

Renewable energy solutions for heating and cooling systems in Moldova

Concept note and draft Agenda

Date: 9 November, 2023 (09:30 – 16:30)
Location: Chișinău, Moldova
Courtyard by Marriot, 21/A Arborilor Str., Conference room
Format: In-person meeting

Background

Energy supply and utilisation are responsible for over 80% of all GHG emissions globally. Heating and cooling represent the largest share of energy consumption, accounting for about half of global total. Today, most of the energy used in the heating and cooling sector is supplied by fossil fuels, resulting in heavy emissions and pollution. This makes the sector critical in the decarbonisation journey and energy transition agenda. In addition, a reduction in pollution from the heating and cooling sector will be beneficial to the health and wellbeing of the society. In this regard, renewable energy offers an alternative to the use of fossil fuels in the heating and cooling sector and are a key enabler of the energy transition. According to IRENA's World Energy Transition Outlook, over 90% of GHG emissions could be abated by using renewable energy in combination with options such as energy efficiency and conservation, among others (IRENA,2021b).

IRENA has been working on heating and cooling in many dimensions. Based on recent analytical outputs, including [Integrating Low-Temperature Renewables in District Energy Systems](#), and [Renewable Energy Policies in A Time of Transition: Heating and Cooling](#), many countries have an abundance of locally available renewable energy options such as geothermal, solar thermal, free cooling and sustainable waste heat. However, utilising them to meet the needs for heating/cooling and domestic hot water supply in buildings still faces several challenges. District energy systems are one of the key infrastructures that can enable the integration of renewables in meeting the heating and cooling needs in cities. In addition, the inclusion of distributed heat/cold production stations and energy storage facilities in the district energy systems can support multiple renewable-based heat/cold sources located in different areas within a city to be integrated into the district energy supply mix. Enabling technologies such as large-scale heat pumps and the development of a new generation of district heating and cooling systems, combined with energy efficiency measures in the networks and building, can also support more renewables, especially those occurring at low temperatures, to be integrated into the heating and cooling systems.

Moldova's heating and cooling sector has a significant share of renewable energy, accounting for around 46% of the gross final energy consumption in 2017 (IRENA, 2019). According to the Energy Balance for 2017, the share of the biomass for heating and cooling in the gross final energy consumption is about 27%. In 2021, residential heating needs contributed the largest share (48%) of energy demand and mainly relied on biomass and fossil fuels. According to a new law under the public consultation process, the share of renewables in heating and cooling will need to increase by 1.1% annually from 2023 to 2030 compared to the 2022 level. Promoting renewables in district heating systems will have a major role to play. It is estimated that about 12 existing district heating networks are in operation in Moldovian cities. Meantime, around two-thirds of households in this country rely on inefficient individual heating stoves. Urgent actions are needed to improve efficient district heating systems and decentralised stoves, and to increase the share of renewables.

Moldova has huge renewable potential that can be used for district heating systems or decentralised heating systems. For example, Moldova has untapped geothermal potential, particularly from thermal springs with 30-50° of water temperature spread across the country. The southern part of Moldova also has a low enthalpy geothermal potential which is suitable for heating purposes. Currently, there are approximately 142 kW of small-scale geothermal heat pump projects installed in Moldova for private or individual uses. In addition, the country has realisable potential for solar thermal and excess (waste) heat, which could be deployed at a household scale, providing heat for a whole building, or integrated into existing district heating networks.

In this regard, IRENA and its partners, will support the government of Moldova to organise a workshop to help policymakers and relevant stakeholders in deploying sustainable renewable energy solutions in the residential heating and cooling of Moldova.

Objectives and target group

The main aim of the Capacity Building is to enhance decarbonisation and heat transition efforts in Moldova through the integration of renewable energy solutions in district heating systems, as well as decentralised renewable heating solutions. It will cover several themes, including Strategic Heating and Cooling Planning (SHCP), enabling framework conditions, and possible solutions for addressing technical barriers in the heating sector.

