CEE Bankwatch Network

Heating in the Western Balkans

Overview and recommendations for clean solutions

May 2021

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This publication has been produced with the financial assistance of the European Union. The content of this publication is the sole responsibility of CEE Bankwatch Network and can under no circumstances be regarded as reflecting the position of the European Union.

Summary

Heating in the Western Balkan region, both district heating systems and individual heating, is dominated by fossil fuels and inefficient burning of wood without regard for sustainability criteria, in combination with a low degree of energy efficiency. Existing district heating systems are old and inefficient, with significant network losses, and they offer no flexibility to consumers over billing and consumption. The reliance on dirty polluting sources in outdated heating devices and networks presents serious health and environmental hazards, and has negative effects on the economy and society.

Coal is still very present in heat consumption in the region. When considering alternatives to transform the heating sectors, decision makers mostly opt for gas, or biomass, and for combined heat and power (CHP) technology. None of these are truly sustainable heating solutions.

The growing trend across Europe in clean heating is to implement decentralised, multi-source, low-temperature technologies based on renewables, in combination with energy efficiency measures. Such solutions include the use of local renewable potential such as solar or geothermal energy, heat pumps, heat recovery from existing industry or data centres, and heat storage.

This should be the way for Western Balkan decision makers to go as well. Planning and implementing clean heating requires intensive investment, and is a long-term process that takes several years from concept to operation. For this to happen, there needs to be a well developed, evidence-based policy framework setting the general outlines, a strong municipality level initiative coupled with commitment from national policy makers, and use of all available financing mechanisms, including the EU, European Bank for Reconstruction and Development (EBRD) and European Investment Bank (EIB) funds.

1. Current situation in the Western Balkans

Basic characteristics of heating in the region

Heating of space and hot water supply account for 43 per cent of the Western Balkans' energy consumption[1]. Around 14 per cent of the total regional heat demand (about 900 ktoe) is produced and distributed to final users in district heating systems.

District heating is based predominantly on fossil fuels (coal/lignite – about 21 per cent, petroleum products – about 9 per cent, and natural gas – about 67 per cent), with other energy sources such as biomass and waste heat only reaching approximately 3 per cent of total production[2].

97%
fossil fuel

Developed district heating systems exist in Bosnia and Herzegovina (BiH), Serbia, Kosovo and North Macedonia, and there are plans to build more in Montenegro.[3]

The existing district heating systems were built around the 1980s. They are mostly second generation systems running on high temperatures above 100° Celcius, and are used for space heating only. Traditionally, water heating in the region has been supplied from electric boilers installed in each individual home.

1 Energy Community Secretariat, Heating and cooling platform, accessed on 12 May 2021.

2 Energy Community Secretariat, WB 6 Energy Transition Tracker 2nd Edition, 16 February 2021.

3 For further information and data about district heating in the region, there is some basic aggregated regional level data as well as national level data available at Energy Community Secretariat, Heating and Cooling Network Website. For country profiles see Euroheat and Power, Country Profiles Archives.

Many district heating systems are connected to cogeneration (CHP) plants – the share of CHP in district heating is 30.5 per cent in BiH, 94 per cent in Kosovo, 56.2 per cent in North Macedonia, and 13.02 per cent in Serbia.[4] Some of these CHP plants are running on coal/lignite, for instance in Tuzla or Belgrade.

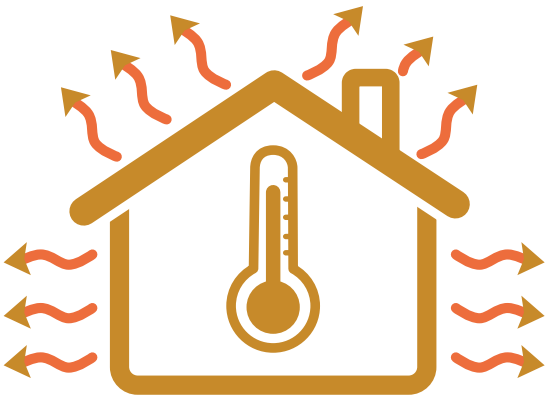
With respect to individual heating in households and the public/commercial/industry sector, there is widespread use of coal and biomass (mostly wood and pellets)[5]. These fuels are often burnt in inefficient stoves, without proper filters and without proper pollution control and enforcement mechanisms.

