

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.





Renewing district heating

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





Latvian DH context

DH covers 80% of Latvian buildings , mainly households. DH is mainly owned by municipalities or private companies. A third of the total length of national heat networks is located in the capital Riga.

Challenges

- Some parts of the total network have high losses, up to 16%
- **Consumer engagement** and attraction issues
- Development of old DHS, heat network retrofitting
- Inefficient use of RES in DH
- Non-existing district cooling systems



Source: Wikimedia Commons



Framework & action

Trends

- Share of natural gas is gradually being replaced with higher share of fuel wood
- The number of biomass heat sources has increased 2.5 times in recent years

Policy stance

- Goal of 0,55% annual increase of RES share in DH
- Latvia obliged to reduce GHG emissions outside ETS by 13% until 2030

Investment subsidies covering (2021-2027):

New DHS /expansions of DHS (capacity till 1MW)	V
DHS retrofits for EE / RES (capacity till 1MW)	
Consumers / connections (capacity till 1MW)	
Soft loans and other financing	
Tax incentives	\mathbf{X}

Recommended actions

- Increase efficiency of DHS by using more RES technologies, especially non-emission technologies (solar collectors, heat pumps, etc.)
- Increase attractiveness of DH
- Reduce fuel consumption

https://keepwarmeurope.eu/countries-infocus/latvia/latviesu-valoda/

DHS Bene



(Heat supply grid in Bene parish, «Auces komunalie pakalpojumi», Ltd.)

- Location: Bene parish, Auce county, Latvia
- Operating since: 1994
- Ownership: municipality
- Grid: 900 m (owned by the DHS)
- Customers: 299
- Connected load: 2310 kW (12 connections)
- Type of DHS: Heat energy is purchased according to meter from biological gas station and delivered to customers
- Current fuel: **biogas**
- Potential renewables nearby: woodchips / solar thermal energy

For more information:

http://www.keepwarmeurope.eu/country-pages/latvia/english/



Source: «Auces komunalie pakalpojumi», Ltd.

Investment plans: to build own **new boiler house** (wood-chip), possible by the end of 2021.

Construction of new and automated boiler



- Primary work-steps and investment drivers:
- Installation of new pellet boiler with an automated pellets delivery system (0,8-1MW);
- Availability of EU Funds and low cost loans.

Strategic background documents:

- National energy and climate plan of Latvia for period 2021-2030;
- Energy Law;
- Energy Action plan of Auce county, 2018-2025;
- Medium-term operational strategy plan of «Auces komunalie pakalpojumi», Ltd. 2019-2021.



Stakeholder involvement:

- Leading: DHS owner (municipality), state financial authorities, banks, technologies` suppliers;
- Other: customers, government, fuel suppliers, state regulatory office.

Required resources:

Financial investment: 165 000 EUR

New equipment: **new pellet boiler with an automated pellets delivery system;**

Additional staff: **external professionals for installation of new equipment.**



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- RES-share : **before 100% ⇒ after** 100%
- RES/fossil heat production ratio:100% RES
- Reduction of losses: remain the same 9%
- Planned energy input: 1760 MWh per year
- CO2 emissions: 0 t/year
- Internal Rate of Return(IRR): 44%
- Discounted repayment period: 2,5 years

Want to <u>adapt our work to your DHS</u>? Want to <u>invest in our progressive DHS</u>? <u>Contact us</u> using the information below!

- <u>zrea@zrea.lv</u> /www.zrea.lv
- •https://www.auceskp.lv/



DHS Jekabpils

(Boiler house at Celtnieku street 13A, Jekabpils, «Jekabpils Siltums», Ltd.)

- Location: Jekabpils city, Latvia
- Operating since: 2003
- Ownership: municipality
- Grid: **1362 m** (owned by the DHS)
- Customers: 15 multiresidential buildings
- Connected load: 3649 kW
- Boiler output: 3360 kW (2 boilers)
- Type of DHS: production and distributionhot water supply
- Current fuel: wood chips (93%) / gas (7%)
- Potential renewables nearby: woodchips, solar energy



Source: «Jekabpils Siltums», Ltd.

