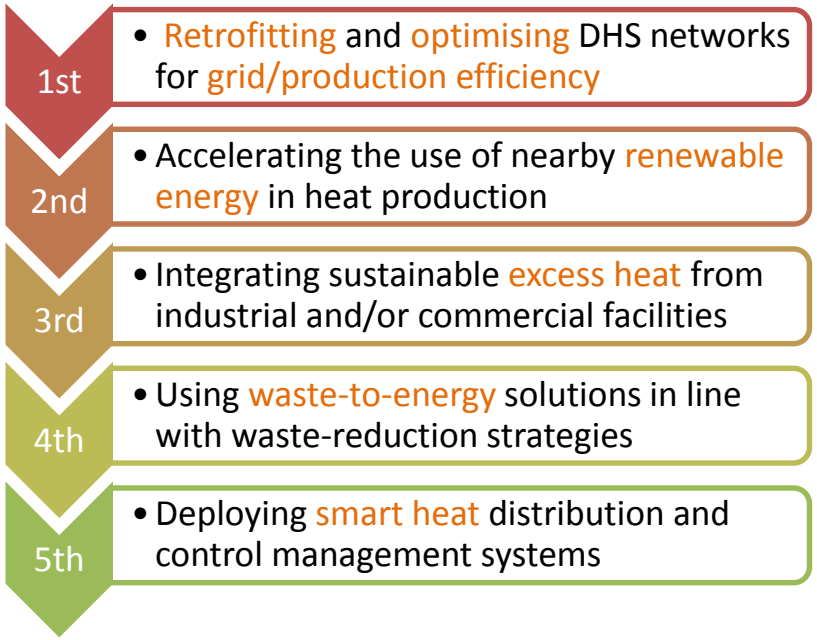
Facilitating the multi-level integration of DHS retrofits into key strategies and plans

KeepWarm Showroom

Following KeepWarm's suggested action-hierarchy below, DHSs will have more **efficient operations** from such **cost-effective investments**, and which provide even more **reliable services** to their customers while still contributing greatly to **climate-related goals**.

The following pages exhibit KeepWarm's portfolio of leading DHS demo cases as a means to:

- **Inspire other DHSs** to replicate their successes
- **Stimulate investment** in worthwhile opportunities
- **Attract customers** to the viability of DHS services
- Showcase DHSs' justifiable **role within energy policies**



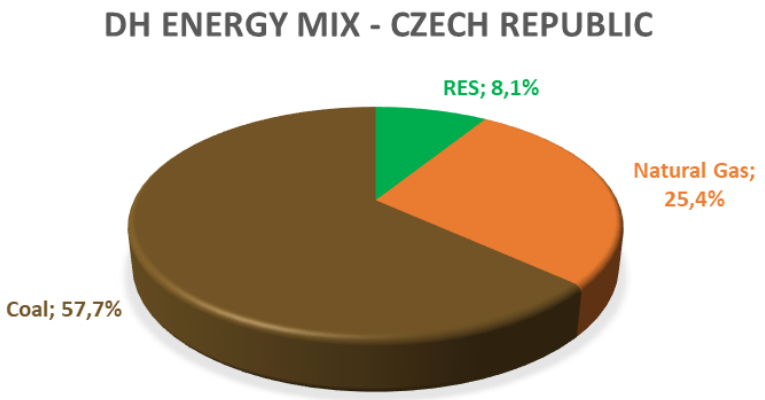
Czech DH context

DH has a high **40,3 %** share of residential heating. Though the DH sector is **highly developed**, nearly 15% of heat networks are still **steam technology**. DHSs are mostly owned by municipalities or in combination with the private sector.

Source: Wallpaper Flare

Challenges

- Heat **prices are regulated**
- Economic **discrimination** of DH industry
- **Vulnerability** of DHSs
- **Retrofits of (steam)** DHSs needed
- Transition from **coal to RES**



https://keepwarmeurope.eu/countries-in-focus/czech-republic/english/

Framework & action

Trends

- Between 2017 and 2019 **3.5% decrease** in DH supplied
- Even so, the share of heat from **biomass** and **biogas** is growing
- Trend in **replacement of inefficient steam** systems with modern ones

Policy stance

- There are goals for the **increase of RES** in heating & cooling
- A **DH Modernisation Fund** is operational

Investment subsidies covering:	
New DHS /expansions of DHS	☑
DHS retrofits for EE / RES	☑
Consumers / connections	☒
Soft loans and other financing	☒
Tax incentives	☑☑

Recommended actions

- **Upgrade biogas** plants and increase the **efficiency** of biomethane (CHP, gas systems)
- Promotion of electricity from high-efficiency **cogeneration**
- Support of **heat from RES**
- Introduce a **carbon tax**, thus eliminating discrimination in the DH sector

https://keepwarmeurope.eu/countries-in-focus/czech-republic/cestina/

DHS Brno

(Teplárny Brno, a.s.)