Background on energy efficiency

Energy efficiency is crucial for bringing down heat demand and implementing modern low temperature heating solutions based on renewable sources. In this respect, the situation across the region, both on the network side and on the demand side, is unfavourable. District heating networks suffer from poor insulation of pipelines and high losses of heat and water leakage – losses are estimated to be typically around 15 to 30 per cent and in some cases reaching even 60 per cent[6].

On the demand end, many residential and public buildings in the region were built in the period from 1960 to 1980, meaning they have very poor energy performance. There are some financial mechanisms in place to help implement energy efficiency measures, like state level funds, municipal subsidies, bank loans etc., but ambitious plans are lacking. The rate of deep renovations and the measures implemented are insufficient to enable a faster transition toward efficient and clean heating.

In addition, the existing district heating systems offer little to no possibility for control by the users, such as metering in individual units. In most countries, installation of individual meters is envisaged for existing district heating connections if it is technically feasible and economically viable, and there is a requirement in the laws for investors to install individual heat meters in new buildings[7]. In recent years there have been efforts to introduce more flexibility and control over individual usage, through introducing consumption-based billing, thermostats to regulate the temperature, etc.,but this is going very slowly – for instance, out of the 58 cities/municipalities in Serbia with district heating systems, consumption-based billing is implemented in 15[8].



4 Energy Community Secretariat, WB6 Energy Transition Tracker 2nd Edition, 16.

5 For instance, an estimated 62 per cent of households in North Macedonia are using wood.

6 World Bank, Biomass Based Heating in the Western Balkan: A Roadmap for Sustainable Development, 69, October 2017. 'Network losses in W-B DH systems are high—typically 15%–30%—and can reach 60% in the worst cases. Softić and Glamočić 2012; Gjoshevski 2014.'.

7 Energy Community Secretariat, Draft report on Legal Frameworks on Consumption Metering in District Heating in the Energy Community, 2020. (Document available upon registration for the Heating and Cooling Platform Networking Group).

8 Energy Community Secretariat, Draft report on Legal Frameworks on Consumption Metering in District Heating in the Energy Community, 2020.

© Center for Ecology and Energy, Tuzla.

2. Why is this a problem?

The region's heating sector is a significant contributor to air pollution and greenhouse gas emissions[9]. The polluting fuels used for heating in combination with poor energy efficiency along district heating networks and in buildings affect health[10], the environment, the economy and society. During the winter, locations like Skopje or Sarajevo constantly appear in the top 10 most polluted cities worldwide. Due to the operation of outdated networks in combination with regulated prices, district heating companies continue to generate losses, and it prevents countries from unlocking the potential for existing and new types of businesses and jobs in the areas of renewables and efficient and smart systems. It also deprives people from quality heating in their homes.

Why should coal be abandoned in heating?

The case for phasing out coal is by now pretty clear and indisputable[11]. Despite this, in some places authorities are not only failing to phase out coal, but they are actually planning the expansion of coal CHP capacities – like in Tuzla in BiH – or for using coal capacities to provide heating – like in Pljevlja in Montenegro.

In addition to the health and environmental impact of pollution from coal, coal is set to become economically unsustainable.

The EU has already introduced mechanisms such as the emissions trading system (ETS), a number of EU countries have a carbon tax in place[12], and there are plans to introduce a carbon border adjustment mechanism. In addition, some EU countries have introduced coal phase-out dates, like Greece (by 2028) and Hungary (by 2025). In the Western Balkans, the Energy Community is in favor of carbon pricing as one element of achieving a coal phase-out[13]. Montenegro already has a carbon pricing mechanism in place. Pollution control is another measure that could make coal economic in this region. The tighter the rules, the less profitable coal plants are, partly because of the cost of installing the equipment, but also because operating it uses up some of the electricity generated.

Coal is not only a source for district heating systems, but it is also still used to a large extent in individual heating. To truly eliminate the negative impact of coal, authorities must take a comprehensive approach to ban coal from heating in individual households or by other users, in addition to replacing it with clean fuels in district heating systems.

9 Energy Community Secretariat, WB6 Energy Transition Tracker, 16.

10 World Health Organization, Household air pollution and health, World Health Organization, 8 May 2018.

11 For further information on adverse effects of coal see Europe Beyond Coal, Why End Coal - Europe Beyond Coal : Europe.

12 Tax Foundation, European Countries with a Carbon Tax, Tax Foundation, 8 October 2020.

13 For further information see Energy Community Secretariat, A carbon pricing design for the Energy Community, January 2021.

Why is gas not suitable for heating?

