ReDEWeB Fund - New Support for Renewable Energy Sources in the Western Balkans District Energy Systems

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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 35 €/MWh.
  - After the repayment of the investment - 2 €/MWh
- Heat from the waste incinerator – up to 30 €/MWh
- Biomass – 30 - 35 €/MWh
- Geothermal energy - depends on temperature, yield and distance.
- Heat pumps (without a high temperature geothermal) - between 30 and 40 €/MWh
- Waste heat (data centers, industry, refineries ...) - ????
What is the ReDEWeB?

- **Renewable District Energy in the Western Balkans**

- ReDEWeB Programme aims to support the establishment of a market for ReDE investment through a range of measures

- **Renewable sources:**
  - Biomass
  - Biogas
  - Geothermal
  - Solar thermal
  - Heat pumps
  - Waste heat

- **DE:** District Heating (DH) & District Cooling (DC)

- Beneficiaries are **WeB** countries:
  - Albania, BiH, Macedonia,
  - Kosovo, Montenegro, Serbia.
Existing Barriers in the WeB

1. Lack of knowledge and insufficient conversation about RES in district heating;

2. The goal of increasing the share of RES in the DE systems fuel mix, usually is not a part of DE companies strategy goals;

3. Limited application of integrated urban planning for RES city infrastructure;

4. RES in DE are not sufficiently financially supported and subsidized;

4. There are many prejudices about the RES;

5. Montenegro and Albania do not have any district heating / cooling system;

6. Limited awareness about technology applications and their multiple benefits and savings.

- How the ReDEWeB can help?
Situation in WB

- Major WB municipalities mostly have a long tradition of DH (with exception of Albania and Montenegro). DH systems mainly fuelled with gas, fuel oil or coal.
- Only 12% of commercial and residential buildings in WB use DH.
- DC non-existent in any of the WB countries; cooling provided at an individual building level from electric chillers (electricity mainly generated from fossil fuels).
- H&C is the biggest energy end-use sector, ahead of transport, constituting more than half of overall energy consumption.
- There is potential in WB for improving existing and constructing new DE systems by introducing renewables sources.
Heating and cooling in the EU is still heavily dependent on fossil fuels (75%), with a more modest but growing share of renewable energy (18%).

A new **EU Strategy on Heating and Cooling** adopted in 2016 (part of the sustainable energy security package) calls for a stronger integration of renewable energy sources in DE systems.

The strategy gives an indication on how the H&C sector should be adapted in order to improve energy efficiency, promote renewable energy sources and combat climate change.

Efficient DE systems can play a key role in achieving the EU’s energy objectives, ultimately leading to increase of the EU’s security of energy supply.
EBRD and ReDEWeB

- EBRD launched the Green Economy Transition (GET) approach in 2015 to put investments that bring environmental benefits at the heart of our mandate.

- GET approach seeks to increase the volume of green financing from an average of 24% of EBRD annual business investment during 2006-2016 to 40% by 2020.

- EBRD partnered with the Government of Austria in setting up ReDEWeB.

- Key objectives:
  - Support both public and private stakeholders to deliver sustainable investments into ReDE;
  - Assist WB countries in reaching their obligations from EC Treaty and advancing in readiness to negotiate Chapter 27;
  - Support private companies in preparing renewable H&C projects for their own use (industrial parks, shopping malls, airports, etc).
ReDEWeB work areas – How to overcame barriers!

- Fund budget and timeline: EUR 4 million to be utilised 2019-2022
- Both technical assistance (TA) and investment grants
- Investment grants available to finance or co-finance eligible projects
- 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 ReDE action plans, supporting countries to meet their RE and EE targets from Energy Community Treaty, etc.);

  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. Small capex grants for selected projects.
## Project preparation support to cities and developers – brainstorming phase

