



Fifth
ENERGY SUMMIT
in Bosnia and Herzegovina



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UNDER THE AUSPICES OF



Ministry of Foreign Trade and
Economic Relations of BiH



State Electricity Regulatory
Commission



Regulatory Commission for
Energy of RS



Regulatory Commission for
Energy in FBiH

VITEZ AND TESLIĆ DISTRICT HEATING PROJECTS

Financier: **EBRD**

Client: **Municipality of Vitez and Municipality of Teslić**

Consultant: **CMS, CETEOR i GreenMax**

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Regional Energy Efficiency Programme

The project of district heating systems in the municipalities of Vitez and Teslić is part of the broader initiative by the European Bank for Reconstruction and Development – EBRD on energy sustainability of the Western Balkans, which is implemented through the Regional Energy Efficiency Programme - REEP, with focus on public sector by providing support for the preparation of the ESCO projects, and financed by the EU Western Balkans Investment Framework - WBIF.

The EBRD supports energy efficiency projects in the public sector through the following:

- **Policy dialogue;**
- **Technical assistance;**
- **Financing instruments and grant elements.**

About project

Recognizing the importance and benefits that **district heating projects** would bring to their municipalities, representatives of the municipalities of Vitez and Teslić contacted the EBRD with request for a technical assistance in preparation of documents, relevant for the implementation of district heating projects as a **Public Private Partnership (PPP)** model.

After preliminary analysis and assessments that showed a significant improvement in quality of life and work of residents, in case of district heating projects implementation in the municipalities of Vitez and Teslić, the EBRD has decided to support both projects through:



Project objectives

Solving problems caused by the existing heating methods (individual heating systems on firewood, coal, heating oil, ...), which will have the following objectives:

- Provide thermal comfort;
- Security of heating supply;
- Increase indoor air quality - IAQ;
- Increase the safety of buildings;
- Affordability of district heating for residents;
- Reducing air pollution;
- Use of renewable energy sources;
- Release of occupied public/green areas.