When authorities are thinking about abandoning coal in heating, they often go for gas as a 'cleaner' alternative and as a 'transition' fuel. This is the case especially for Serbia and North Macedonia, where gas is politically favoured for electricity and heating production. The problem is made worse by the fact that the EU is pushing gas as a transition fuel for the region[14].

The obvious problem is that gas is a fossil fuel with significant carbon intensity – when counting methane leaks during extraction and transportation, gas is no better than coal[15].

In addition, traditionally, gas has not been used much in this region. Albania, Kosovo and Montenegro have no access or limited access to gas at present. Pushing for gas means investing in hugely expensive infrastructure (transnational/supply and distribution pipelines) to be built, in some cases from scratch, along the entire demand chain, resulting in stranded assets that would lock these countries into another fossil fuel dependency, as well as an import dependency. The lifetime expectancy of these projects is at least 30 years, and on top of that there are usual delays in planning and construction (on average 5 to 10 years at the EU level). This would delay the transition to a zero-carbon economy in this region, because investing in gas slows down the uptake of renewables.

There is also a growing trend of promoting hydrogen as a cleaner source. However, almost all hydrogen is currently made using fossil fuels, and even renewable hydrogen is pointless to use for heating as it is energy intensive compared to just using renewable electricity directly – some estimates find that the amount of green electricity needed to produce green hydrogen is 500 to 600 per cent greater than what is needed for the equivalent number of heat pumps[16].

Why is solid waste not suitable?

The incineration of waste for heating/CHP is problematic for several reasons.

Municipal waste is composed of different types of waste, most of which can and should be either prevented, recycled or composted.

This is the goal of the EU's circular economy policy, which includes a commitment to prevent or recycle 65 per cent of municipal waste by 2035 – a goal that the Western Balkan countries will also have to meet. Using waste as a fuel crowds out investments in waste selection and recycling measures, which are hugely underdeveloped in this region.

In addition, burning waste creates air pollution including carcinogenic substances like dioxins and furans.

The composition of waste in this region is highly variable and there are no strict standards in place to monitor and control what type of waste is used as energy fuel. It is clear from the experience with existing industrial and energy facilities in the region that the authorities are not effective in enforcing pollution control legislation, so it is highly risky to build incinerators. Even where proper filters are used, the ash from the incinerator (about 30 per cent of the weight of the original waste) as well as the highly toxic filter residues,

14 European Commission, Commission Communication on Economic and Investment Plan for the Western Balkans, 6 October 2020.

15 CEE Bankwatch Network and Observatori Del Deute En La Globalitzacio, Smoke and Mirrors: Why climate promises of the Southern Gas Corridor don't add up, CEE Bankwatch Network and Observatori Del Deute En La Globalitzacio, 12, January 2018. 'Extraction and transmission are considered to determine the percentage corresponding to fugitive emissions produced along the gas supply chain. Studies carried out by Alvarez et al. (2012) and Howarth (2014), and the IEA World Energy Outlook of 2017 (IEA2017), establish a limiting fugitive emissions percentage, beyond which gas stops receiving a climate benefit compared to coal. These studies also evaluate extraction and transmission gas supply chain operations. Alvarez et al. (2012) finds this percentage to be 3.2 percent, whereas Howarth (2014) establishes it at 2.8 percent. In the case of the IEA2017, this threshold has been established at 3 percent. Since methane remains in the atmosphere for approximately 12 years (Howarth 2014), climate impact in these studies is determined under the 20 year GWP.'

16 Fraunhofer Institute for Energy Economics and Energy System Technology, Hydrogen and Heat in Buildings, 14 July 2020.

have to be disposed of somewhere, and the Western Balkan countries do not have secure enough facilities for this. In other words, whatever toxic substances are in the waste or are generated during combustion have to end up somewhere – either in the air, ash, or filter residues.

Why is biomass not suitable for heating?

When authorities opt for renewables-based heating (both district heating and individual), the usual politically easy choice is biomass, as it is affordable and readily available in the region.

Biomass is not a carbon-free fuel: its burning releases greenhouse gases. The theory put forth for why biomass can be considered carbon-neutral is that because trees or other crops used for biomass are replaced, they lock in the carbon that has been released by burning and so the cycle is carbon-neutral. However, addressing climate change is becoming so urgent that we simply cannot afford to wait decades for trees to re-grow, and there are increasing calls17 for the EU to stop treating biomass as carbon-neutral and to make sure its emissions costs are included in the EU emissions trading scheme.

