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# EBRD and ReDEWeB Fund - Support for the Decarbonisation of the District Energy

Clean Energy for People

June 2022

# What 2021 has brought new in the field of renewable sources in district heating and cooling?

What kind of institutional and financial support is needed?

Can we change the share of renewable energy sources in district heating and cooling?

Can we reduce air pollution and CO<sub>2</sub> emissions by improving the operation of district heating systems

Can district energy sector be a pillar of energy security in WeB?

Is the recent gas/oil price increase opportunity or threat?

Do we have grounds to be optimistic?

# Sofia Declaration on the Green Agenda for the Western Balkans



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- It was signed on November 10<sup>th</sup> 2020 by the countries of the Western Balkans

- It is based on 5 pillars:

- Climate, energy, mobility

- Circular economy

- Depollution

- Sustainable agriculture and food production

- Biodiversity

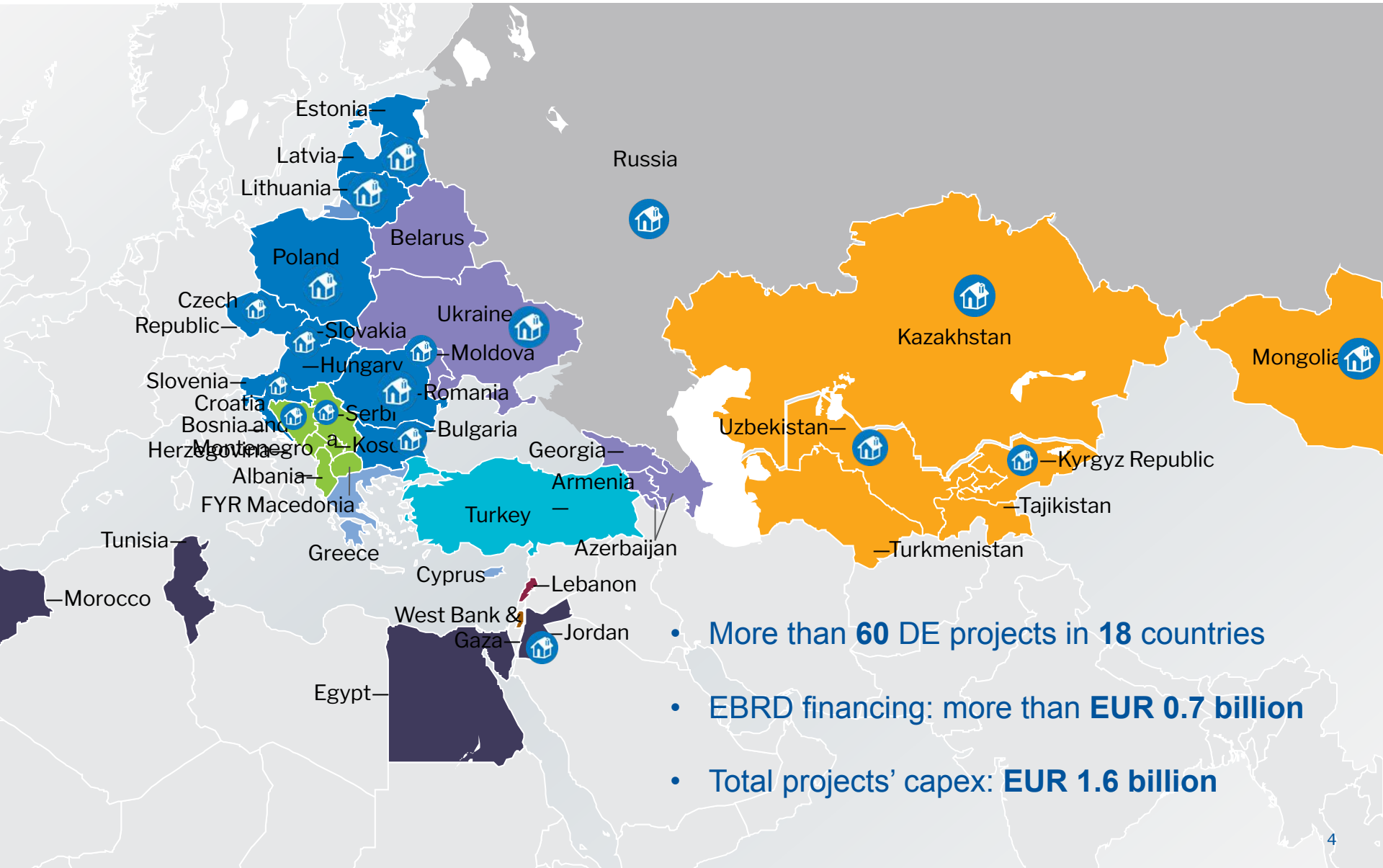
- The main aims are harmonization with the EU Climate Law, setting energy and climate goals by 2030 in accordance with the framework of the Energy Community and the EU acquis, development and implementation of integrated energy and climate plans, harmonization with the EU Emissions Trading Scheme, to review and revise, as appropriate, all relevant laws to support the progressive decarbonisation of the energy sector and ensure their full implementation, in particular through the Energy Community, increasing the share of renewable energy sources and providing investment conditions, in line with the EU and Energy Community acquis etc.

