



# GREEN COMFORT FOR SUSTAINABLE CITIES

**Ec**  **heat**  **4** **cities**

[www.ecoheat4cities.eu](http://www.ecoheat4cities.eu)





# 1. ISN'T IT TIME TO TALK ABOUT GREEN HEAT FOR YOUR COMMUNITY? WE HAVE A SOLUTION FOR YOU!

More and more communities formulate climate protection, energy efficiency or renewable energy targets and feel the obligation to think about a sustainable future-proof energy infrastructure for their citizens. Heating and cooling needs represent the largest share in energy end-use – and are today mainly covered by fossil fuels in individual appliances (oil and gas boilers). Therefore, any serious climate concept needs to integrate the dimension of heating and cooling.

This present brochure provides local governments and urban planners with an introduction to the tools available to assess the merits of District Heating and Cooling, and compare them to alternatives on the basis of criteria like primary energy use, CO<sub>2</sub> emissions, renewability, air quality, and economic criteria.

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## 2.\* LOCAL CLIMATE STRATEGIES: WHY DISTRICT HEATING AND COOLING?

District Heating and Cooling infrastructure enables the connection of local sustainable energy sources to buildings in local communities. The concept of District Heating and Cooling relies on three simple principles: reducing primary energy consumption, recycling energy where and when ever possible and progressively replacing fossil fuels by renewable energies.

In other words, it provides resource-efficient, low-carbon comfort to citizens.

Combined heat and power plant



Geothermal



Municipal waste incineration



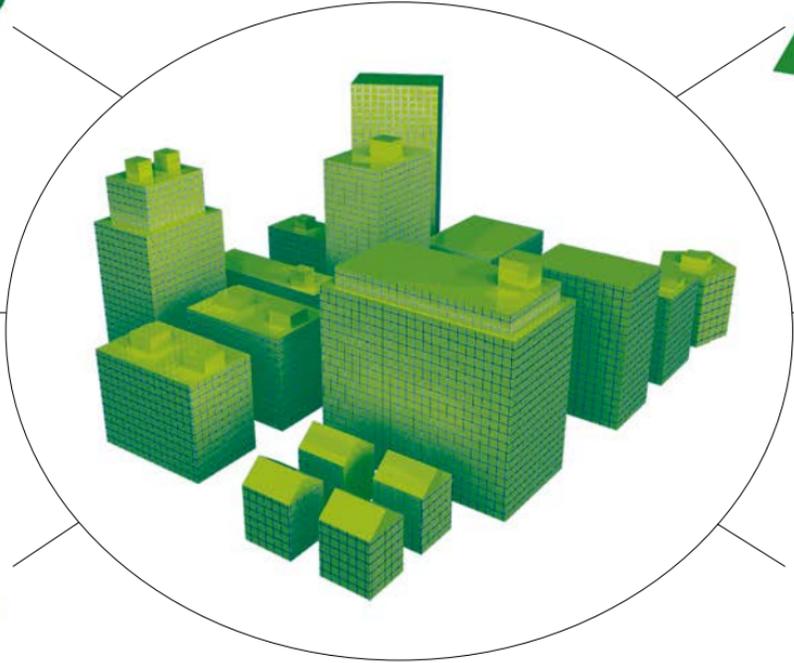
Biomass



Solar thermal



Surplus heat from industry and biofuel refineries





### 3\* MANY ENERGY SOURCES

Urban areas do not only feature the highest density of energy demands, they also dispose of the highest density of energy resources. Mapping these often hidden treasures such as industries producing waste heat, existing power stations, waste incineration and water treatment plants, nearby forests and agricultural activities or rivers and lakes provides a good basis for starting a debate, identifying synergies, and establishing partnerships with a view to creating, consolidating, expanding or modernizing District Heating and Cooling infrastructures.





## 4\* BOOST THE LOCAL ECONOMY AND GET MORE JOBS

Implementing new or extended District Heating networks will generate more local jobs. Furthermore, investing in District Heating will improve the local economy, because money spent on importing fossil fuels can be redirected to investments in District Heating networks, CHP plants, geothermal, solar thermal, industrial waste heat, and waste incineration.

Studies indicate that at European scale the employment effect can amount to around 8-9 million man years. This corresponds to approximately 220,000 new jobs on average over the period from 2013 to 2050, not counting multiplier effects of direct employment and improved competitiveness' of European industry.

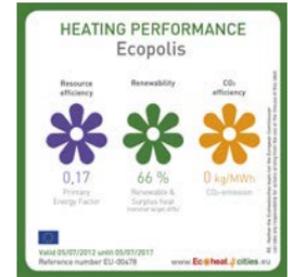




## 5\* GOOD, BETTER, BEST IN CLASS: THE ECOHEAT4CITIES LABEL

What exactly will be the impact of your heating and cooling choices?