The capacity building is ideal for policy makers/cities/municipalities/district heating companies which are in the process of:

- i. Developing new district heating and cooling (DHC) infrastructure.
- ii. Expanding/modernising/refurbishing existing DHC systems, or
- iii. Switching from the use of fossil fuels to modern renewables, including modern biomass, in their heating and cooling sector.

The outcomes of the capacity building will complement the efforts of the country to implement its Nationally Determined Contributions (NDC) and National Energy and Climate Plans (NECP).

The capacity building will aim to equip heating and cooling stakeholders (including policymakers at the national and local levels), urban planners, district energy operators/utilities, etc. with knowledge on the options and tools for integrating renewable energy sources in district heating and cooling networks. These include but not limited to the following groups:

- Relevant national government representatives.
- Relevant representatives from municipalities planning to integrate RE in district heating systems.
- District heating utilities representatives.
- District heating and cooling industry representatives (including operators, equipment manufacturers, distributors, installers, etc).
- Relevant representatives from academia and research institutions.
- Relevant international development and financial institutions.

Partners

The capacity building will be organised by IRENA and Energy Community Secretariat, as part of the EU4Energy project, in collaboration with the Moldovan Ministry of Energy and Energy Efficiency Agency. The contribution from the Ministry of Energy will include delivering a keynote speech; advising on the development of the agenda; facilitating the organisation of the workshop and securing the participation of Moldavian stakeholders, including the national and local policymakers, that are planning to develop new district heating systems or to switch from fossil fuels to geothermal energy and other modern renewable energy sources.

Format of the workshop

The capacity building will take place in 9 November, 2023 and is envisaged to be conducted in an in-person format (i.e. in-person in Chișinău, Moldova, with Zoom interventions of certain speakers). It will consist of 4 sessions addressing different topics on heating and cooling. The workshop will be kicked-off by two interventions of the Ministry of Energy and Energy Community Secretariat on the revised version of the Law no. 10/2016 on the promotion of the use of energy from renewable sources (that transposes RED II) and wider EU acquis, presentations by IRENA, building on its analytical work. Moldavian experts will present about specific topics relevant to the country context. In addition, guest speakers from government, industry and academia, will also be invited to share local and international insights, experiences and best practices on the implementation of renewable energy solutions in heating and cooling systems.

The workshop will incorporate Q&A sessions as well as a group activity to allow for discussions between the speakers and the participants.

Interpretation services will be available during the workshop (English-Romanian-English).

Draft AGENDA

09:00 – 09:30: Arrival and registration of participants

	Activity	Presenter /Resources
(Moldova Standard Time) 9:30 – 9:50	<p>Opening</p> <ul style="list-style-type: none"> - Ministry of Energy, Republic of Moldova - Energy Community Secretariat - IRENA - European Union Delegation 	<p>Victor PARLICOV Minister of Energy</p> <p>Artur LORKOWSKI Director, Energy Community Secretariat</p> <p>Gurbuz GONUL Director CEP, IRENA</p> <p>EUD (tbc)</p>
Session I: Introduction		
9:50 – 10:55	<p>The renewable future of Heating and Cooling</p> <p>Driving the green transition of Moldova. The role of the Law on renewable energy</p> <p>The contribution of the RES-H&C segment to a decarbonised Moldova</p> <p>“CET-Nord” in pursuit of sustainability. Diversification through integration into DHS of renewable energy sources and heat accumulators</p>	<p>Naida TASO Renewable energy expert, Energy Community Secretariat</p> <p>Biljana GRBIC Heating and Cooling Consultant, Energy Community Secretariat</p> <p>Carolina NOVAC State Secretary, Ministry of Energy</p> <p>Ion MUNTEAN, Director, Energy Efficiency Agency</p> <p>Marian BRÎNZA Director, JSC ”CET Nord”</p>
10:55 – 11:10	Coffee Break (15 Minutes)	
Session II: Enabling framework conditions for renewable-based heating systems		
11:10 – 12:40	<p>Industry perspectives on heat transition (15 Minutes)</p> <ul style="list-style-type: none"> - <i>Lessons, opportunities, challenges and solutions on renewable based district heating systems from the perspective of a developer</i> <p>Policies for District Heating and Cooling - cities perspective(15)</p> <ul style="list-style-type: none"> - <i>Roles, stakeholders, measures and examples to enable district heating systems and promote integration of renewable heat sources in the urban context</i> <p>Renewable energy resource mapping to support decision making - Geothermal case study (15 minutes)</p> <ul style="list-style-type: none"> - <i>Assessment and mapping of geothermal resources in Danube Region to support decision making</i> <p>Practices and opportunities for funding RE-based heating and cooling systems/ Renewable Energy Project financing (20 Minutes)</p>	<p>Lars GULEV, Senior Consultant, VEKS</p> <p>Jinlei FENG, Programme Officer, IRENA</p> <p>Anna Maria NADOR Senior Geologist, Supervisory Authority for Regulatory Affairs of Hungary</p>

