



**European Bank**  
for Reconstruction and Development

# **EBRD support for low carbon and renewable district energy**

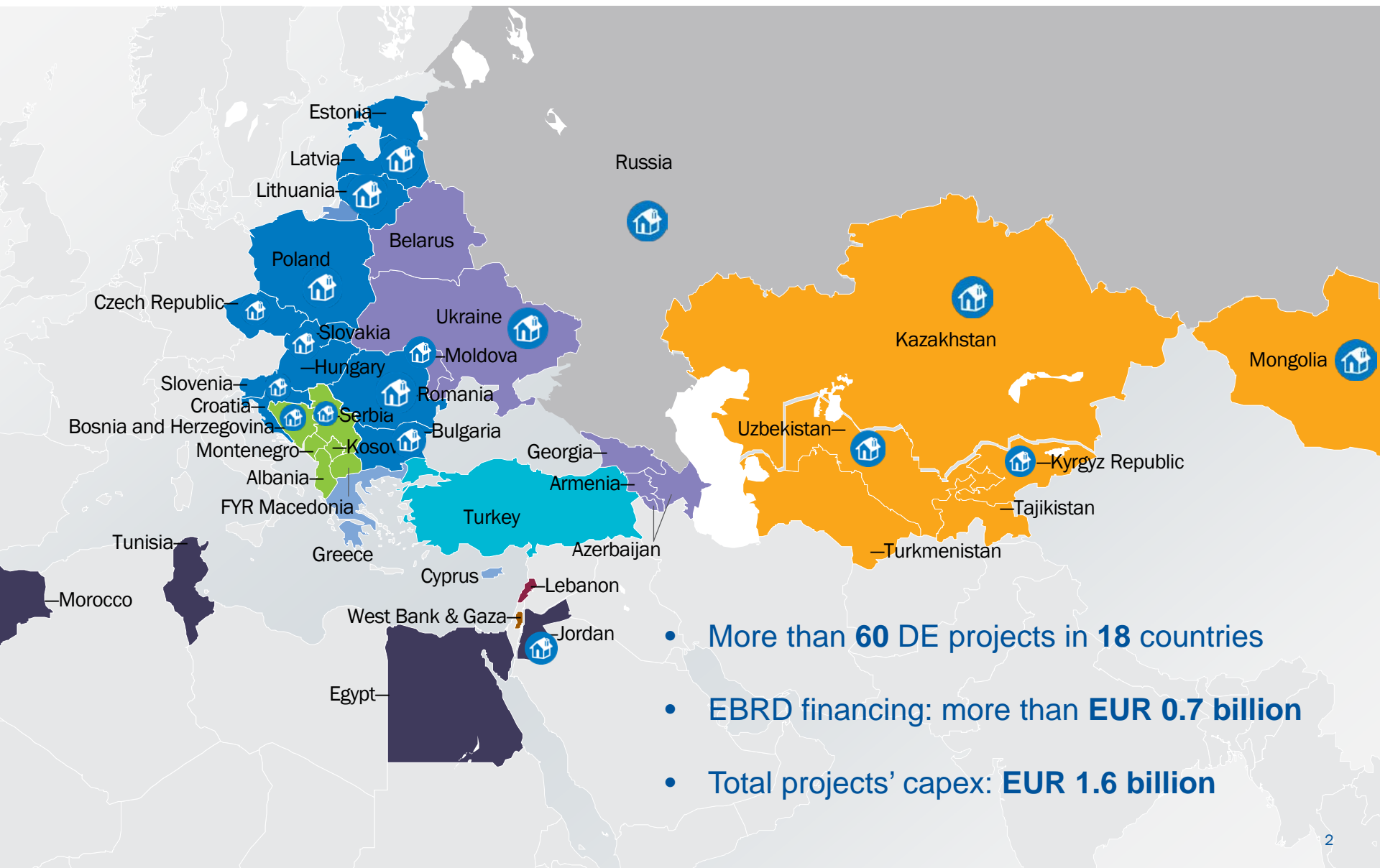
## **Energy Community workshop on efficient district heating**

June 2020

# EBRD District Energy Projects



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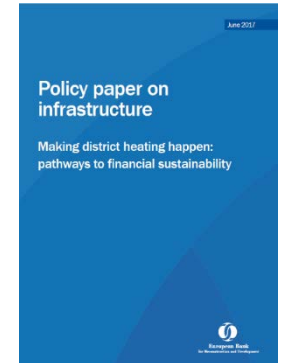
- More than **60 DE** projects in **18** countries
- EBRD financing: more than **EUR 0.7 billion**
- Total projects' capex: **EUR 1.6 billion**