Analysis of heat demand in urban area of Vitez municipality



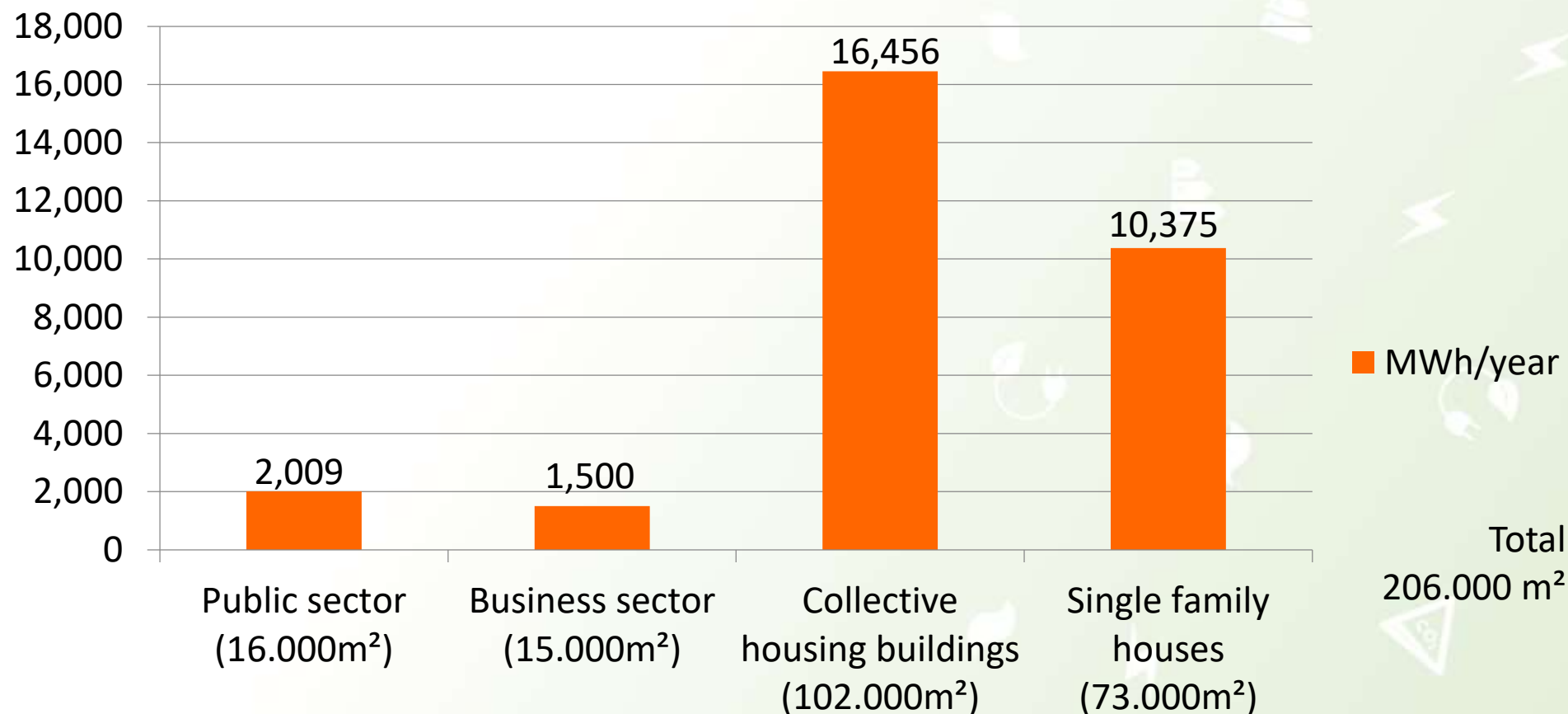
Vitez municipality

Vitez Municipality - FBiH, BiH



Analysis showed that in urban area of Vitez (cca 0,7 km²) total heat demand is **30.340 MWh/year**, and