Investment plans: Reconstruction and automatization of boiler house, planned within next 2-3 years

For more information:

- www.keepwarmeurope.eu/country-pages/austria
- jekabpils-siltums.lv/lv/par-uznjeemumu-63321/inform%C4%81cija-parkapit%C4%81lsabiedr%C4%ABbu

Boiler house reconstruction and automatization



- Primary work-steps and investment drivers:
- Change of wood-chips boiler to new, automated wood-chips boiler (1MW);
- Automation of existing gas boiler;
- Installation of additional new automated 0,5 MW gas boiler (for summer load);
- Availability of EU Funds and low cost loans.

Strategic background documents:

- National energy and climate plan of Latvia for period 2021-2030;
- Energy Law;
- Sustainable Development Strategy of Jekabpils city by 2030,
- Sustainable energy and climate action plan 2030 for Jekabpils city
- Medium-term operational strategy plan of «Jekabpils Siltums», Ltd. 2019-2022.

Stakeholder involvement:

- Leading: DHS owner (municipality), state financial authorities, banks, technologies` suppliers;
- Other: Customers, Government, fuel suppliers, state regulatory office.

Required resources:

Financial investment: **510 000 EUR**

New equipment: wood-chips boiler (1MW), gas boiler

(0,5MW), equipment for automation of an existing gas boiler

Additional staff: external professionals for installation of new equipment.

Results:

- RES-share : **before 93% ⇒ after** 78%
- RES/fossil heat production ratio: 78%/22%
- Reduction of losses: remain same at 7% level
- Primary energy input: 6736
 MWh/year ⇒ 4907 MWh per year
- CO2 emissions: 205,698 t/year
- Internal Rate of Return(IRR): 14%
- Discounted repayment period : 8 years

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- https://www.jekabpils-siltums.lv/



DHS Lielauce



(Boiler house «Niedras», Lielauce parish, «Auces komunalie pakalpojumi», Ltd.)

- Location: Lielauce parish, Auce county, Latvia
- Operating since: 2004
- Ownership: municipality
- Grid: **300 m** (owned by the DHS)
- Customers: 96
- Connected load: 540 kW
- Boiler output: 0,6 kW
- Type of DHS: production and distribution of hot water for heating
- Current fuel: wood chips
- Potential renewables nearby:

wood-chips, solar thermal energy

For more information:

http://www.keepwarmeurope.eu/country-pages/latvia/english/



Source: «Auces komunalie pakalpojumi», Ltd.

Investment plans: Modernisation of the heat source without replacing the existing boiler, planned by the end of 2020

Boiler house and grid modernisation



- Primary work-steps and investment drivers:
- Installation of frequency changer for network pumps;
- Change of grid: installation of industrially isolated single channel pipes with less diameter;
- Automation of fuel supply with a sliding floor and a fitted conveyor;
- Availability of EU Funds and low cost loans.

Strategic background documents:

- National energy and climate plan of Latvia for period 2021-2030;
- Energy Law;
- Energy Action plan of Auce county, 2018-2025;
- Medium-term operational strategy plan of «Auces komunalie pakalpojumi», Ltd. 2019-2021.

Stakeholder involvement:

- Leading: DHS owner (municipality), state financial authorities, banks, technologies` suppliers;
- Other: customers, government, fuel suppliers, state regulatory office.

Required resources:

Financial investment: 65 000 EUR;

New equipment: a sliding floor and a fitted conveyor, frequency changer for network pumps, industrially isolated single channel pipes with less diameter;

Additional staff: external professionals for installation of new equipment.



- RES-share : **before 100%** ⇒ after 100%
- RES/fossil heat production ratio:100% RES
- Reduction of losses: 27% ⇒
 10% Primary energy input: 1423
 MWh/year ⇒ 1178 MWh per year
- CO2 emissions: 0 t/year
- Internal Rate of Return(IRR):
 29%
- Discounted repayment period : 4 years

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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 <u>KeepWarm website</u>, including its <u>Learning Centre</u> with numerous resources from KeepWarm and many other <u>related</u> <u>projects</u> and EU-led initiatives, not to mention our latest <u>news</u>.

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
- <u>Inspire Events</u>, many of which are now being done online...

... and much more!



Keep going with KeepWarm

Finally, it is worth highlighting that the <u>KeepWarm</u> <u>consortium</u> is especially well-suited to use its <u>competence</u> to help you achieve your DH goals! Our diverse group of experts can apply our great <u>experience all across Europe</u>, 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!





Renewing district heating

For more information: visit our website www.KeepWarmEurope.eu contact us at: info@keepwarmeurope.eu or at: keepwarmeurope.eu/contact follow us on Twitter: @KeepWarm_EU





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