The European Union grants in the amount of 9 billion euros for the Western Balkans are intended to support the realization of the goals

# 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**

## Electrical power system (EPS)

Installed power: 7.3 GW

Energy generated: 36,000  
GWh/year

Renewable energy share: >32%

## District heating system

Installed power: 6.6 GW

Energy generated: 7,000 GWh

Renewable energy share : 0.8%

Extension of District heating systems and renewable and waste energy share should enable:

- decreasing excessive electricity consumption and peak power generated by the consumers who use electricity for heating (in inefficient way), which then helps decreasing coal fired thermal plants utilisation;
- reducing air pollution from shutting down inefficient boiler-houses and individual stoves (PM10, PM2.5, NO<sub>x</sub>, SO<sub>2</sub>, soot);
- reducing CO<sub>2</sub> emissions;
- increasing comfort conditions,
- delivery of renewable and waste energy where it is otherwise difficult (dense urban city areas).

1. Insufficient conversation about RES in district heating;
  2. Insufficient thought to increase the share of RES in the fuel mix;
  3. No efficient supporting mechanisms for RES;
  4. Limited application of integrated planning for RES city infrastructure;
  5. There are many prejudices about the RES;
  6. Montenegro and Albania do not have any district heating / cooling system;
  7. Limited awareness about technology applications and their multiple benefits and savings.
- **What is ReDEWeB and how can it help?**

# Renewable District Energy in the Western Balkans (ReDEWeB)



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## PROGRAMME DESCRIPTION

- ReDEWeB aims to enable renewable district energy investment in the Western Balkans
- **EUR 4 m funds available for 2019-2022, for both technical assistance and investment grants, funded by the Government of Austria**
- **Additional EUR 8.5m funded by SECO, to be utilised in Serbia for CAPEX grants, policy and TC work**

## TYPE OF SUPPORT PROVIDED

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

## GEOGRAPHY

- All WB countries



## TARGET ACTIVITIES

TA component will support four areas of activity:

- I. National policy activities** developed in close cooperation with Energy Community Secretariat - ECS (supporting development of country Renewable District Energy action plans, supporting countries to meet their RE and EE targets from Energy Community Treaty)
- II. City policy activities** (integrating ReDE sources, generation and storage into municipalities' urban planning, introducing ReDE generation and EE measures for selected cities, advocating consumption based billing, etc.)
- III. Project preparation support to cities and developers** (mapping of DE consumption in selected municipalities, mapping of economically feasible RE sources, preparation of Feasibility studies, designs and PPP proposals for ReDE, etc.)
- IV. Capacity building** (education, networking and knowledge sharing; establishing a network of ReDE professionals; organising annual ReDEWeB conferences)
- V. Capex grants for selected projects**

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



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

### Fossil fuel:

- Natural gas or heavy oil - boiler- (between  $\frac{7}{0}$  and  $\frac{20}{0}$  €/MWh) ?

### Renewable sources of thermal energy:

- Solar thermal – between 35 and 45 €/MWh.
  - After the repayment of the investment - 2 €/MWh
- Heat pumps (without a high temperature geothermal) - between 30 and 45 €/MWh
- Solid waste to energy – up to 30 €/MWh
- Biomass – 40 - 45 €/MWh
- Geothermal energy - depends on temperature, yield and distance.
- Waste heat (data centers, industry, refineries ...) – depends on conditions