In addition, biomass cannot really be considered renewable unless strict sustainability standards are in place and are enforced, as it may lead to deforestation or the replacement of old-growth forests with plantations.

Another problem is that the concept of biomass is rather vague and can mean different things, so defining what type of biomass could be suitable for large-scale use in district heating systems is important. Sustainability is especially problematic with 'forest biomass' and less so when the biomass used as an energy source is made up of wood residue and waste (e.g. residue from furniture production, sawmill facilities, etc.).

Combined heat and power plants cannot be the only proposed solution

A popular trend in Western Balkan countries' strategies to decarbonise heating is to use combined heat and power (CHP) as an efficient and fast way to transform existing power plants or plan for new capacities for power and heat generation. First, CHP cannot be the only solution in the complex planning process to decarbonise heating. Modern heating systems are by their nature multi-source and decentralised, so CHP could be one element in a modern system design, and is usually planned for peak load capacity, to complement heat-only solutions.

Second, the coupling of heat and power generation, when it is based on fossil fuels (coal or gas) with the argument of efficiency and cost-effectiveness, keeps the fossil heat share unnecessarily high and prevents the development of renewable heat-only solutions.

Third, district heating in the region is used only for space heating, meaning that any CHP capacity connected to existing networks would have a problem with heat waste in summer months when the heating system is switched off, thus making it uneconomic in most cases. So, unless the heating system is designed with heat storage, CHP alone cannot be efficient. In the case of a biomass fueled CHP plant, the issue with heat waste in summer months would make the biomass sustainability problem worse.

17 WWF, 500+ scientists tell EU to end tree burning for energy, WWF, 11 February 2021.

3. What is the solution?

3.1. Decarbonise heating through fossil fuel phase-out and modern and clean technologies based on renewables

Governments (central and municipal) need to be progressive in thinking about how to transform their heating sectors.

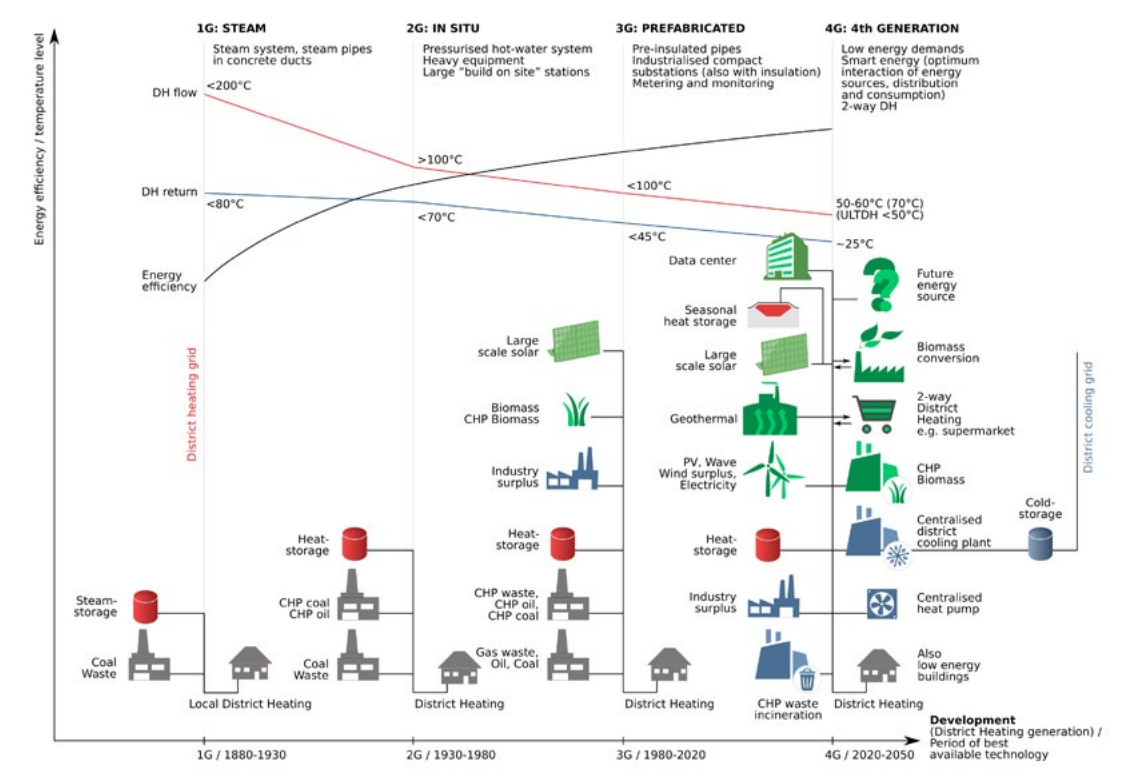
Focusing on 'transition' fuels like gas or biomass CHP is a 20th century solution, resulting in a lock-in to another unsustainable heating source for decades.