- Location: **Brno, Czech Republic**
- Operating since: **1930**
- Ownership: **community**
- Grid: **291 011 m** (owned by the DHS)
- Customers: **4 000**
- Connected load: **1 078 000 kW**
- Boiler output: **762 840 kW** (13 boilers)
- Type of DHS: **steam, hot-water**
- Current fuel: **natural gas**
- Potential renewables nearby: **wood chips, Forests of Brno city**

Source: http://www.teplarny.cz/provozy

Investment plans:

Reconstruction of obsolete steam pipelines for **modern economical hot water system** in the period 2020 - 2023, **expansion of WtE** capacity by 2024.

For more information:

- www.keepwarmeurope.eu/country-pages/czech-republic
- www.teplarny.cz/projekt/1005/keep-warm-renewing-district-heating/

Upgrade to hot-water system

Primary work-steps and investment drivers:

- **Analysis of heat network condition, heat distribution losses and demand for technological steam**
- **OP Enterprise and Innovations for Competitiveness**

Strategic background documents:

- **Territorial Energy Concept of the City of Brno**
- **State Energy Policy supporting DH modernisation**

Stakeholder involvement:

- Leading: **DHS operator, municipality as an owner of DHS**
- Other: **Financial institutions, suppliers**

Required resources:

Financial investment:

650 mil Kč (25 mil €)

for a conversion of the steam network

Results:

- Reduction of losses: **18 % before ⇨ 6 % after**
- Primary energy savings over the lifetime of the solution: **5 533 GWh**
- Emission reductions: **⇩1 106 670 tCO_2 (- 14 %)**
- Fuel (natural gas) savings per year: **19 529 000 m^3**

Want to adapt our work to your DHS?

Want to invest in our progressive DHS?

Contact us using the information below!

• Martin Sroubek, Head of Tech.Development

• sroubek@teplarny.cz

DHS České Budějovice

(Teplárna České Budějovice, a.s.)

- Location: **České Budějovice, Czech Republic**
- Operating since: **1965**
- Ownership: **community**
- Grid: **165 000 m** (owned by the DHS)
- Customers: **1181**
- Connected load: **456 400 kW**
- Boiler output: **453 700 kW** (5 boilers)
- Type of DHS: **steam, hot-water**
- Current fuel: **lignite, natural gas**
- Other energy potential: **excess heat from NPP Temelín**

Source:http://www.teplarna-cb.cz/o-spolecnosti/zakladni-udaje/

Investment plans:

Conversion of a reasonable part of the **steam network to hot water** by 2021. Construction of a hot-water feeder and start of **excess heat supply from NPP** Temelín in 2020/21.

For more information:

- www.keepwarmeurope.eu/country-pages/czech-republic
- http://www.teplarna-cb.cz/media/projekt-keepwarm/

Switch to heat from NPP

Primary work-steps and investment drivers:

- **Technical and economic analysis of heat utilisation from nuclear power plant**
- **Plan of the feeder route and negotiations with the participating municipalities**
- **OP Enterprise and IC, OP Environment, loans**

Strategic background documents:

- **Long-term business concept of DHS Česk Budějovice in 2018–2045**
- **State Energy Policy supporting DH modernisation**

Stakeholder involvement:

- Leading: **DHS operator, municipality as an owner of DHS, NPP owner as heat supplier**
- Other: **Financial institutions**

Required resources:

Financial investment:

1,5 mld Kč (58,3 mil €)

for a construction of the hot-water pipeline

Results:

- RES-share increase: **před 0 ⇨ po 208 GWh**
- RES/fossil heat production ratio: **1/2**
- Reduction of coal production: **30 %,**
- Primary energy savings over the lifetime of the solution: **4 583 GWh**
- Emission reductions: **⇩1 650 000 tCO_2 (- 30%)**

Want to adapt our work to your DHS?

Want to invest in our progressive DHS?

Contact us using the information below!

- Jan Vaclík, Head of Production Economics
- Jan.vaclik@teplarna-cb.cz

DHS Písek

(Teplárna Písek, a.s.)