designed capacity of boilers should be up to 20 MW

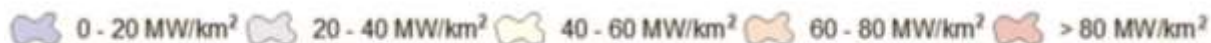
Analysis of heat demand in urban area of Vitez municipality



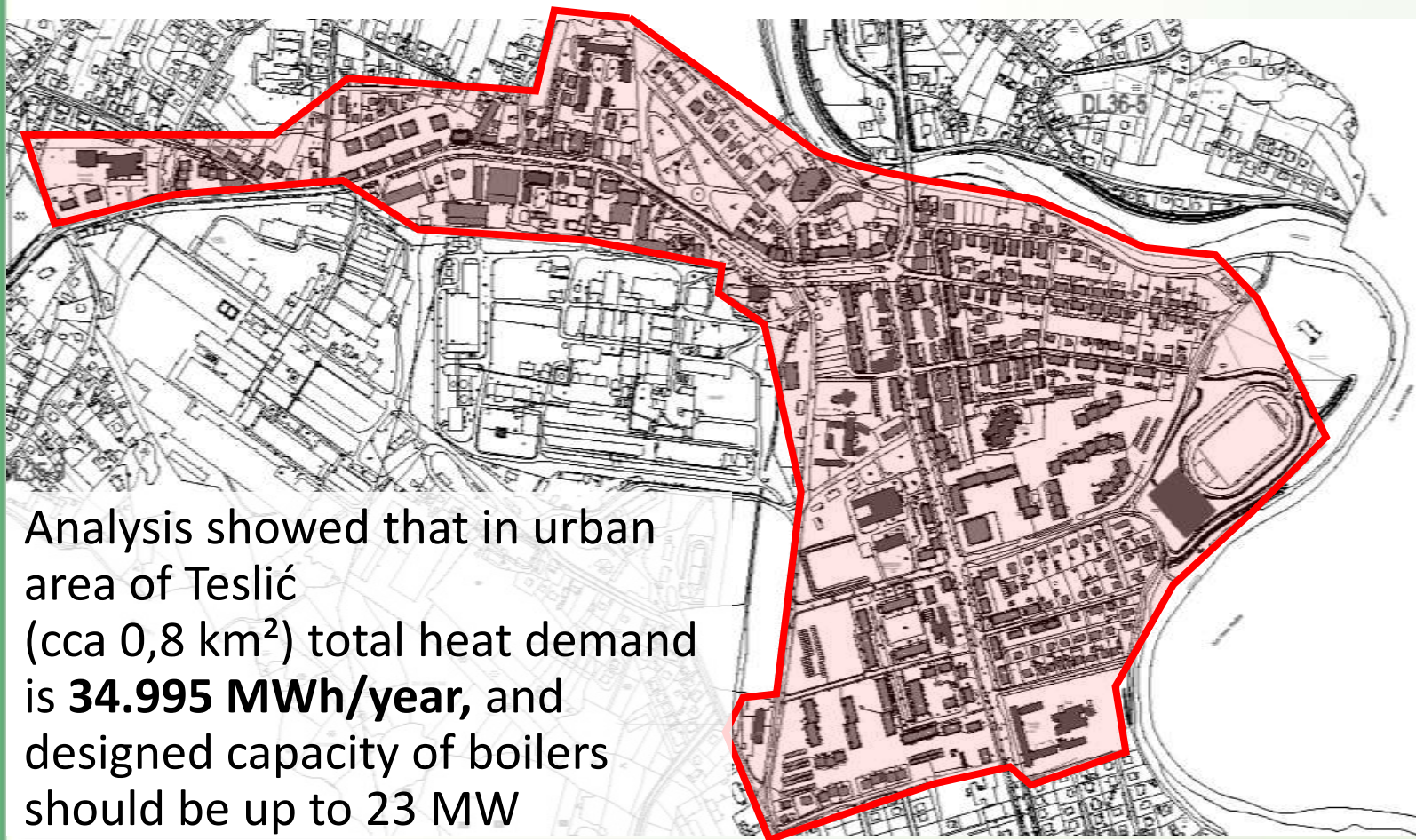
Map of heat demand density in urban area of Vitez municipality