Instead, to ensure a high level of comfort and cleaner air, and to achieve the climate and energy targets and fulfill their EU commitments, Western Balkan countries should embrace fourth generation heating[18].

Where feasible and economically justified, district heating systems should be used, as they offer numerous advantages in more densely populated places – scale, efficiency and significant reduction of air pollution.

Such fourth generation systems include advanced low-temperature technological solutions of different scales, based on renewables and recycled/reused heat, which can be integrated into existing networks or be used for the design of new systems[19].

Heat pumps are one such solution that is already being promoted throughout the region, but overall, governments should be looking at diversified solutions based on the local potential for renewables (solar, geothermal, electricity produced from renewables like wind), excess heat recovery from industry and services, and seasonal heat storage.



© MrmwAndol, CC0, via Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Generations_of_district_heating_systems_EN.svg)

18 4GDH, 4GDH definition, accessed on 12 May 2021..

19 For examples and policy recommendations, see Marina Galindo Fernandez, Alexandre Bacquet, Soraya Bensadi, Paul Morisot, and Alexis Oger, Integrating renewable and waste heat and cold sources into district heating and cooling systems, Publications Office of the European Union JRC123771: Luxembourg City, Luxembourg, 2021.

Long-term benefits – including sustainability, no import dependence, clean air, economic growth and the creation of new jobs

Even though fourth generation solutions can be expensive to implement, over time they are becoming less costly, and their long term benefits greatly outweigh the costs. Such systems are decentralised, combine several sources of heat, and require high and long-term investments – it takes several years to bring them from planning to full operation. For these reasons, it might make sense to plan them at the municipal level starting at a very small scale. A heating system can be designed for a small village or for one city neighbourhood. This can be easier to plan and mitigate the costs, and it can allow local businesses to be involved in the implementation as local expertise and resources can be more easily available for small-scale projects.

Solar power plant for district heating, Marstal, Denmark'

© Erik Christensen (https://upload.wikimedia.org/wikipedia/commons/4/4d/Marstal.powerplant.1.jpg)

When it comes to examples, there are many existing fourth generation systems around Europe, primarily in Denmark and the Nordic countries, but also places like Germany and Italy.[20] In smaller places, the transformation has been easier (e.g. Marstal[21] in Denmark), and in bigger cities like Helsinki[22] which has an existing district heating system, the transition from fossil fuels has been gradual. What is common for locations where fourth generation heating already exists is that the full transformation does not have to happen over night: it can be done in stages over a period of time, which also helps to spread out the costs. Another important factor is that the municipal authorities and local communities should be the most engaged actors and need to work together on the transformation. Locals are involved through 'energy communities' that pool finances, set up collective ownership of district heating networks, engage in prosumer activities, etc.[23]

An example of a location where the transformation of the heating system is underway is a case Bankwatch has been working on in Slovakia. A study was done to propose alternative solutions to the heating provided from the coal-based CHP plant Novaky, scheduled to shut down by the end of 2023. The proposed solution in the study, which was completed at the beginning of 2020, is to prioritise energy efficiency through savings in buildings and in the distribution network, and to combine several