<table>
<thead>
<tr>
<th>Country</th>
<th>City</th>
<th>Technology</th>
<th>Project description</th>
<th>Project preparation phase</th>
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</thead>
<tbody>
<tr>
<td>Serbia</td>
<td>Pancevo</td>
<td>Solar thermal</td>
<td>Available land - 10.7 hectares + old landfill + Biogas from old landfill</td>
<td>Expression of interest form signed and submitted by DH Company</td>
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<td><strong>Ongoing development of the Pre-feasibility study</strong></td>
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<tr>
<td></td>
<td>Bor</td>
<td>Solar thermal</td>
<td>Big solar thermal plant at location of old sludge basin within copper mine and adjacent to existing coal thermal DH plant</td>
<td>PUC - will send Expression of Interest form for the Big solar thermal project</td>
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<td></td>
<td>Novi Sad</td>
<td>Solar thermal</td>
<td>Land in near proximity to the existing CHP plant</td>
<td>PUC - will send Expression of Interest form for the Big solar thermal project</td>
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<td></td>
<td>Belgrade</td>
<td>Solar thermal</td>
<td>Cerak and Batajnica locations</td>
<td>Coordination with UNEP to jointly develop study for solar thermal within District Energy in Cities Programme</td>
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<tr>
<td></td>
<td>Nis</td>
<td>Biomass, heat pumps and geothermal</td>
<td>Work on concept</td>
<td>Work on concept</td>
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<tr>
<td></td>
<td></td>
<td>Energy efficiency in heating plants</td>
<td>Economisers + other EE measures</td>
<td>Work on concept</td>
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<td></td>
<td>Sabac</td>
<td>Heat pump using Waste water treatment facility as a source</td>
<td>BMW heat pump utilising the heat form the existing waste water treatment facility</td>
<td>Work on concept</td>
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<tr>
<td></td>
<td>Subotica</td>
<td>Heat pump using Waste water treatment facility as a source</td>
<td>Work on concept</td>
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<td>Bosnia and Hercegovina</td>
<td>Sarajevo</td>
<td>Geothermal borehole + Heat pump</td>
<td>Ilidza geothermal energy use in existing DH system. 58C - underground water.</td>
<td>Work on concept</td>
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<td>Support for the DH network extension and shutting down boiler houses</td>
<td>Work on concept</td>
<td>Work on concept</td>
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<td></td>
<td>Tuzla</td>
<td>Renewable energy from heat pumps using excessive heat from condensation part of Thermal power plant</td>
<td>Work on concept</td>
<td>Work on concept</td>
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<td></td>
<td></td>
<td>Biomass woodchips boiler</td>
<td>Work on concept</td>
<td>Work on concept</td>
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<td></td>
<td></td>
<td>Solar thermal</td>
<td>plants at 2 locations within the city</td>
<td>Work on concept</td>
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<tr>
<td></td>
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<td>Big solar thermal plant at location of old sludge basin from coal power plan</td>
<td>Big solar thermal plant at location of old sludge basin from coal power plan</td>
<td>Work on concept</td>
</tr>
<tr>
<td></td>
<td>Zenica</td>
<td>Exploring potential for 20 - 25 MW RES + modernisation + EFW project initiated by the City</td>
<td>Energy from waste EFW - project PUC Company expressed necessity to develop 20 - 25 MW of RES heat source, to extend network and connect additional customers, but also to modernise existing substations / increase their efficiency</td>
<td>Will be disused and supported by GCAP procedure</td>
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<td>Doboj</td>
<td>Biomass or heat pumps Substation modernisation Frequency control for pumps</td>
<td>Replacing the use of the coal with RES technologies</td>
<td>Existing feasibility study analysis</td>
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<td>Kosovo</td>
<td>Pristina</td>
<td>Solar thermal</td>
<td>Big solar thermal plant at location of old sludge basin from coal power plant - development of solar thermal and new DH network.</td>
<td>Ongoing feasibility study elaborating together with KfW</td>
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<td></td>
<td>Djakova</td>
<td>Solar thermal</td>
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<td>North Macedonia</td>
<td>Skopje</td>
<td>Absorption heat pump 22MW at existing CHP</td>
<td>Increasing of energy efficiency of existing CHP and introducing RES</td>
<td>Work on concept</td>
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<tr>
<td>Montenegro</td>
<td>Zabljak</td>
<td>Biomass</td>
<td>Biomass boiler Greenfield DH - Development of network</td>
<td>Pre-feasibility</td>
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<tr>
<td></td>
<td>Kolasin</td>
<td>Biomass</td>
<td>Biomass boiler Greenfield DH - Development of network</td>
<td>Work on concept</td>
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<tr>
<td>Albania</td>
<td>Albania Context</td>
<td></td>
<td>Albania Context - There are no District heating systems in Albania. Outdoor temperatures during the heating season are relatively high. Geothermal potential for heating and solar thermal potential for heating + cooling + domestic hot water preparation should be explored</td>
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Policy work and capacity building

- **Policy support:**
  - National - Guidelines for the DE sector (in coordination with ECS);
  - City level - Guidelines for standardization of regulation on the City level for all cities (rulebooks on: supplied energy cost allocation, rules of the system operation, rules for disconnection of customers, etc.).

- **Capacity building:**
  - Establishment of the WeBNADEC specialized conference for ReDE;
  - Workshop in Montenegro – how to develop a greenfield DE system;
  - Spiking on conferences, panels and workshops;
Why Solar Thermal District Heating in the WeB?

- WeB is one of the southernmost reigns with a large district heating system and delivery of DHW.
- The low temperature network in systems (average return temperature usually approximately 45°C) is extremely convenient.
- Installation on the ground is 30% cheaper than on roofs.
- The only realistic solution for collective residential buildings.
- Analyzes have shown that it is economically viable.
- WeB has 30% more insolation than Denmark.
- Value of investment in construction is lower than in Denmark.
- Maintenance costs are lower than in Denmark.
- Over 100 such plants have already been built in Denmark.
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| Municipal and Environmental Infrastructure           |                                           |