# Objectives for the Sector



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- Increase energy efficiency and reduce environmental impacts
- Improved service levels
- Increased commercialisation, consumer control and consumption based billing

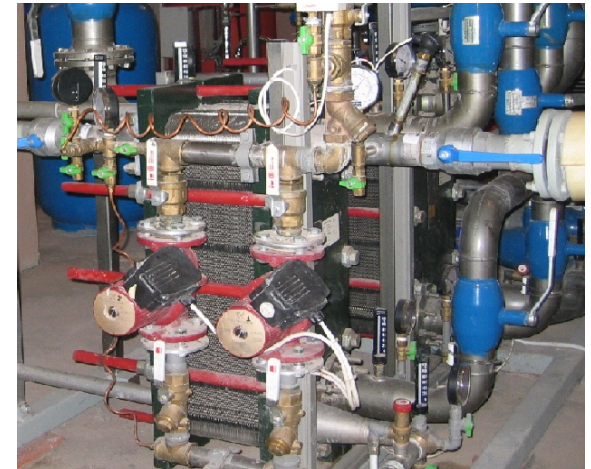


**EBRD provides financing and works with operators and policymakers to improve the operational, environmental and financial performance of the DE sector.**



## DE Company Level

- Sub-Sovereign loans often co-funded by donor grants
- PPPs, private loans and equity investments
- Heat generation (excl. coal), network and demand side improvements
- Assistance with feasibility through to implementation



## Country or Sector Level

- National framework agreements
- Policy paper series “Making District Heating Happen”
- Technical cooperation projects with Government agencies



# Ongoing Projects in Ukraine



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- Six Ukrainian cities (Lutsk, Zhytomyr, Ternopil, Lviv, Ivano-Frankivsk and Chernivtsi);
- **Priority Investment Programmes:**
  - Construction of 2 biomass-fired CHPs;
  - Boiler house modernization including new boilers, burners, pumps and auxiliary equipment;
  - Installation of biomass boilers;
  - Network upgrades and customer reconnection;
  - Installation of IHSs;
  - Installation of SCADA systems.
- **Financing sources:**
  - ~65 M EUR Capex
  - EUR loans from EBRD and CTF;
  - Grants from the E5P fund and Sweden.



# Kyiv DH Project – Under Development

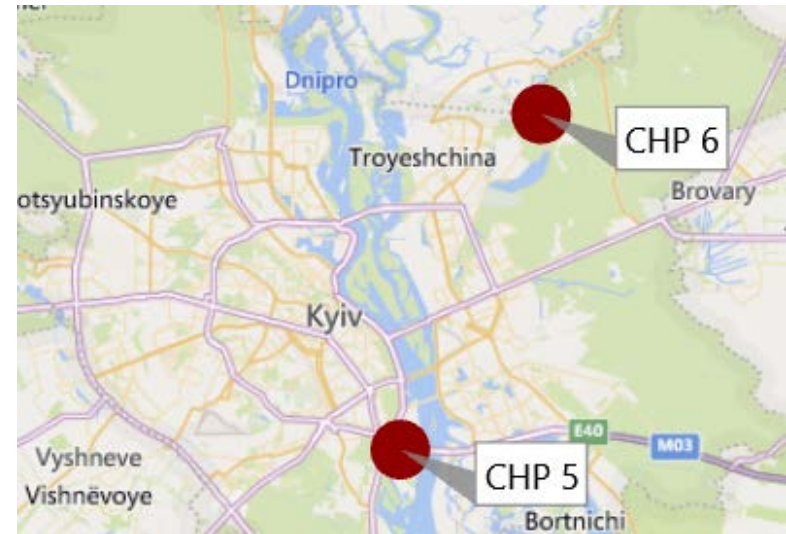


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EBRD Finance\*                    € 140 million  
Grant Funding\*                    € 3 million

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Working with Kyivteploenergo to develop a project focused improving the reliability and sustainability of DH services in Kyiv



## Proposed investment programme:

- Modernisation of CHPs;
- Reconstruction of large boiler houses;
- New monitoring and dispatching system (SCADA);
- Replacement of networks; and
- Installation of IHS.