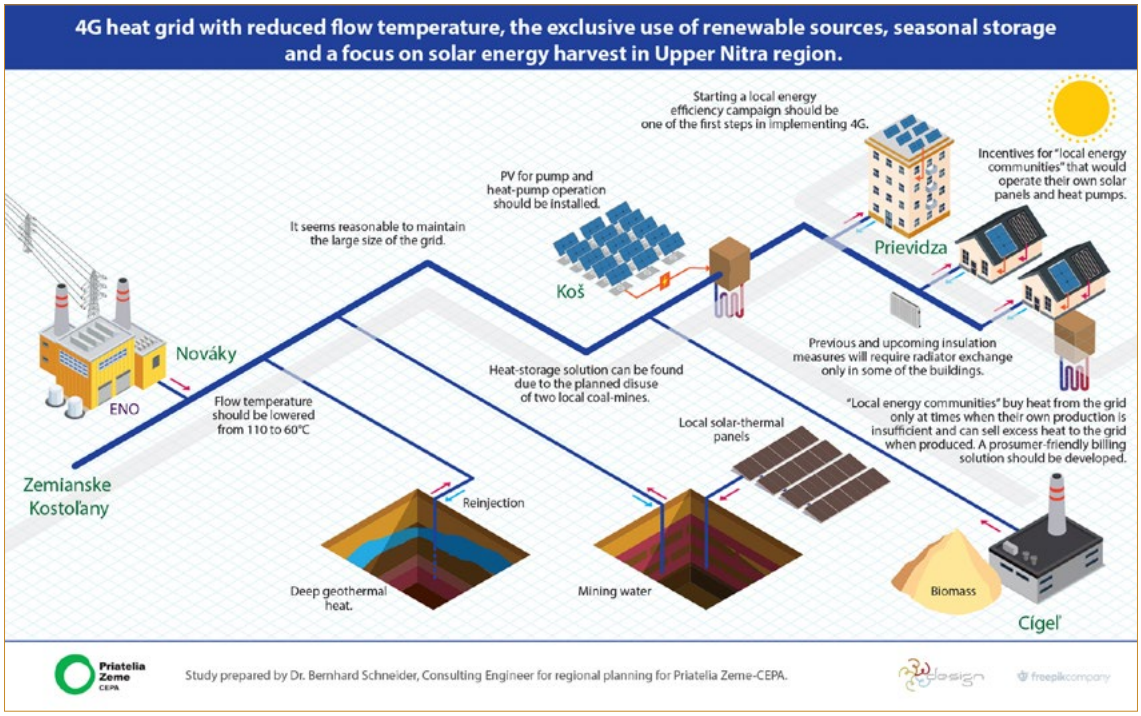
20 Euro Heat & Power, Case Studies Archives, accessed on 12 May 2021.

21 Co2community, Factsheet-Aerö-Marstal, 6 March 2019.

22 FLECHX, Helen World's Best City Energy, 3 March 2019.

23 For further explanations and case studies see REScoop, Community Energy: A practical guide to reclaiming power, RESCoop, 29 October 2020.

renewables based on the local potential, including geothermal, solar energy, heat pumps, and biomass (from the CHP plant), together with seasonal heat storage.



3.2. Reduce heat demand through energy efficiency

Without 'energy efficiency first', there can be no modern and affordable heating, either in district heating systems or in individual heating. Energy efficiency is crucial for bringing down heat demand, which is needed to reduce costs for consumers. Various IEA and World Bank estimates point to potential savings in the Western Balkans of 10 to 35 per cent for households and 35 to 40 per cent in the public sector[24].

Measures for energy efficiency should be more aggressively pushed together with the plans to design or redesign district heating systems. These measures consist of energy efficiency improvements in buildings, especially deep renovation that would lead to substantial energy savings[25]: comprehensive insulation of the facade, floors, roofs, windows and air sealing; improvements in the internal distribution systems; and also protection against heat in summer to reduce cooling demand. They should also cover improvements to the heat networks (the pipelines and the grid), in order to allow for decreasing the temperature in the networks, which will lead to further energy savings. In addition, there needs to be an overall shift toward demand-driven systems where the users can actively control their consumption. The introduction of metering and consumption-based billing together with adequate control equipment enables consumers to control their heating expenses and motivates them to invest in energy efficiency improvements, as long as they are coupled with appropriate education measures.

District-heating-pipeline made of preinsulated bonded pipe systems

© Björn Appel (https://upload.wikimedia.org/wikipedia/commons/0/09/2005-08-30-district-heating-pipeline.jpg)

24 Western Balkan Investment Framwork, Financing Energy Efficiency Investments in the Western Balkans, 2016.

25 For further EU level data and benefits from buildings refurbishment see CAN Europe, DECREPIT EUROPE OR RENOVATED EUROPE?, 23 April 2021.

4. How can this be achieved?

4.1. National policy frameworks need to set out a clear strategy that enables the transformation of heating systems with goals, measures to reach those goals, and supporting instruments

Several elements are required for drafting successful policy frameworks. They all require engagement, primarily of municipal authorities as the leading actors together with national decision makers, and the entire civil sector, including NGOs, academics and other experts, local communities and businesses.

Data

To make sure that the strategy will be implemented, it needs to be evidence-based. There is a serious lack of data on the heating sectors in the Western Balkans. A deep analysis of the existing heating situation in each country is needed, including all relevant aspects – the technical, financial, social, legal and institutional set-up. Detailed and up-to-date data is needed about the existing and projected heat demand, the status of the building stock, the availability and share of use of different heat sources, and the status and performance of existing district heating systems. Having as much data as possible is a prerequisite to feed the policy making and planning of any measures.

