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DIRECTIVE

# Implementing Article 14 in Bulgaria

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20 licenses – 11 GW<sub>th</sub> installed capacity for heat production:

- District heating in 12 major Bulgarian cities provided by private companies;
- Sofia district heating company is serving 70 % of all heat consumers in the country and is municipal;

Other licenses for heat production issued to power plants in the industry sectors – chemical, metallurgy, food, oil and textile;

Most of them are CHP with issued licenses for combined electricity production and purchase of the electricity on feed-in tariffs.

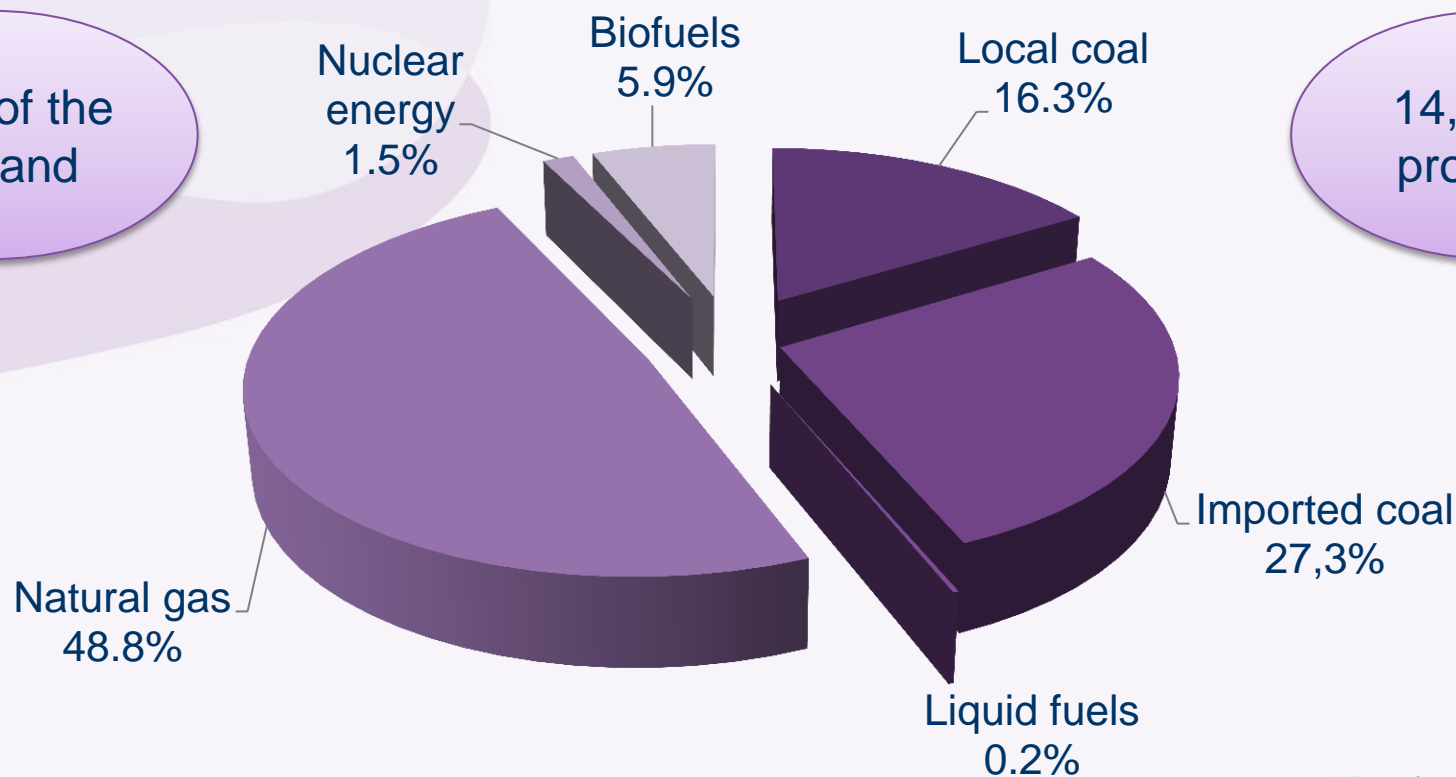
# Heat production



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## Energy sources for heat production in 2015\*

37 % of the demand



14,2 TWh produced

\* Data from Ministry of Energy

# Heat consumption



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## Final Heat Consumption in 2015\*

Housholds  
33.1%



Industry and  
Services  
66.9%

11,7 TWh  
consumed

\* Data from Ministry of Energy

# Support for electricity generation from high-efficiency CHP



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- Obligatory purchase of the entire quantity of electricity generated in high efficiency CHP plants with certificate of origin;
- Preferential prices for the electricity generated in high efficiency CHP plants;
- Priority connection to the grid of the high efficiency CHP plants.