LEGEND
MW/km²



Analysis of heat demand in urban area of Teslić municipality



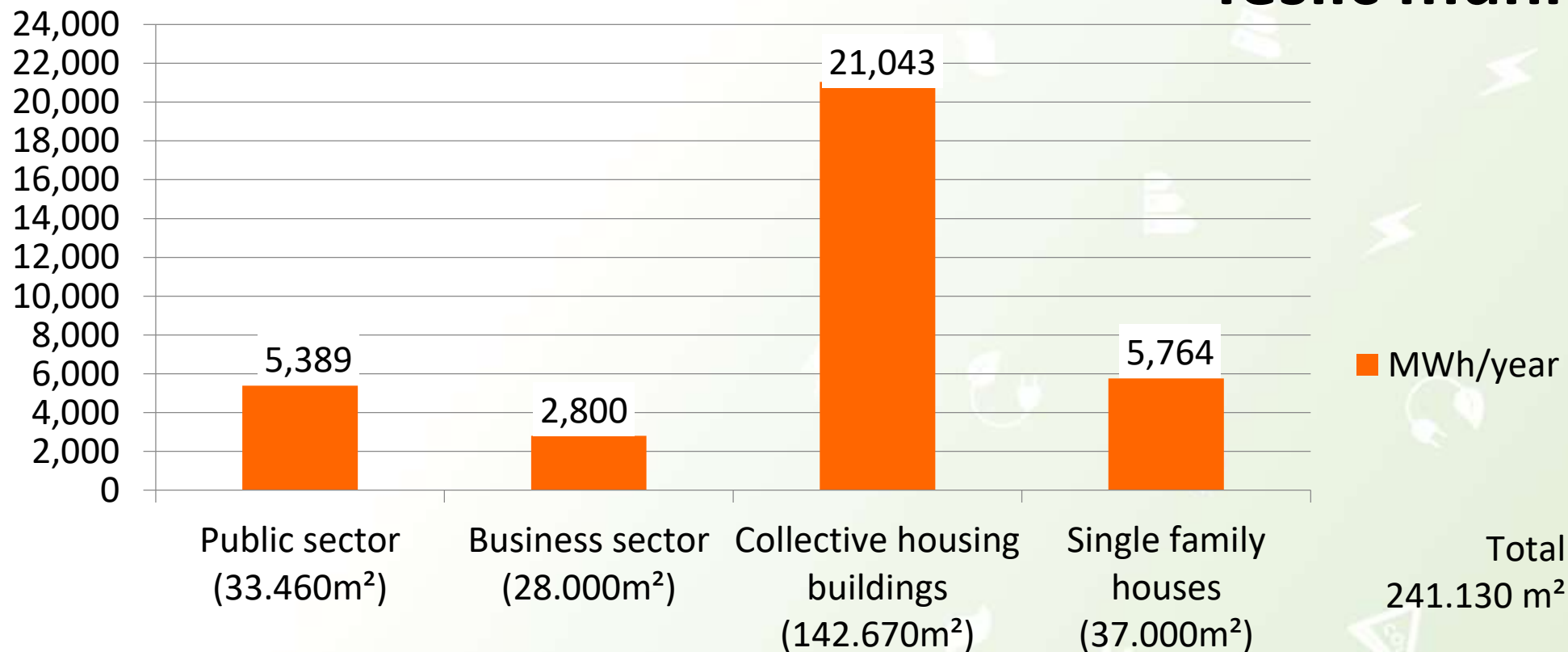
Teslić Municipality - RS, BiH

Teslić Municipality - RS, BiH

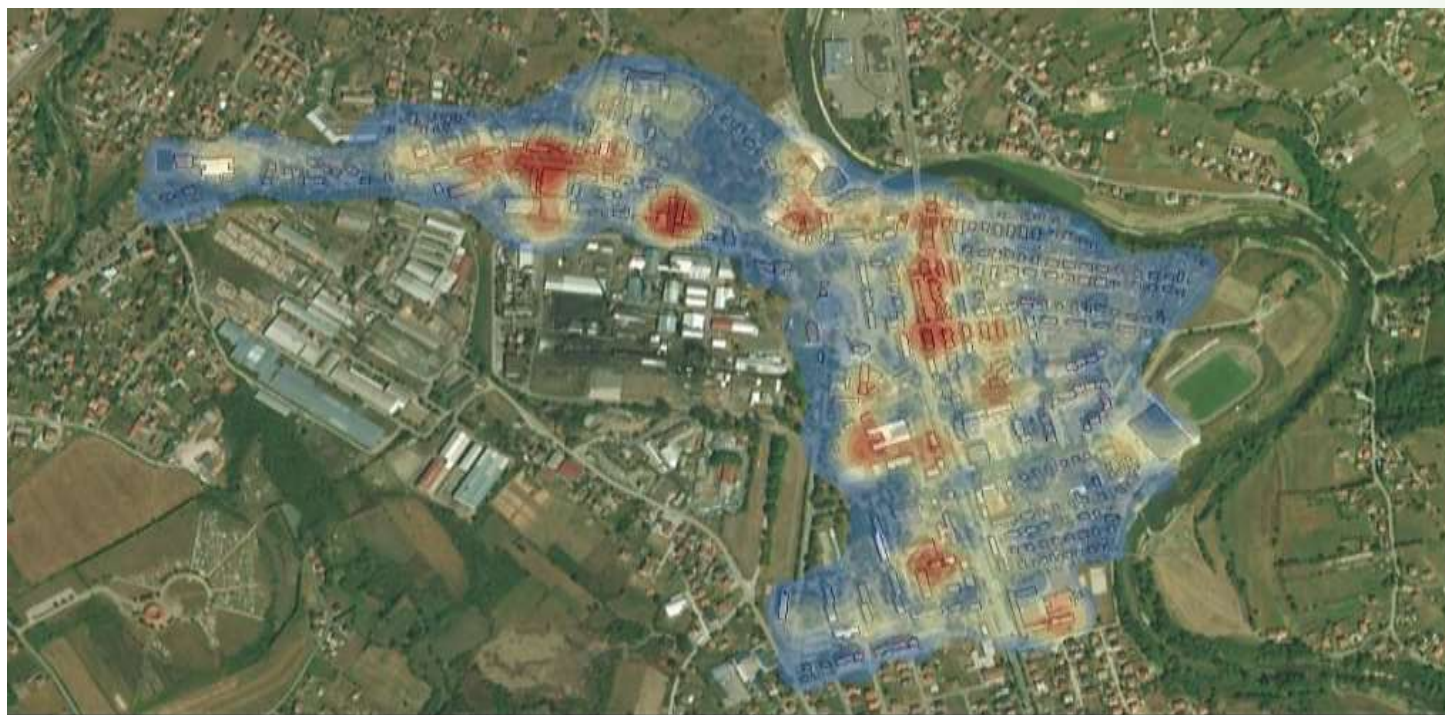


Analysis showed that in urban
area of Teslić
(cca 0,8 km²) total heat demand
is **34.995 MWh/year**, and
designed capacity of boilers
should be up to 23 MW

Analysis of heat demand in urban area of Teslić municipality



Map of heat demand density in urban area of Teslić municipality



Survey on interest of potential users in connecting to district heating

Vitez Municipality - FBiH, BiH

- **94 %** respondents of collective housing expressed interest in connecting to district heating system
- **85 %** respondents of single family houses expressed interest in connecting to district heating system
- **95 %** respondents of business sector expressed interest in connecting to district heating system