	<p>Development of feasibility studies/Financing case study (15 Minutes)</p> <ul style="list-style-type: none"> - <i>What existing and emerging opportunities are there for financing of heating and cooling projects</i> - <i>What Challenges and solutions, and lessons have been learnt in financing heating and cooling projects in the region</i> <p>Q&A (10 Minutes)</p>	<p>Project Facilitation and Support Division, IRENA</p>
12:40 – 13:40	Lunch Break	
Session III: Integration of renewable-based heating solutions		
13:40 – 15:05	<p>Technical considerations for modern district heating and cooling systems (15 Minutes)</p> <ul style="list-style-type: none"> - <i>What key design considerations, technical challenges and solutions, as well as enabling technologies, promote renewable-based decentralised heating systems for households</i> <p>Waste to Energy Solutions to decarbonise heating systems in the European context (15 Minutes)</p> <ul style="list-style-type: none"> - <i>Vienna Experience in Waste to Energy</i> <p>Solar thermal solutions for districting heating and cooling (15 minutes)</p> <ul style="list-style-type: none"> - <i>Challenges and solutions for integrating solar thermal in European district energy systems</i> <p>Modern biomass for decarbonisation of heating in households (15 Minutes)</p> <ul style="list-style-type: none"> - <i>Implementing the direct use of modern biomass in European context</i> <p>Integration of waste heat sources/cogeneration for heating and cooling (15 minutes)</p> <ul style="list-style-type: none"> - <i>Different waste heat sources, good practices, challenges and opportunities for their utilization in heating/cooling</i> <p>Q&A (10 Minutes)</p>	<p>Ines JACOB Associate Programme Officer, IRENA</p> <p>Dr. Christine Wenzl Wien Energie</p> <p>Christian HOLTER Founder, SOLID Solar Energy Systems</p> <p>Adam BROWN Independent Consultant</p> <p>Hans KORTEWEG Managing Director, COGEN Europe</p>
15:05 – 15:20	Coffee Break (15 minutes)	
Session IV: Strategic Heating and Cooling Planning [Next steps]		
15:20 – 16:20	<p>Key factors in strategic heating and cooling planning (15 Minutes)</p> <ul style="list-style-type: none"> - <i>An overview of the strategic heating and cooling methodology and its key elements</i> <p>Exercise for policy making on development and implementation of strategic heat planning (20 Minutes)</p> <ul style="list-style-type: none"> - <i>A group exercise among the participants to interact with strategic heating and cooling processing</i> - <i>How IRENA could further support and facilitate the process of renewables integration in district heating systems</i> <p>Q&A (10 Minutes)</p>	<p>Jack KIRUJA Associate Programme Officer, IRENA</p> <p>- All</p>
16:20 – 16:30	Closing	IRENA, Ministry of Energy