\* *Project is under development*



# Bălți District Heating Project

## Moldova



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EBRD Finance	€ 7 million
Grant Funding	€ 3.7 million
GHG Reduced	18,300 tonnes of CO <sub>2</sub> eq / yr

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New and upgraded generation infrastructure and modern network control in Moldova's 2<sup>nd</sup> largest city

- New gas engine CHP plant with a capacity of 13,4 MWe and 12.5 MWth
- 0.65 MWth Biomass boiler
- Installation of 169 IHS in 130 buildings
- Phase II project under preparation



## Renewable District Energy in the Western Balkans



Aim to enable renewable DE investment in:

- Albania
- Bosnia and Herzegovina
- Kosovo
- Montenegro
- North Macedonia
- Serbia

Funding is available for:

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

Special focus on solar DH

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# ReDEWeB Fund - Pipeline



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No	Country	City	Project scope	Processing stage	Category
1	Serbia	Pancevo	Solar thermal* + Network refurbishment** + Buildings Energy Efficiency **	Pre-Feasibility Study completed. The City decided to proceed further with the project development. Feasibility study contracted.	Private* Public**
2	Kosovo	Pristina	Solar thermal	Joint work with KfW being a lead IFI. Pre-Feasibility Study completed. The City decided to proceed further with the project development.	Public
3	Serbia	Bor	Solar thermal* - Buildings Energy Efficiency ** + Substations modernisation** + Network refurbishment **	Pre-Feasibility Study completed. The City decided to proceed further with the project development.	Private* Public**
4	Serbia	Novi Sad	Solar thermal	Pre-Feasibility Study completed. Presenting the results to the Mayor.	Public
5	Montenegro	Zabljak	Biomass based greenfield district heating development	Pre-Feasibility Study completed. The City decided to proceed further with the project development.	Private
6	Serbia	Valjevo	Heat pump (Waste water Treatment Facility - WWTF) + Extension and New connections to DH system + Buildings Energy Efficiency	Pre-Feasibility under development.	Public
7	Serbia	Sabac	Heat pump utilising the heat from the waste water treatment facility (WWTF)	Contracting the consultants for the pre-feasibility study	Private
8	Serbia	Nis	Phase 1 Solar thermal* + Buildings Energy Efficiency **	Expression of interest received. Mandate letter-signing phase.	Private* Public**
			Phase 2 Geothermal + Biomass + DH Energy Efficiency	Concept development phase.	Public
9	Serbia	Zrenjanin	Solar thermal* + Buildings Energy Efficiency **	Expression of interest received.	Private* Public**
10	Bosnia & Hercegovina	Sarajevo	Heat pump utilising geothermal heat - Energy efficiency in DH plant	Expression of interest received.	Public
11	Bosnia & Hercegovina	Banja Luka	DH Network refurbishment + Industrial waste heat	Expression of interest received.	Public
12	Serbia	Belgrade	Solar thermal* + Energy Efficiency in DH plants and Buildings Energy Efficiency **	Preparation of the Memorandum of Understanding. Joining efforts with UN Environment.	Private* Public**

