KeepWarm
Renewing district heating

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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

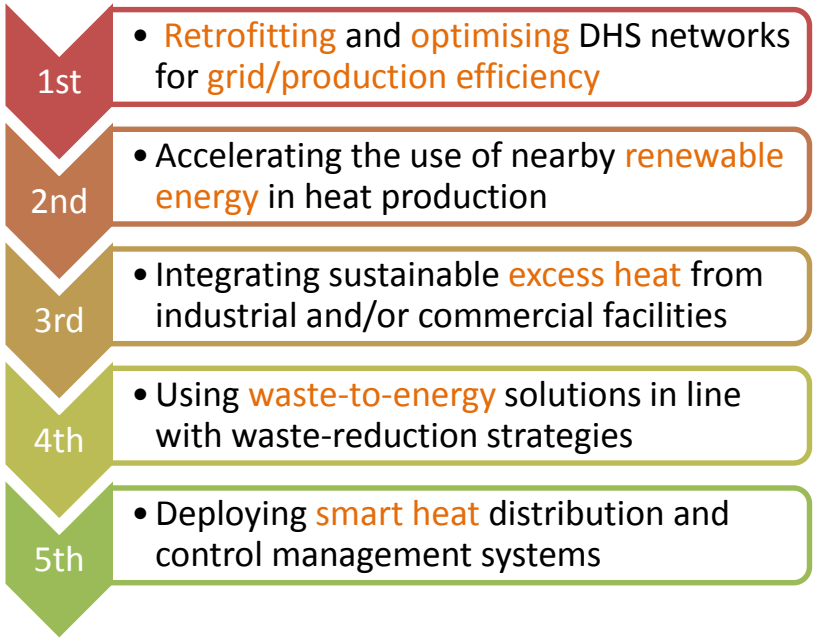
Facilitating the multi-level integration of DHS retrofits into key strategies and plans

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**



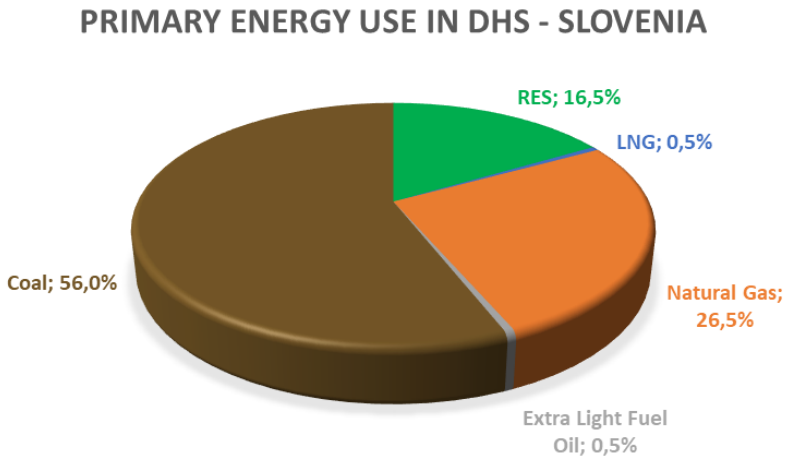
Slovenian DH context

DH covers about **10%** of total heat supply in Slovenia and is the prevailing type of space heating particularly in densely populated **urban** areas. The DH is mainly carried out as an optional local service of general economic interest (supply to 89% of all DH consumers), as commercial distribution or as the supply from a private DHS.

Source: Pigsels

Challenges

- Average **annual losses** are estimated to be around 15%
- DHS **temperatures** often still too high to enable more RES to be integrated
- Need to ensure **cost competitiveness** despite **decreasing heat demand**
- Lack of **strategic framework and supportive activities/funds** for systematic decarbonisation of DHSs



https://keepwarmeurope.eu/countries-in-focus/slovenia/english/

Framework & action

Trends

- Compared to 2016, DH consumers **connections increased by 5 %** in 2017 and additional 1% in 2018.
- In the last few years, **the share of RES and excess heat** is around 17%.
- Carbon intensity is planned to noticeably decrease by 2021 due to **coal phase-out** in the largest DHS.

Policy stance

- Goal of **1% annual increase of RES** share in DHC (by 2030)
- All black and brown **coal should be replaced** by 2023 (via gas or other)
- **GHG emissions reductions** expected as a result of building renovations and DH retrofitting

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

Recommended actions

- Investments in **renewable heat** generation facilities, the use of **excess heat** and **reduction of temperature** levels
- Integration of **large HPs and heat storages**
- Intensified electricity and heat **sector coupling**
- **DH network planning** supported by "heat mapping" tools

https://keepwarmeurope.eu/countries-in-focus/slovenia/slovensko/

DHS Ptuj

- Location: **Ptuj, Slovenia**
- Operating since: **1975**
- Ownership: **community**
- Grid: **5.990 m** (owned by the DHS)
- Customers: **42**
- Connected load: **24,8 MW**
- Boiler output: **27 MW**
- Type of DHS: **hot water**
- Current fuel: **natural gas**
- Potential renewables nearby: **biomass, solar**

Source: Javne službe Ptuj, d.o.o.