The Ecoheat4cities label enables utilities and cities to assess energy performance and proven environmental achievements, to establish successful development strategies and to engage customers and citizens in the process. Awarded on the basis of a set of European-wide agreed criteria, the label provides reliable information on how efficient the existing or planned District Heating and Cooling system is or will be, how much CO<sub>2</sub> is emitted per MWh, and how well the system performs in relation to the national renewable energy target.







## 6\* TIME TO PLAN FOR DISTRICT HEATING AND COOLING

A long-term perspective in energy planning, together with clear targets is a must for any municipality that considers energy as an integral part of its responsibility for the environment and quality of life in the community.

A collective energy solution for the benefit of all therefore requires local government and urban planners to take on a pivotal role. Specifically, upgrading of the public building stock should go hand in hand with the establishment of heating and cooling plans. A comprehensive approach to local energy supply and demand, and the development of eco-districts will help to keep costs for the citizens at affordable levels.





## 7\* BE A FRONTRUNNER

District Heating is not yet very widespread in your country? Get inspired by others!

The city of London provides a good example. The share of District Heating is still very low on average in the country. But London has developed a comprehensive energy plan providing clear guidance for urban planners. It includes a heating hierarchy prioritising the connection to District Heating networks and sets a target for decentralised heat and power supply of 25% which is expected to deliver CO<sub>2</sub> savings of more than 2.5 million tonnes per year. Public authorities are encouraged to connect their own buildings to the network wherever possible and to identify potential sites for energy centres on either council owned land or in buildings. Among its online services the city presents an interactive heat map to give first guidance to developers.





## 8\* EXPAND WHAT YOU ALREADY HAVE

60 million EU citizens today are served by District Heating systems. But more than half of the EU population lives in regions that have at least one District Heating system. Hence, more sustainable heat can be easily delivered in the future by expanding existing District Heating systems.

Just like in Mannheim: The eco-performance of the local District Heating system makes it a natural partner for the city's climate protection programme. The network covers 59% of the city's heating demands today and reduces Mannheim's CO<sub>2</sub> emissions by 300 000 tonnes per year.

In the future, it is expected to serve 70% of the population. To speed-up the connection rate, MVV Energie AG does not only lead a marketing and communication campaign, but also provides incentives per kW connected load and a lump-sum payment for old oil tanks to be disposed of.



**mambo-pizza**

PIGERNA

EUROPA

**CLP**





## 9\* MODERNISATION

When the paradigms of energy supply change, District Heating changes as well. The Central and Eastern European Member States feature some of the oldest and also largest systems. Like in Lithuania, where more than half of the population's heat needs are covered by District Heating systems.

Old-fashioned? Not at all. Future-proof? Definitely.

Take Vilnius, for example. Investment in a new biofuel boiler will not only reduce CO<sub>2</sub>-emissions considerably, but also decreases the reliance on expensive natural gas imports by 7%. Roughly 10 % of the city's heat supply will be green – without a single citizen having to invest in new heating equipment. Or look at the Kaunas region, where biogas and waste water treatment are used in a variety of plants to produce heat and electricity – eliminating CO<sub>2</sub> emissions not only from fossil fuel use but also from landfill.





## 10\* BE SMART – DON'T STOP MOVING

Stockholm illustrates how a system established in the 1950ies can continuously grow and use new technologies to reduce the city's environmental footprint and to improve the air quality. By 2020 the District Heating system will be climate-neutral.

By 2025 the brand new Norra Djurgård community will be complete, with a population of 30.000 people living and working there. Although the highly-energy efficient buildings will have very low heating demands, connecting to the (smart) District Heating system remains the best solution. Cooling demands will be covered by natural cooling and surplus heat.





## 11 \* THE ESSENTIALS IN A NUTSHELL

- \* Recognition of heating and cooling as important pillars of climate protection plans
- \* Respect for the energy hierarchy: Reduce energy consumption – recycle energy that otherwise would be lost – replace fossil fuels by renewable energies
- \* Redirecting investments into sustainable energy infrastructures
- \* Responsibility for citizens at local level





## 12\* READ MORE

\* **Planning for and labeling DHC systems,**

including case-studies from this brochure

[www.ecoheat4cities.eu](http://www.ecoheat4cities.eu)

\* **Guidance for urban planners**

<http://aaltopro2.aalto.fi/projects/up-res/index.html>

\* **More success stories**

[www.districtenergyaward.org](http://www.districtenergyaward.org)

\* **Heat Roadmap Europe 2050 –**

The benefits of DHC for a smarter, safer and climate-friendly energy supply

[www.heatroadmap.eu](http://www.heatroadmap.eu)

\* **More projects, events and literature**

[www.euroheat.org](http://www.euroheat.org)

[www.dhcplus.eu](http://www.dhcplus.eu)

### **CONTACT US:**

The partners of the ecoheat4cities project remain at your disposal for further information!

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