# Requirements for high-efficiency CHP energy generation



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- Efficiency more than 75 %:
  - Steam backpressure turbine;
  - Gas turbine with heat recovery;
  - Internal Combustion engine;
  - Fuel cells.
- Efficiency more than 80 %:
  - Combined cycle;
  - Steam extracting/condensing turbine.

There has not been collected any official data on cooling and air conditioning demand in Bulgaria;

The cooling for large customers is generated almost exclusively by compressors and the significant increase in electricity consumption during the summer months shows that there is an increase in the cooling demand;

Energy demand for cooling of large buildings requires long-term work and is an essential part of the total energy consumption:

- 37 % for large business buildings;
- 38 % for the hotel sector; and
- 56 % for office buildings.

High-efficiency generation of energy for heating and cooling in EVN Bulgaria in Plovdiv

First project in Bulgaria for cooling through the district heating systems

Installation of absorption refrigerator and chillers for cooling with a total capacity of 6 MW, supplying:

- Administrative building of Plovdiv Municipality;
- Trimontium Ramada Hotel;
- A new sports hall;
- A business building.





# Comprehensive Assessment



Estimation of the National technical potential for high-efficiency cogeneration;

Identification of the existing high-efficiency cogeneration capacities;

Estimation of the possibility for replacement of the existing cogeneration capacities with new high-efficiency ones;

Calculation of the technical potential for introduction of new high-efficiency cogenerations replacing the conventional heat producers;

Two different scenarios:

- With the available district heating network;
- With construction of new district heating networks delivering heating to public and residential buildings not connected to district heating.

# Existing capacity for high-efficient cogeneration

Parameter		Value
Total installed capacity for electricity production	GW <sub>e</sub>	13,6
Installed electricity generation capacity of large TPP and CHP	GW <sub>e</sub>	8,6
Installed electricity generation capacity of certified high-efficiency cogeneration plants	GW <sub>e</sub>	0,8



# Expansion in the district heating companies

The potential for production of heat in new cogeneration installations can be achieved primarily through:

1. Transition from separate heat production to high-efficiency cogeneration of electricity and heat;
2. Transition from Rankine steam cycle to cogeneration gas steam cycle
3. Intensification and expansion of existing cogeneration with a potential of waste utilization

The total potential for building high-efficiency cogeneration by 2025:



# National Heat Map 1/3



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Part of the comprehensive assessment is the National Heat Map of the territory of the Republic of Bulgaria made on the basis of the analysis and the gathered information. The National Heat Map consist of data for heat consumption and heat production technologies distributed in the different municipalities.

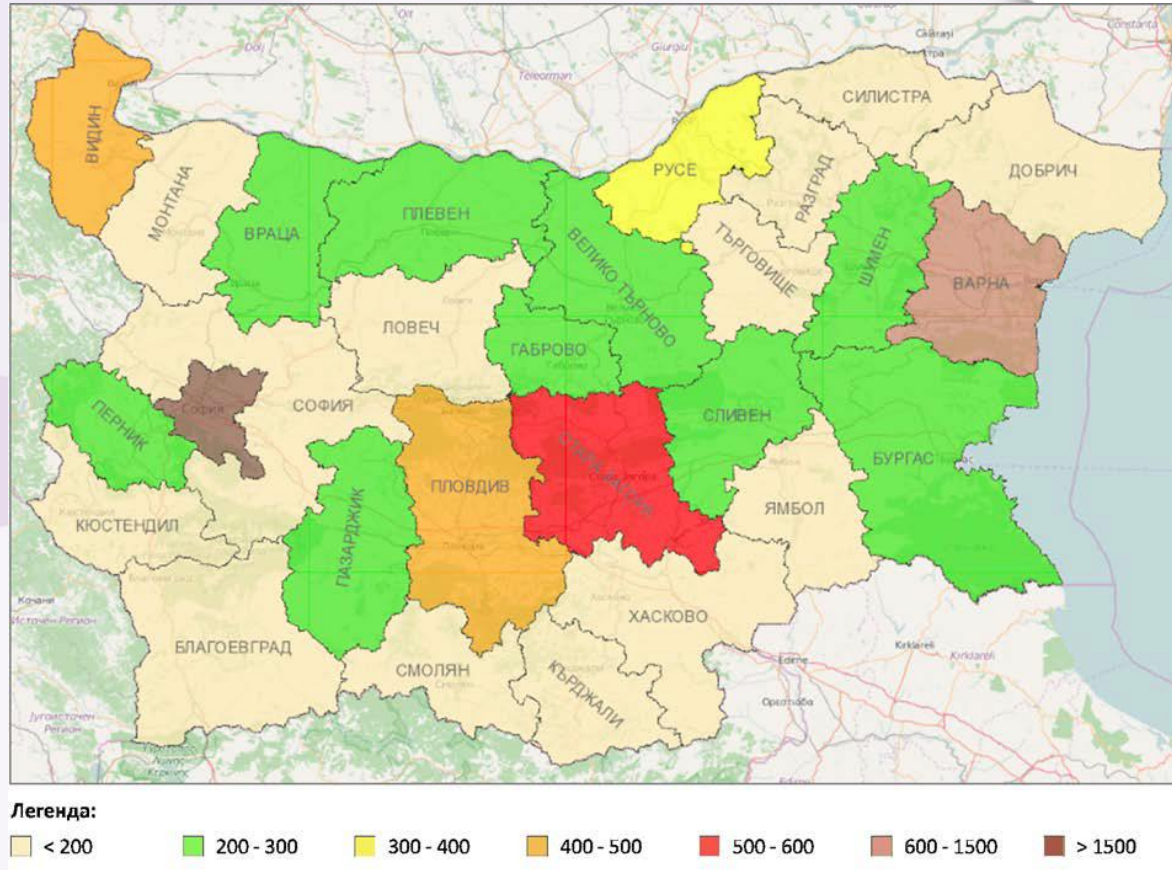
The map can be found on the following address:

<http://maps.trimbul.com/bulgaria-heatmap/>

# National Heat Map 2/3



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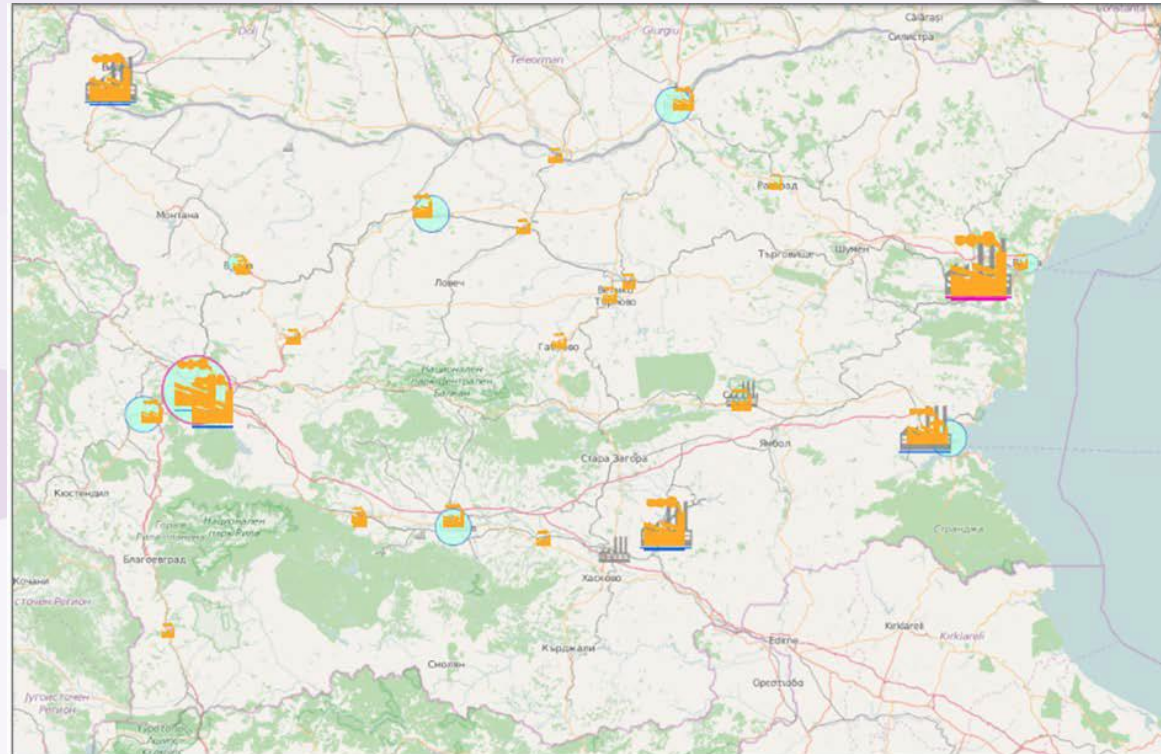


Density of heat energy consumption (MWh/year/km<sup>2</sup>)

# National Heat Map 3/3



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Легенда:



ТЕЦ над 20GWh



Топлофикации над 20GWh



Предприятия над 20GWh

## District heating plants, large industrial heat consumers and TPP



# Thank you for your attention!

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