Investment plans:

Optimisation of the biomass boiler and boiler house installation within next two years. In second phase is also planned to increase the grid and optimize it.

For more information:

- www.keepwarmeurope.eu/country-pages/austria
- www.ligist.at/startseite/wirtschaft/heizgemeinschaft

Switch to biomass and optimisation of boiler and grid

Primary work-steps and investment drivers:

- **Company (internal) development plan Municipal Local energy concept (LEK)**
- **Available incentives – Ministry of Infrastructure Co-financing of renewables for DHSs**

Strategic background documents:

- **NATIONAL ENERGY EFFICIENCY ACTION PLAN 2014–2020**

Stakeholder involvement:

- Leading: **Local decision makers, biomass suppliers**
- Other: **Costumers, Technology suppliers**

Required resources:

Financial investment:
1.538.824,88 EUR + 525.500 EUR
Additional staff: **none – outsource**
Other: **outsourcing of services for documentation, design, etc**

Results:

- RES-share increase: **before 0 % ⇨ after 80 %**
- RES/fossil heat production ratio: **5/1**
- Grid efficiency: **increase for 3 %**
- New connections: **2.500 MWh/Year**
- Emissions: **1.515 tCO_2**
- Payback period: **8-10 years**

Want to adapt our work to your DHS?

Want to invest in our progressive DHS?

Contact us using the information below!

Franci Voglar/ Project manager

Franci.Voglar@jsp.si

DHS Slovenj Gradec

- Location: **Slovenj Gradec, Slovenia**
- Operating since: **1980**
- Ownership: **community**
- Grid: **7.958 m** (owned by the DHS)
- Customers: **170**
- Connected load: **21,2 MW**
- Boiler output: **17,4 MW**
  (2 boilers + CHP)
- Type of DHS: **hot water**
- Current fuel: **natural gas**
- Potential renewables nearby:
  biomass

Source: Komunala Slovenj Gradec

Investment plans:

For the next year of operation, DHS SG plans to install a new boiler system on biomass, buffer tank system and logistic facilities;

For more information:

- www.keepwarmeurope.eu/country-pages/austria
- www.ligist.at/startseite/wirtschaft/heizgemeinschaft

Modernisation and switch to biomass

Primary work-steps and investment drivers:

- **Company (internal) development plan Municipal Local energy concept (LEK)**
- **Available incentives – Ministry of Infrastructure Co-financing of renewables for DHSs**

Strategic background documents:

- **NATIONAL ENERGY EFFICIENCY ACTION PLAN 2014–2020**

Stakeholder involvement:

- Leading: **Local decision makers, biomass suppliers**
- Other: **Costumers, Technology suppliers**

Results:

- RES-share increase: **before 0 % ⇨ after 75 %**
- RES/fossil heat production ratio: **4/1**
- Reduction of losses: **4-5 %**
- Primary energy savings: **5 %**
- Emissions: **3.000 tCO_2 p.a**
- Payback period: **10-12 years**

Required resources:

Financial investment:
2.500.000 EUR
Additional staff: **one and outsourcing**
Other: **outsourcing of services for documentation, design, etc**

Want to adapt our work to your DHS?

Want to invest in our progressive DHS?

Contact us using the information below!

Sašo Mozgan/ consultant

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DHS Velenje

- Location: **Velenje, Slovenia**
- Operating since: **1959**
- Ownership: **community**
- Grid: **173 km** (owned by the DHS)
- Customers: **11.776**
- Connected load: **224 MW**
- Boiler output: **600 MW**
  (4 boilers)
- Type of DHS: **steam**
- Current fuel: **coal - lignite**
- Potential renewables nearby:
  solar energy, biomass, lakes

Investment plans:

Grid renovation and optimisation, digitalisation.

For more information:

- www.keepwarmeurope.eu/country-pages/austria
- www.ligist.at/startseite/wirtschaft/heizgemeinschaft

Grid renovation and digitalization

Primary work-steps and investment drivers:

- **Company (internal) development plan**
- **Municipal Local energy concept (LEK)**
- **SEAP Velenje**

Strategic background documents:

- **NATIONAL ENERGY EFFICIENCY ACTION PLAN 2014–2020**

Stakeholder involvement:

- Leading: **Local decision makers,**
- Other: **Costumers, Technology suppliers**

Required resources:

Financial investment: **834.500 EUR**

Additional **staff: not needed**

Other: **outsourcing of services**

Results:

- Costumers: **lowering connected power**
- Savings for costumers: **33.900 EUR p.a.**
- Reduction of losses: **0,3 %**
- Primary energy savings: **1.600 MWh p.a.**
- Emissions: **784 tCO_2 p.a**
- Payback period: **25 years**

Want to adapt our work to your DHS?

Want to invest in our progressive DHS?

Contact us using the information below!

Ervin Miklavžina / Head of department

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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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or at:

keepwarmeurope.eu/contact

follow us on Twitter:

@KeepWarm_EU

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