- Location: **Písek, Czech Republic**
- Operating since: **1987**
- Ownership: **community + private**
- Grid: **56 001 m** (owned by the DHS)
- Customers: **446**
- Connected load: **64 800 kW**
- Boiler output: **66 350 kW** (3 boilers)
- Type of DHS: **steam/hot-water**
- Current fuel: **lignite, oil, gas, BM**
- Potential renewables nearby: **wood chips**

Source: http://www.tpi.cz/informace-pro-odberatele.php

Investment plans:

Conversion of steam network to hot water by the end of 2020, **fuel optimisation** - switch from coal to biomass in 2020.

For more information:

- www.keepwarmeurope.eu/country-pages/czech-republic
- http://www.tpi.cz/keepwarm.php

Switch to biomass

Primary work-steps and investment drivers:

- **Definition of DHS strategic objectives: reduction of CO_2 emissions, replacement of fossil fuels, efficient heat production and distribution**
- **Integrated Regional OP, OP Enterprise and IC, OP Environment, investment loans**

Strategic background documents:

- **DHS Písek long-term strategy**
- **The thermal concept of town of Písek**
- **State Energy Policy supporting DH modernisation**

Stakeholder involvement:

- Leading: **DHS operator, municipality as an owner of DHS**
- Other: **Fuel suppliers, financial institutions**

Required resources:

Financial investment:

170 mil Kč (6,5 mil €)

for desulfurisation and biomass boiler

Results:

- RES-share increase: **before 0 ⇨ after 63 GWh**
- RES/fossil heat production ratio: **2/3**
- Reduction of coal production: **40 %,**
- Primary energy savings over the lifetime of the solution: **1 260 GWh**
- Emission reductions: **⇩453 320 tCO_2 (- 40%)**

Want to adapt our work to your DHS?

Want to invest in our progressive DHS?

Contact us using the information below!

- Andrea Zakova, DHS director
- zakova@tpi.cz

KeepWarm inspires

Now that you have discovered our front-running DHSs all across the CEE region, we hope that they have inspired you to **replicate their successes for your own DHSs**, as well as set up **effective policy frameworks** to support them further and inject **investments into their bankable DH projects**.

To facilitate your next steps, please keep reading the remaining few pages to see how **we can help you to KeepWarm**.

Keep learning with KeepWarm

In order to help you on your way, you are highly recommended to explore further the **KeepWarm website**, including its **Learning Centre** with numerous resources from KeepWarm and many other related projects and EU-led initiatives, not to mention our latest news.

In particular, you can discover numerous **guidebooks, tools and other useful materials** to help you on your way to modernising DHSs:

- case studies of DH retrofits and sustainable-energy upgrades
- spatial mapping about heat supply and demand across Europe
- free-to use thermal planning software
- policy recommendations
- insights into finance and technical assistance
- Inspire Events, many of which are now being done online…

… and much more!

Keep going with KeepWarm

Finally, it is worth highlighting that the KeepWarm consortium is especially well-suited to use its **competence to help you achieve your DH goals!** Our diverse group of experts can apply our great **experience all across Europe**, especially in countries of the CEE region.

Contact us (centrally or via links on the next pages) so we can know how **our expertise can benefit your work towards making your DH more efficient and sustainable**:

- Technical consultancy
- Feasibility studies
- Financial guidance
- Strategic action-planning
- Policy/market integration
- Staff/stakeholder trainings
- General advice

… and much more!

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International project partners

ICLEI Local Governments for Sustainability

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

(Germany)

ASSOCIATION FOR DISTRICT HEATING of the Czech Republic

Czech Republic

Latvia

ZREA ZEMGALES REGIONĀLĀ ENERGĒTIKAS AĢENTŪRA

lk Landwirtschaftskammer Steiermark

Austria

KT-ENERGY

Ukraine

Jožef Stefan Institute, Ljubljana, Slovenia
Energy Efficiency Centre

Slovenia

KSSENA

VINČA INSTITUTE OF NUCLEAR SCIENCES University of Belgrade NATIONAL INSTITUTE OF THE REPUBLIC OF SERBIA

Serbia

FSB University of Zagreb Faculty of Mechanical Engineering and Naval Architecture

Croatia

REGEA REGIONALNA ENERGETSKA AGENCIJA NORTH-WEST CROATIA
SJEVEROZAPADNE HRVATSKE
REGIONAL ENERGY AGENCY

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keepwarmeurope.eu/contact

follow us on Twitter:

@KeepWarm_EU

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