# Projects and technologies 1/2



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No	City	Technology used	Partners
1	Pančevo (Serbia)	Solar thermal with seasonal storage and geothermal energy with heat pump	ReDEWeB & ReDE Serbia with MoME
2	Novi Sad (Serbia)	Solar thermal with seasonal storage and heat pumps that use heat from sewage and the River Danube	ReDEWeB with local self-government
3	Valjevo (Serbia)	Heat pump that uses heat from the Wastewater Treatment plant	ReDEWeB & ReDE Serbia with MoME
4	Sabac (Serbia)	Heat pump that uses heat from the Wastewater Treatment plant	ReDEWeB & ReDE Serbia with MoME
5	Krusevac (Serbia)	Heat pump that uses heat from the Wastewater Treatment plant	ReDEWeB & ReDE Serbia with MoME
6	Kraljevo (Serbia)	Heat pump that uses waste heat from flue gases	ReDEWeB & ReDE Serbia with MoME
7	Kragujevac (Serbia)	Heat pump that uses waste heat generated by the servers of the Data Center in Kragujevac	ReDEWeB & ReDE Serbia with MoME
8	Nis (Serbia)	Solar thermal and heat pumps that use low temperature groundwater Construction of deep geothermal wells	ReDEWeB & ReDE Serbia with MoME
9	Bogatic (Serbia)	High-temperature geothermal energy	ReDEWeB & ReDE Serbia with MoME
10	Paraćin (Serbia)	Heat pump that uses geothermal water to start reusing district heating system that is out of operation	ReDEWeB & ReDE Serbia with MoME
11	Zrenjanin (Serbia)	Solar thermal with seasonal storage and coordination with EPS related to biomass cogeneration	ReDEWeB & ReDE Serbia with MoME
12	Priština (Kosovo*)	Solar thermal with seasonal storage	Cooperation with KfW and ReDEWeB

# Projects and technologies 2/2

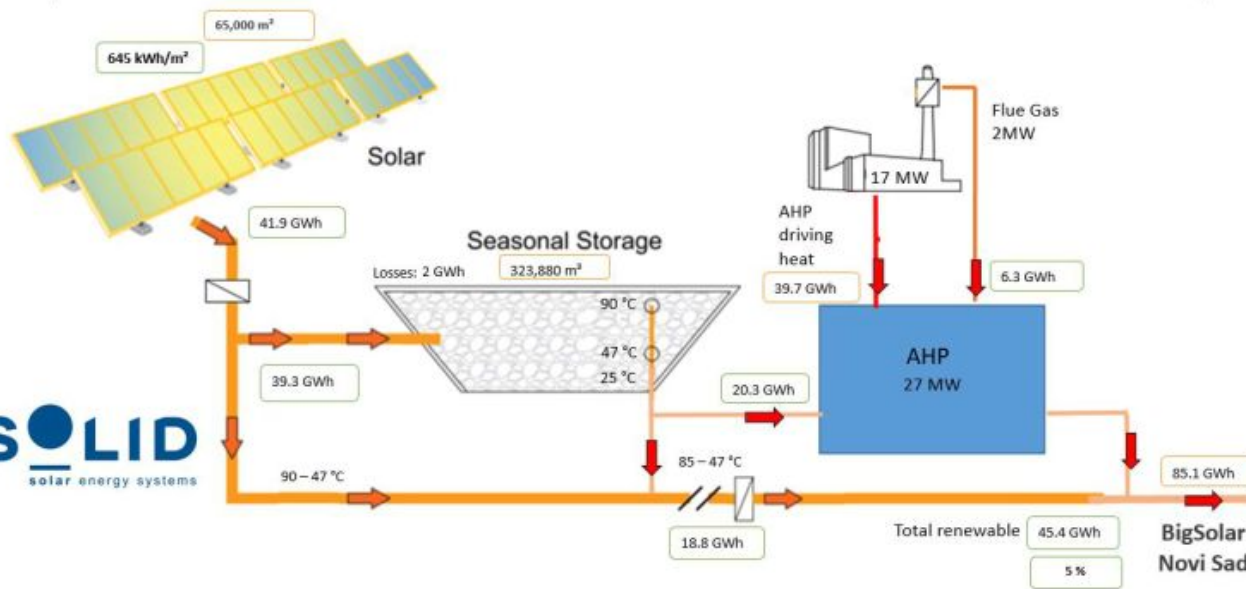
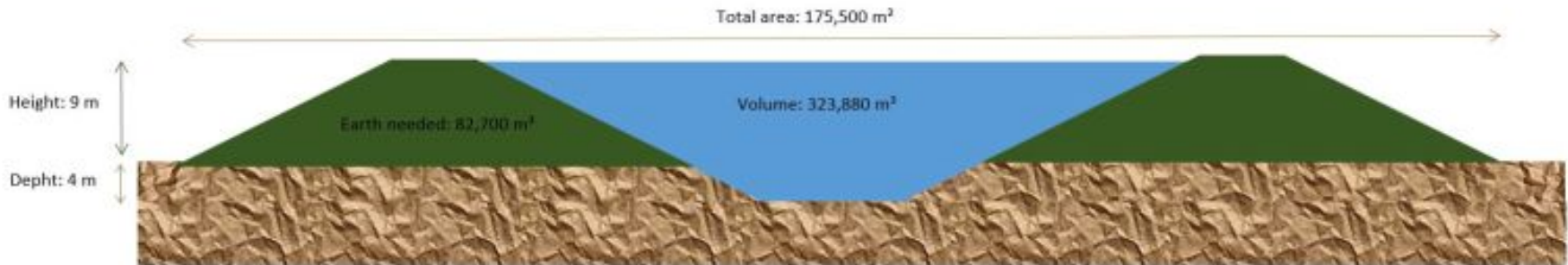


