

A new study shows that the city's district heating can come from fully renewable sources.

It's not often that a town in a coal dependent region leaps to a fully renewable district heating system. Sometimes it is not even technically possible; other times, decision makers are just too rooted in 'how we've always done things around here' and keep old polluting heating systems on life-support because it's the easier political decision. But the city of Motru in Romania benefits both from political will and from diverse sources of sustainable energy and can be a leading example for other municipalities in the country in their efforts to decarbonise the heating sector.

On 17 November, the study *Heating from renewable and alternative energy sources for the city of Motru. Solutions and recommendations* was launched in Motru, Gorj County, with the support of the mayor and representatives of the local council. The study, which presents five alternative scenarios to the current coal-based district heating system, was carried out by the Institute for Studies and Power Engineering (ISPE) at the request of Bankwatch Romania. Its goal is to assess whether the need for heating and hot water of the 5,000 homes connected to the system can be met in a sustainable way, using renewable energy sources, with minimal negative impact for residents' health and the environment.

The coal-based district heating plant is managed by the local council and has been providing hot water and heating to Motru's residents since 1970. Currently, it supplies 86 per cent of Motru's population, 8 per cent of the public institutions and only 6 per cent of the private ones.

The end of an era?

In recent years, the increasing costs of CO₂ allowances - up from EUR 7 per tonne of CO₂ at the end of 2017 to over EUR 70 per tonne of CO₂ now - and the health-damaging pollution caused by the aging power plant, have made it increasingly difficult to operate it. The wear and tear on both the thermal power plant and the hot water distribution system also results in a lot of lost heat: the system's registered thermal energy losses in 2021 stood at an eye-watering 46.8 per cent.

At the end of 2021, the company running the plant just barely managed to get out of the insolvency process it had been mired in since 2016. To continue providing heating and hot water for the residents of Motru, the operator received at least EUR 6.5 million in financial aid from the local budget.

Because the financial problems were projected to deepen month after month, the mayor of Motru and Bankwatch Romania decided to look for sustainable, financially viable and non-polluting solutions.

A fully renewable energy scenario is possible, even in a coal dependent

town

The study includes the analysis of five scenarios with different technologies for the production of thermal and/or electrical energy. These technologies range from conventional ones, which are expensive to operate and have considerable environmental impacts (such as fossil gas boilers, a municipal waste incinerator), to a biomass cogeneration plant, to photovoltaic (PV) panels on the ash deposit and heat pumps.

Out of all five scenarios, **the 100 per cent renewable one stands out as the best choice for modernising the thermal power plant.** It involves the use of heat pumps powered by solar PVs mounted on the heating substations and on the ash disposal sites. The electricity required to power the heat pumps when the solar PVs cannot provide it will be taken from the national grid. Along with a deep renovation of the apartment buildings stock, and the rehabilitation of the distribution system, the scenario is possible, viable from a technical-economic point of view and 'easier to manage and safer from the point of view of continuity and safety of supply', according to the authors of the study.

The income from the system's operations fully covers the annual operating expenses. The EUR 23.5 million original investment is estimated to be recovered eight to nine years after the new heating system is put into operation. After the ninth year of operation, the new district heating system would begin making profits. An important part of the cost cuts is because the plant will no longer have to buy CO₂ allowances. In 2022 alone, the plant operator had to buy over 45,000 CO₂ allowances, with a cost burden of approximately EUR 2.5 million.

The 100 per cent renewables scenario will also significantly improve the local air quality, as current emissions from the district heating plant (sulphur dioxide, nitrous oxides and dust particles) would disappear altogether.

The fully renewable scenario ensures the district heating system will be independent from potentially unreliable, unavailable or expensive fuel sources such as gas, waste or biomass. The fully renewable solution eliminates the risk of having production outages and it gives more predictability to consumer prices.

Funds exist - Motru just has to go for them

The investment needed for a 100 per cent renewable district heating system in Motru is estimated at EUR 23.5 million, which the local administration must fundraise. Fortunately, the palette of available sources of funding is wide, and it ranges from grants to low-interest loans. The Modernisation Fund, the Just Transition Fund, Romania's COVID-19 recovery plan, and its operational programmes all prioritise investments in renewables, especially in district heating. Motru is a just transition region and has a Territorial Just Transition Plan, so it ticks all the boxes to qualify for this funding. International financial institutions (such as the EBRD) would gladly lend to such projects as well, but when grants are available, they should be the municipality's preferred option. We can only hope the local council sees all



Sustainable district heating gives hope to the Romanian city of Motru

these benefits and opportunities and approves Motru's way forward on its sustainable path. The city of Motru is the first town in one of Romania's coal regions to take such a step towards the use of renewable sources and thus towards decarbonising thermal energy production. The initiative is in line with EU policies and the commitment to increase renewable energy production and improve energy efficiency. Moreover, it will set an example for other towns in similar situations. The well-being of Motru's citizens will depend on the modernisation of its heating sector, Bankwatch writes.