CEE Bankwatch Network

Heating issues and initiatives in the CEE region

Sustainable Domestic Heating Conference, 22.07.2021

Learn more: bankwatch.org

Situation in the Western Balkans region

Heating is dominated by fossil fuels and inefficient burning of wood.

Low degree of energy efficiency.

Existing district heating systems are old and inefficient, with significant network losses.

District heating systems are **97% fossil fuel based** (21% coal/lignite, 67% natural gas, 9% petroleum products).

Mostly second generation systems running on high temperatures above 100°C, and are used for space heating only.

Countries with District Heating

Bosnia and Herzegovina (BiH), Serbia, Kosovo and North Macedonia, and there are plans for Montenegro.

Many are connected to cogeneration (CHP) plants – 30.5% in BiH, 94% in Kosovo, 56.2% in North Macedonia, and 13.02% in Serbia.

CHP plants in Tuzla and Belgrade are running on coal/lignite.

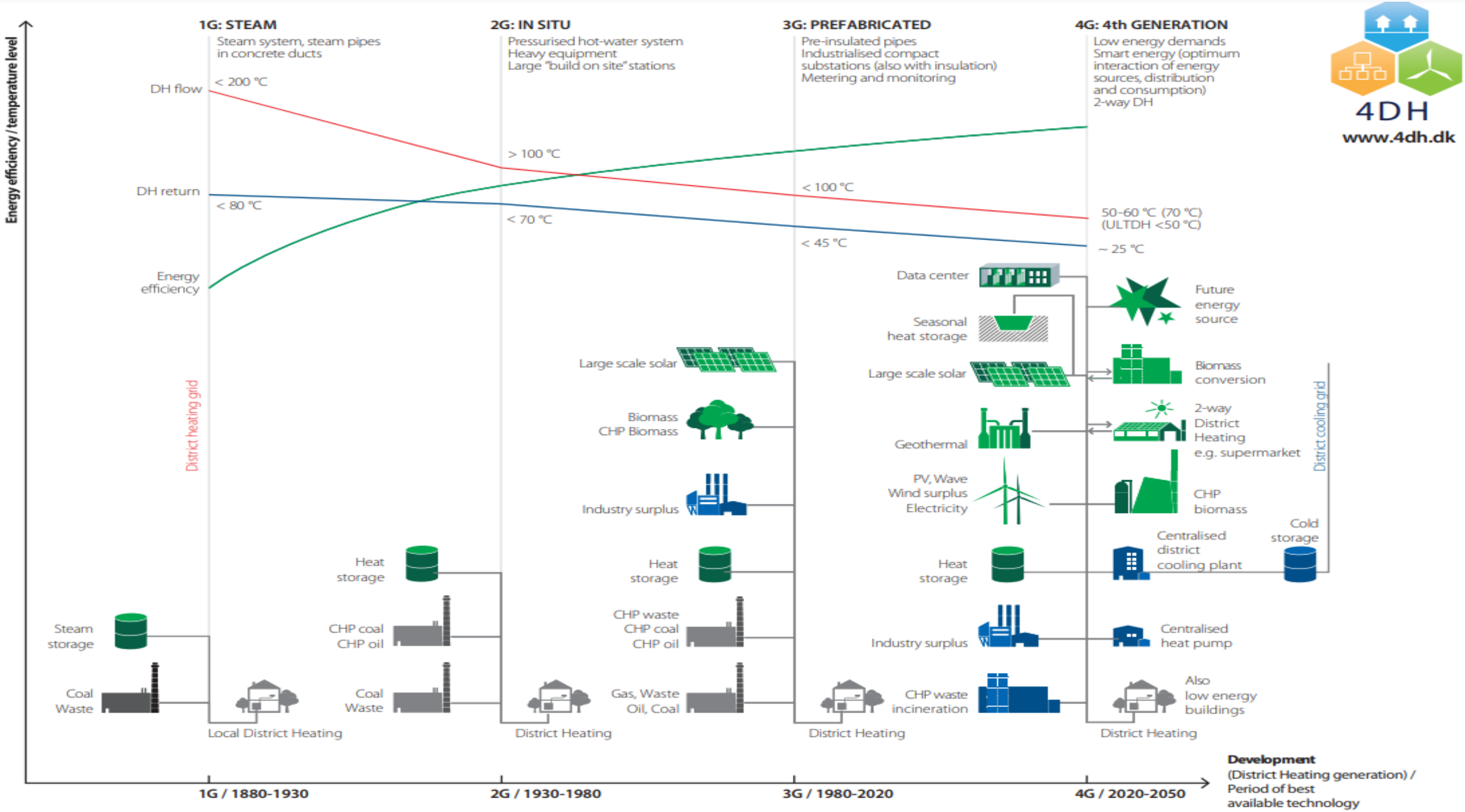
2nd generation of district heating

Technologies developed 1930 – 1980.

Pressurised hot water systems (>100°C).

Mostly fossil fuels and waste incineration.

Low to medium energy efficiency.


1G: STEAM
Steam system, steam pipes in concrete ducts
2G: IN SITU
Pressurised hot-water system
Heavy equipment
Large "build on site" stations
3G: PREFABRICATED
Pre-insulated pipes
Industrialised compact substations (also with insulation)
Metering and monitoring
4G: 4th GENERATION
Low energy demands
Smart energy (optimum interaction of energy sources, distribution and consumption)
2-way DH
4DH
www.4dh.dk
Energy efficiency / temperature level
DH flow
< 200 °C
> 100 °C
< 100 °C
50-60 °C (70 °C)
(ULTDH <50 °C)
DH return
< 80 °C
< 70 °C
< 45 °C
~ 25 °C
Energy efficiency
District heating grid
District cooling grid
Data center
Seasonal heat storage
Large scale solar
Future energy source
Biomass conversion
2-way District Heating e.g. supermarket
Geothermal
PV, Wave Wind surplus Electricity
CHP biomass
Centralised district cooling plant
Cold storage