Teslić Municipality - RS, BiH

- **87 %** respondents of collective housing expressed interest in connecting to district heating system
- **81 %** respondents of single family houses expressed interest in connecting to district heating system
- **94 %** respondents of business sector expressed interest in connecting to district heating system

Financial analysis - Scenario 1 and Scenario 2

Within the estimation of heat demand and development of district heating systems in the urban area of municipalities Vitez and Teslić, the financial analysis for both cities was conducted on the basis of two scenarios :

- **Scenario 1 (S1)** assumes lower capacity of the plant (boilers) due to implementation of energy efficiency measures (thermal insulation of walls/roofs and replacement of joinery) to min. 50% of buildings in the urban area of the municipality;
- **Scenario 2 (S2)** assumes higher capacity of the plant (boilers) due to higher energy consumption, in case of non-implementation of energy efficiency measures on the buildings.

An overview of district heating scenarios

Vitez municipality

Description		Scenario1 (S1)	Scenario 2 (S2)
Annual heat demand		22.755 MWh/year	30.340 MWh/year
Designed capacity of boilers		15 MWt	20 MWt
Primary fuel		Wood chips	Wood chips
Annual consumption of biomass		9.217 t/year	12.289 t/year
Investment cost	Boiler house	12.300.000 KM	15.700.000 KM
	Network		
	EE measures	6.300.000 KM	-
Total investment		18.600.000 KM	15.700.000 KM
Total operational costs	Fuel costs(wood chips)		
	Labor costs	960.000 KM/year	1.290.000 KM/year
	Total operational costs		
Heat tariff		117 KM/MWh	117 KM/MWh
Estimated income from heat		2.690.000 KM/year	3.590.000 KM/year
Simple Payback Period		10,7 years	6,8 years

An overview of district heating scenarios

Teslić municipality

Description	Scenario 1 (S1)	Scenario 2 (S2)	
Annual heat demand	25,547 MWh/year	34,995 MWh/year	
Designed capacity of boilers	12 MW _t biomass boilers + 5 MW _t fuel oil boilers → 17 MW _t	16 MW _t biomass boilers + 7 MW _t fuel oil boiler → 23 MW _t	
Primary fuel	Wood chips	Wood chips	
Alternative fuel	Fuel oil	Fuel oil	
Annual consumption of biomass	9,586 t/year	12,781 t/year	
Annual consumption of fuel oil	160 t/year	302 t/year	
Investment cost	Boiler house	12.550.000 KM	
	Network	16.600.000 KM	
	EE measures	7.540.000 KM	
Total investment	20.090.000 KM	16.600.000 KM	
Total operational costs	Fuel costs (wood chips + fuel oil)		
	Labor costs	1.300.000 KM/year	1.970.000 KM/year
	Total operational costs		
Heat tariff	117 KM/MWh	117 KM/MWh	
Estimated income from heat	3.000.000 KM/year	4.100.000 KM/year	
Simple Payback Period	11,8 years	7,8 years	

Specific technical aspects of the project

Within the Feasibility Studies of district heating projects in urban area of Vitez and Teslić, the following aspects will be analyzed:

- Development of **fourth (4th) generation district heating network**;
- Application of **efficient cogeneration** in district heating;
- Application of centralized **solar thermal heating** for district heating.

Key issues

The district heating projects in the urban areas of Vitez and Teslić are challenging for these local communities in terms of their preparation and implementation, therefore a high level of engagement of the municipalities is expected at all stages of the project.

The issues that the municipalities will face are the following:

- Implementation of district heating projects as a **PPP model** ;
- Readiness of the municipalities to support DH projects through **co-financing of the capital costs** of district heating construction;
- Adoption of the relevant **regulations in the field of utility services** and their consistent application, with the establishment and expansion of the DH network;
- Issuing the **required permits** under the authority of the municipalities.

Public presentation of projects

Within the public presentations of the district heating projects in Vitez and Teslić, that will be held in May/June 2019, in Vitez and Teslić, to all interested parties will be presented:

- **Feasibility Studies of district heating in urban area of Vitez and Teslić;**
- **Draft contract of PPP** (basic terms of contract, responsibilities of private partner and public partner, ...);
- **Tender procedure and timeline.**



THANK YOU FOR YOUR ATTENTION!

Leonida Hadžimuratović, Head of Energy Department

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