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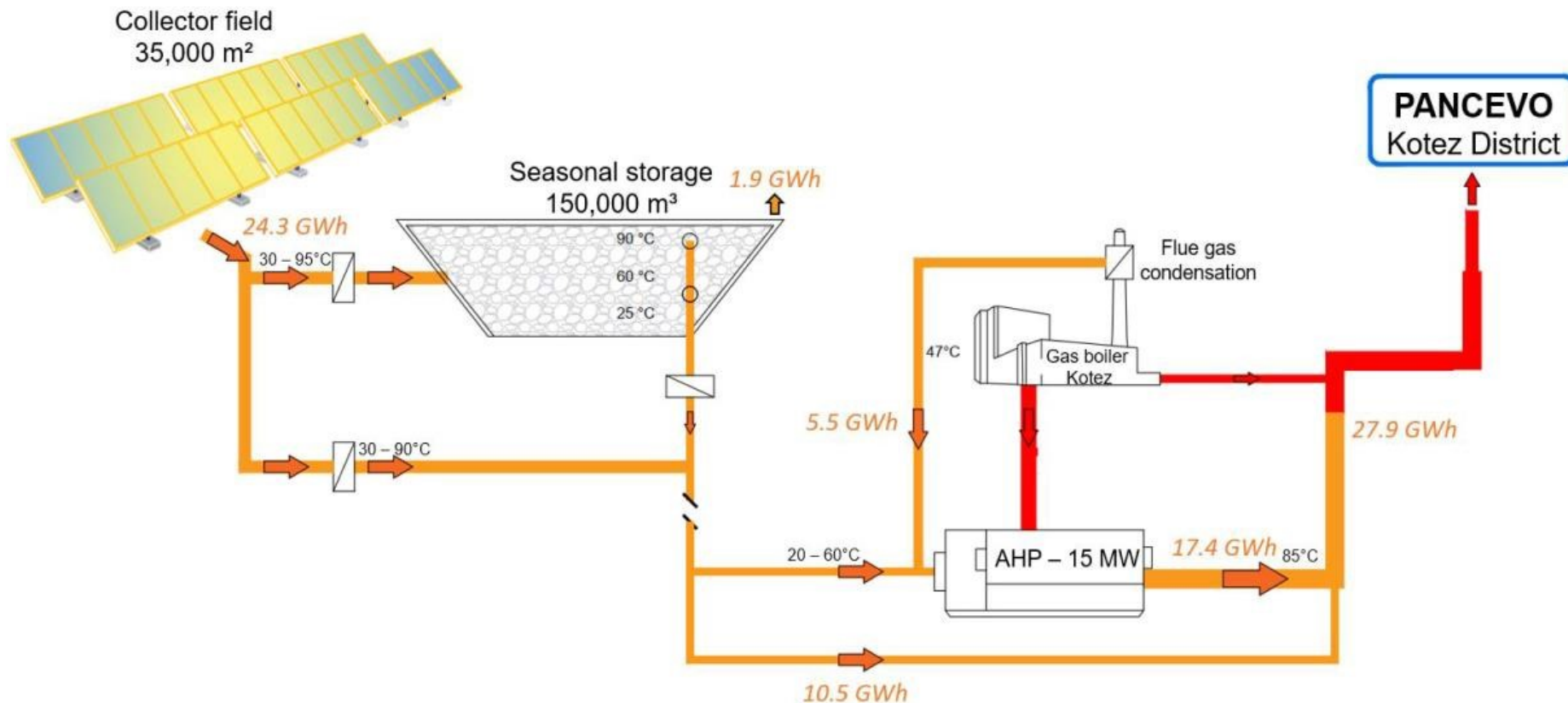
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# Pancevo Solar Thermal District Heating Project Serbia



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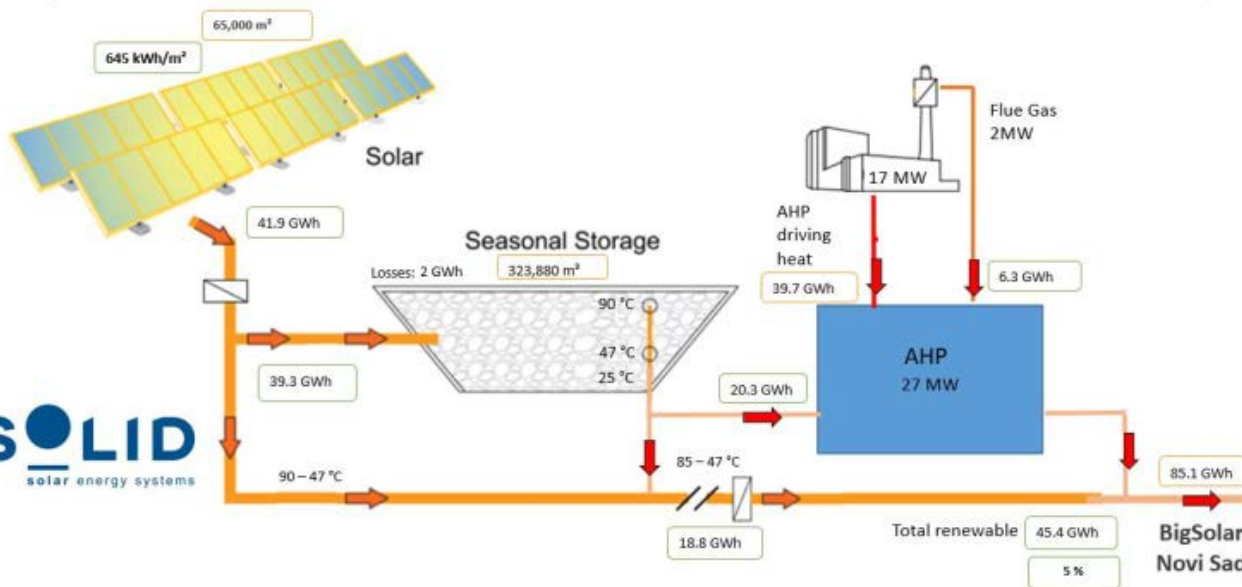
■ Solar heat via HP	3,858.4	2,136.2	1,776.8	1,036.5	20.9	0.0	0.0	0.0	0.0	0.0	0.0	3,117.3
■ Solar heat - direct	0	0	0	0	449	534	528	446	576	5,086	2,838	0
Natural Gas	13,150	10,537	7,260	3,819	51	0	0	0	0	0	8,166	12,460
Gas per day currently	596	494	318	176	17	18	17	14	19	164	397	547
Gas per day BigSolar+ Flue gas	424.2	376.3	234.2	127.3	1.6	0.0	0.0	0.0	0.0	0.0	272.2	401.9