Heat storage
Industry surplus
Centralised heat pump
CHP waste incineration
Also low energy buildings
Steam storage
Coal Waste
Heat storage
CHP coal CHP oil
Coal Waste
Heat storage
CHP waste CHP coal CHP oil
Gas, Waste Oil, Coal
Local District Heating
District Heating
District Heating
District Heating
1G / 1880-1930
2G / 1930-1980
3G / 1980-2020
4G / 2020-2050
Development
(District Heating generation) / Period of best available technology

Tuzla analysis – current situation

Unit 4 of the Tuzla coal-fired power plant provides heat to Tuzla and Lukavac.

Managed by public utility company.

Heat carrying capacity of 300 000 MWh, flow temperature of 130°C, 22934 users.

Unit 4 to be closed before 2023 and replaced by planned new Unit 7.

Tuzla analysis - recommendations

It is technically possible to fully replace local use (power and heat) of coal by solar energy.

Requires massive improvements in energy efficiency and transition to low-temperature grid.

Biomass cogeneration can be used for transition period and heat supplied by Unit 6.

New planned Unit 7 and waste incineration were analysed for comparison, but they are not economically or environmentally feasible.

In theory, the entire planning and transition period can be completed before 2030 if started this year.

Next steps

Same analysis is in preparation for Pljevlja, Montenegro, to be completed in July 2021.

Current plan, existing from 1982 is to convert the existing coal power plant to cogeneration. Analysis should give recommendations for 4th generation heating solutions that will avoid further coal use for heating.

Meetings with municipalities in Autumn 2021.

General recommendations and conclusions

Clear strategy that enables the transformation of heating systems.

Municipalities taking the initiative – building capacities, heat mapping and planning.

Identifying and addressing challenges early on, build on existing successful cases.

Rely on already available financing mechanisms.

Essential for the decarbonisation by 2050 commitment.