No	City	Technology used	Partners
13	Sarajevo (B&H)	Heat pumps that use geothermal water, sewage system and river water	ReDEWeB with local self-government
14	Banja Luka (B&H)	Heat pumps that use industrial waste heat	ReDEWeB with local self-government
15	Gradiska (B&H)	Biomass	ReDEWeB with local self-government
16	Zenica (B&H)	Solar thermal with seasonal storage and heat pumps using sewage system	ReDEWeB with local self-government
17	Zabljak (Montenegro)	Biomass and the establishment of a new District Heating System	ReDEWeB with local self-government
18	Korca (Albania)	Solar thermal with seasonal storage and heat pump using sewage systems and the establishment of a new District Heating System	ReDEWeB with Ministry of Infrastructure and Energy and local self-government

# Novi Sad Solar Thermal District Heating Project Serbia



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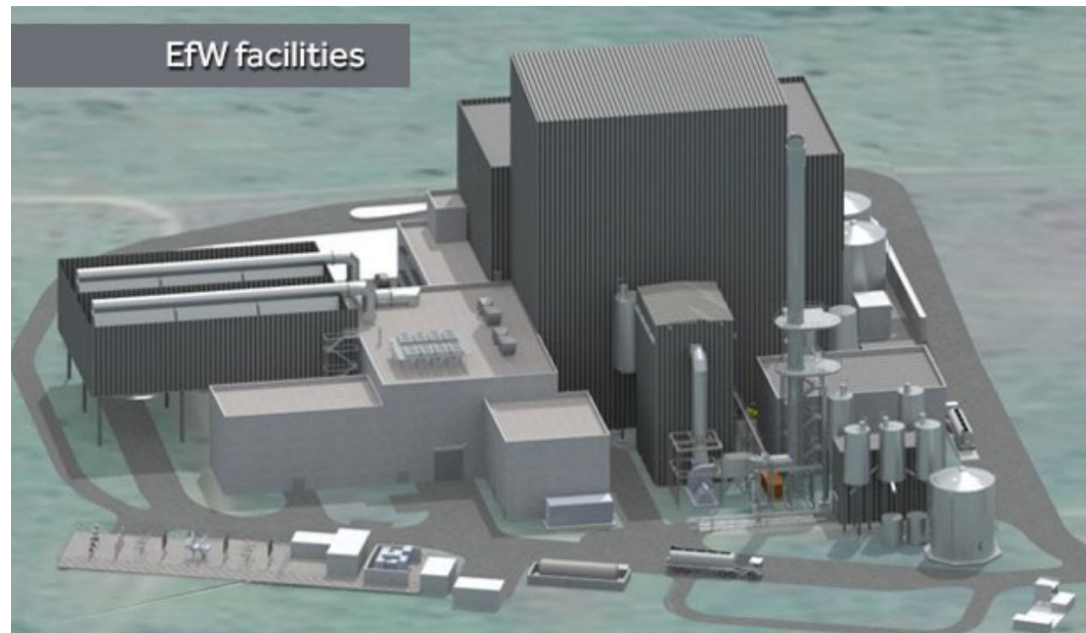
# EFW Project “Vinca” Serbia



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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

# Banja Luka Biomass Project

## Bosnia and Hercegovina



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EBRD Finance	€ 8.35 million
GHG Reduced	45,750 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

**Yes, we have the grounds to be optimistic and should prioritize affordable decarbonisation of the sector !!!**



# Questions



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