Month

# Novi Sad Solar Thermal District Heating Project Serbia



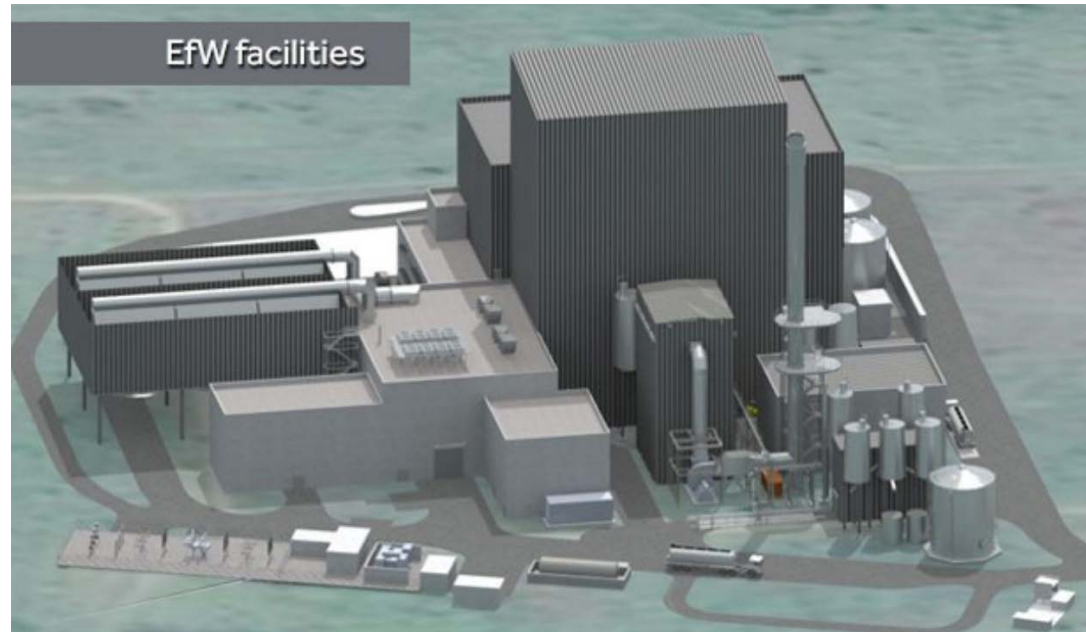
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# EFW Project “Vinca” Serbia

EBRD Finance € 78 million

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## Main project parameters:

Heat production: 56MW

Electricity production: 20.9 MW

Heat to be delivered: more than 200 GWh

Reliable baseload heat for Belgrade district heating system

# The price of thermal energy from fossil fuels and renewable sources in district heating

Indicative prices for heat energy including all life-cycle costs:

## Fossil fuel:

- Natural gas - boiler – 45 €/MWh

## Renewable sources of thermal energy:

- Solar thermal – between 22 and 33 €/MWh.
  - After the repayment of the investment - 2 €/MWh
- Heat pumps (without a high temperature geothermal) - between 30 and 35 €/MWh
- Heat from the waste incinerator – up to 30 €/MWh
- Biomass – 30 - 35 €/MWh
- Geothermal energy - depends on temperature, yield and distance.
- Waste heat (data centers, industry, refineries ...) - ????

# Banja Luka Biomass Project

## Bosnia and Hercegovina



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EBRD Finance	<b>€ 8.35 million</b>
GHG Reduced	<b>45,750</b> tonnes of CO <sub>2</sub> eq / yr

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Supporting the City of Banja Luka for the purchase of an equity stake in a new district heating Company 'Eko Toplane'.

- New 49 MW biomass boiler plant replacing heavy fuel oil based capacity
- Green City Action Plan preparation
- City adopted a new tariff structure





# In Conclusion



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The Bank will continue to support technical innovation in the sector and enhanced private sector participation across the EC countries.

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



# Questions



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