Policy making

Based on all available data, and based on consultations with local authorities and all relevant stakeholders on heating issues and priorities, national authorities should set clear, measurable objectives for their heating sectors. National energy and climate plans (NECPs) are long-term strategic planning documents that set the countries' paths for the next 10 years, and so they are the right place to plan for a set of multiple well analysed, well-defined options and measures to transform existing district heating networks, to encourage the development of new renewables-based networks, and overall to incentivise the transition from carbon-intensive fuels to clean heating sources and energy efficiency. For each analysed policy option there should be clear processes/roadmaps with each step clearly defined along with deadlines and clear responsibilities, especially for the municipal authorities.

The measures arising from the policy framework should include adjustments in the legal framework relevant to heating, in line with EU acquis and with best practice examples from individual countries. Introducing a detailed district heating regulation and governance is important as the basis for investment in district heating networks and heat generation, for instance to address issues such as the access of third-party renewable heat suppliers to the grid. Also, any incentives/subsidies should be designed in favour of encouraging renewable technologies, network refurbishment and demand-side energy efficiency uptake in heating, all of which can mobilise local businesses[26]. The measures should also anticipate the needed investments and funding sources – here also, best practice examples from countries where fourth generation systems already exist should be examined, stakeholders should be identified, any technical and operational activities necessary should be planned, etc.

Timing

The national level planning of advanced low-temperature heating solutions needs to start now, because any feasible technology, in combination with energy efficiency measures, takes at least 7 to 10 years to be implemented – from securing investments, to undergoing permitting procedures,

26 For further information about subsidies for individual solutions such as heat pumps installations, solar thermal in individual households or financing schemes in place across EU countries and the challenges with investment return for the households see Cool Products, Clean heat grants are failing to green our homes – New analysis, 21 February 2021.

to completing construction, to actual operation. For individual-level solutions, such as heat pumps or solar thermal use, or energy efficiency measures for single-family households, it can be done much faster. This means in practice that in order for people to enjoy clean, affordable, modern district heating 10 years from now, the strategy and planning for all the necessary measures to make that happen needs to be in place immediately.

4.2. Municipalities should take the initiative in heat planning and in design and implementation of specific projects

Since heating is by nature a localised issue, the operational work is mostly done by the municipalities. Therefore, the transformation should be driven by a bottom-up approach with strong initiative from the municipalities. This approach requires the following:

Capacity

One of the key challenges in transforming the heating system of a city or smaller municipality is the lack of capacity and technical expertise within the municipal services. Therefore, the first prerequisite is to build capacity, in the sense of employing competent staff in the municipalities and awareness raising activities where NGOs can play an important role. Authorities should also put processes in place to engage with stakeholders and the local community in local decision-making[27].

Local heat mapping and planning

Tools and processes for local heat mapping need to be developed and implemented, to have precise data about the existing district heating grid, existing individual heating sources, consumption data, various technical characteristics, etc. Based on the mapping, municipalities should have in place local heating planning documents including identification of investment needs and funding sources, and, based on those, specific heating decarbonisation projects such as feasibility studies, business plans, tendering and permitting procedures, and assessments of compliance with relevant rules. It is very important for the heating planning to encompass both district and individual heating, since heating networks cannot cover everyone.

4.3. Identifying and addressing challenges early on, based on lessons learnt from locations where transformation has been completed or is ongoing

The lessons learnt from other places should be explored, since they can be very useful to identify and deal with any potential challenges early on. Here again, local authorities have the crucial role in establishing communication with such municipalities. This is relevant especially when it comes to transforming existing district heating systems, for issues such as how to integrate various sources that have different technical parameters into a single network, how to cover peak loads in winter, or how to adjust the grid temperatures between older parts of grid that can't be retrofitted with the new parts of the grid. An example of a lesson that can be learnt from other locations is the case of Novaky in Slovakia, where one challenge encountered in the process relates to the energy efficiency measures, specifically the renovation of multi-family buildings. As there are many owners in multiple-flat buildings, they could not agree on whether they or the government should finance the expensive renovation. This is just one example of an issue that could be addressed early on, at the policy level in the strategic documents such as the NECP. Concerning the demand side, another important issue is to find a way to introduce market prices while addressing energy poverty in a targeted manner.

27 For further information about the energy cooperative initiative in Niš, Serbia, see Igor Todorović, Niš is empowering citizens within its energy transition, Balkan Green Energy News, 8 March 2021.

4.4. As investments in clean district heating are intensive and long-term, it is crucial to use available financing mechanisms

For complex investments in district heating networks, there are increasingly available funding mechanisms for the Western Balkans, aimed at introducing fourth generation solutions in heating or at modernising existing district heating networks.

Below are relevant details on the EU, EBRD and EIB financing mechanisms that national and local authorities can use at the initial stages when they need technical assistance, for new district heating system design and development, or for existing system modernisation. Other donors including development banks and agencies (KfW, USAID, GIZ, World Bank) have financing or other support available for heating projects in the region[28].

The EU's Instrument for Pre-Accession Assistance

The Instrument for Pre-Accession Assistance III (IPA III) is an instrument of the European Commission for pre-accession assistance for the programming period from 2021 to 2027. This generation of IPA is based on the lessons learnt from the previous two generations of IPA (2007 to 2013) and IPA II (2014 to 2020).

The legal framework for IPA III is a regulation establishing the instrument, followed by implementing rules adopted by the Commission. According to the structure, IPA III is divided into five windows and 17 thematic priorities. Climate change is identified as a cross-cutting theme. Window 3 - Green Agenda and Sustainable Connectivity, covers the following:

- Environmental protection
- Mitigation of and resilience to climate change
- Shift towards a low-carbon economy
- Digital economy and society
- Connectivity of the IPA III beneficiaries to the EU and the wider global market

The funds will not be distributed based on national allocations for each country, but the countries will 'compete' with each other for funding. In addition, the funding will be granted only for mature projects, in order to shorten the long period between programming and implementation.

The European Bank for Reconstruction and Development

The European Bank for Reconstruction and Development (EBRD) provides financing and works with operators and policymakers to improve the operational, environmental and financial performance of the district energy sector. The Bank continues to support technical innovation in the sector and enhanced private sector participation. The areas of focus are:

- Renewable heat generation (solar, heat pumps, geothermal and biomass) and waste heat utilisation
- Thermal storage and integration with renewable electricity generation
- Capacity building and networking, jointly with the Energy Community Secretariat and District Heating and Cooling Associations.

28 For further examples of similar projects see Energy Community, Donor coordination platform, accessed on 12 May 2021.

There is a programme for funding renewables in district heating for the Western Balkan region, the Renewable District Energy in the Western Balkans (ReDEWeB) Programme[29]. The aim is to enable renewable district energy investments in the countries of the region. Funding is available for:

- Policy support for renewable district energy
- Project preparation and feasibility
- Capacity building and networking

Special focus is placed on solar district heating, with projects already in the pipeline in several municipalities in Serbia.

The European Investment Bank

The latest European Investment Bank (EIB) energy lending policy was adopted in 2019[30]. The policy underlines that district heating networks can play an important role in markets both in the EU and outside the EU, and can be used by decarbonised sources of heat supply. The Bank will continue to finance the expansion and rehabilitation of these networks under certain conditions. In parallel to its financing, the Bank is providing project preparation and implementation support to public authorities and promoters developing strategies to decarbonise district heating systems. The EIB will also continue its work to develop and implement programmes to deliver energy efficiency finance and capacity building technical assistance for district heating.

The EIB's eligibility criteria: The Bank supports the construction, rehabilitation or extension of district heating systems under the following conditions:

- No increase in the combustion of coal, peat, oil or non-organic waste as a result of the project, on an annual basis.
- Thermal storage facilities are considered to be a network investment.
- Economic assessment: For new and extended networks, the Bank compares the cost of the project against a least-cost alternative form of individual heat supply, including all externalities. For rehabilitation, the Bank compares the costs to the expected savings.
- Contribution to energy efficiency: The project will need to be part of an 'efficient district heating and cooling system', as defined in the EU energy efficiency directive.
- Heat production: Only projects using renewable energy sources (defined in Annex II) are eligible. As an exception, gas-fired high efficiency cogeneration projects may be eligible under certain additional conditions (including maximum emissions of 250 gCO2/kWh).

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29 European Bank for Reconstruction and Development, Renewable District Energy in the Western Balkans (ReDEWeB) Programme, 22 March 2018.

30 European Investment Bank, EIB energy lending policy: Supporting the energy transformation, 15 November 2019.

Governments need a progressive approach to transform their heating systems through integration of renewables-based solutions and ambitious energy efficiency measures. The planning of the measures needed for clean and modern heating should start immediately.

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