

Digitalization of Warsaw DHN

Veolia Energia Warszawa S.A.

AGENDA



1. | Veolia activity
Worldwide and in Poland

2. | Warsaw case

3. | Smart DHN Project
2014 - 2017

4. | Future direction

„Resourcing the world”



Veolia worldwide

Key figures 2021



ENERGY

48 mln MWh produced
46 058 thermal installations managed
2211 industrial sites managed
583 heating and cooling networks managed



WATER

79 mln people supplied with safe drinking water
61 mln people connected to the wastewater system
3 367 drinking water production plants managed
2 750 wastewater treatment plants managed



WASTE

435 861 business clients
40 mln people provided with collection services on behalf of municipalities
48 mln metric tons of treated waste
691 waste processing facilities operated




Veolia Group in Poland

Heat and Electricity



Veolia Group in Poland provides heating services in **78 cities**, managing heat distribution networks in **58** of them.

VEOLIA ENERGIA POZNAŃ

 **458 thousand**
residents provided
with services

 **6.8 thousand**
heat substations


VEOLIA ENERGIA ŁÓDŹ

 **408 thousand**
residents provided
with services


 **10 thousand**
heat substations


VEOLIA ENERGIA WARSZAWA

 **1.7 million**
residents provided
with services

 **18 thousand**
heat substations

VEOLIA TERM

 **294 thousand**
residents provided
with services

 **5.2 thousand**
heat substations



Warsaw case

Key numbers

- Network length = **1 850 km** / The biggest heating network in EU
- Area of the supply = **190 km²** (**75% of the Capitals heat needs**)
- **4 pumping stations**
- **4 974 heating chambers**
- **18 300 substations (18 600 buildings)**
- Pipe diameter = 20 – 1200 mm
- Annual heat sale = **33 678 TJ**
- Annual heat lossess = **3 919 TJ (10,26%)**
- Annual water lossess = 1 700 000 m³
- Supply temperature:
 - Winter = **122/60°C**
 - Summer = **73/43°C**.
- Supply pressure: **1,35/0,2 MPa** (winter), **0,8/0,25 MPa** (summer)

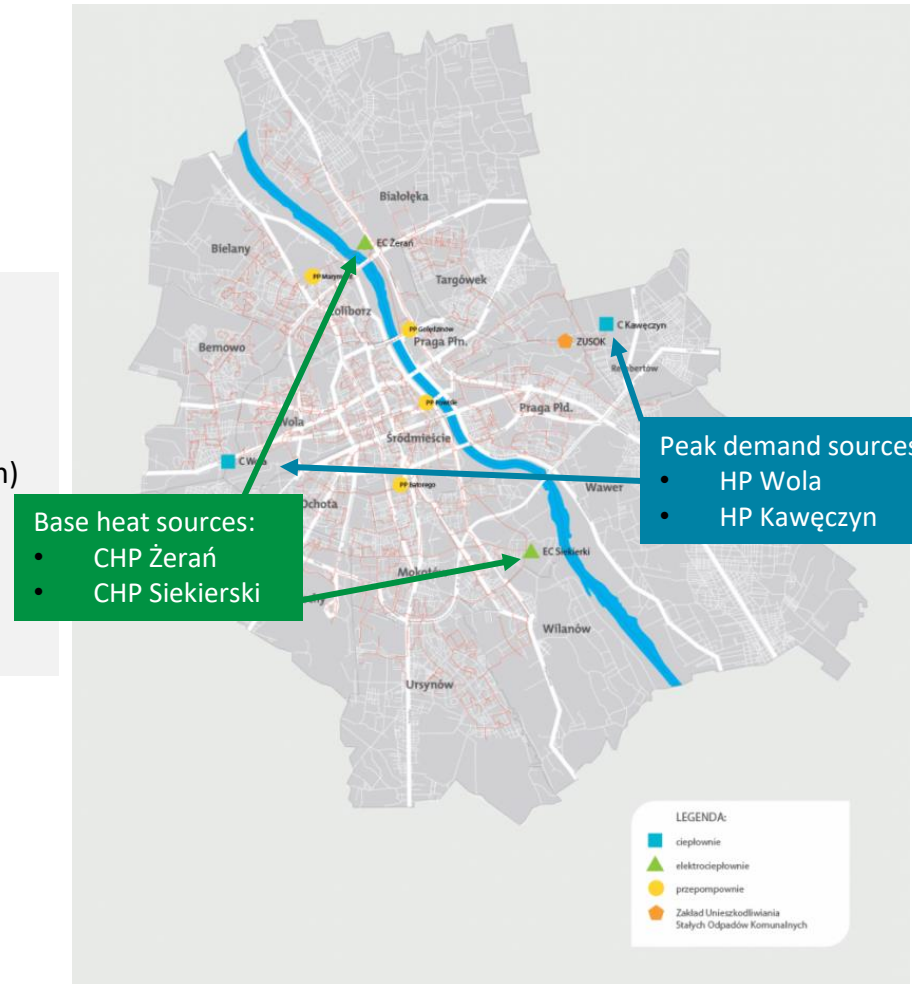




Warsaw case

Operation description

- In Warsaw Veolia owns only district heating network
- DHN operate on „open” configuration
- Heating system in Warsaw includes following sources:
 - 2 combined heat and power plant (1860 MWth +1370 MWth)
 - 2 heating plant (348 MWth + 465 MWth)
 - 1 waste incineration plant (10 MWth)
 - 2 cogeneration engines (2 x 1 MW)





SMART DISTRICT HEATING NETWORK

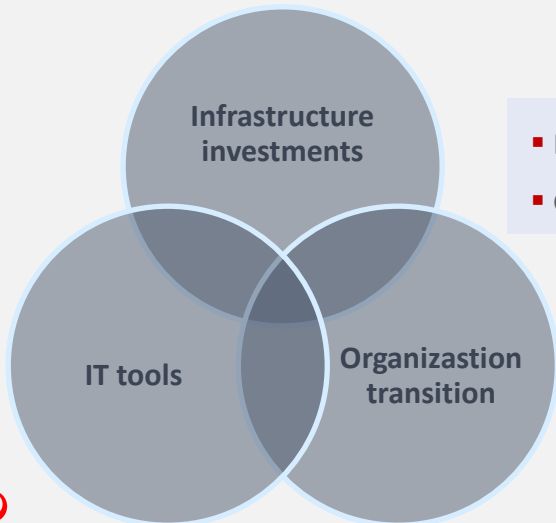
Project implementation: 2014 - 2017

SMART DHN

Digitalization of Warsaw network 2014-2017



- ✓ Gain more control
- ✓ Optimize operation
- ✓ Increase efficiency of DHN
- ✓ Positive contribution to the environment.



- Project value = 47 MPLN
- Grant = 14 MPLN

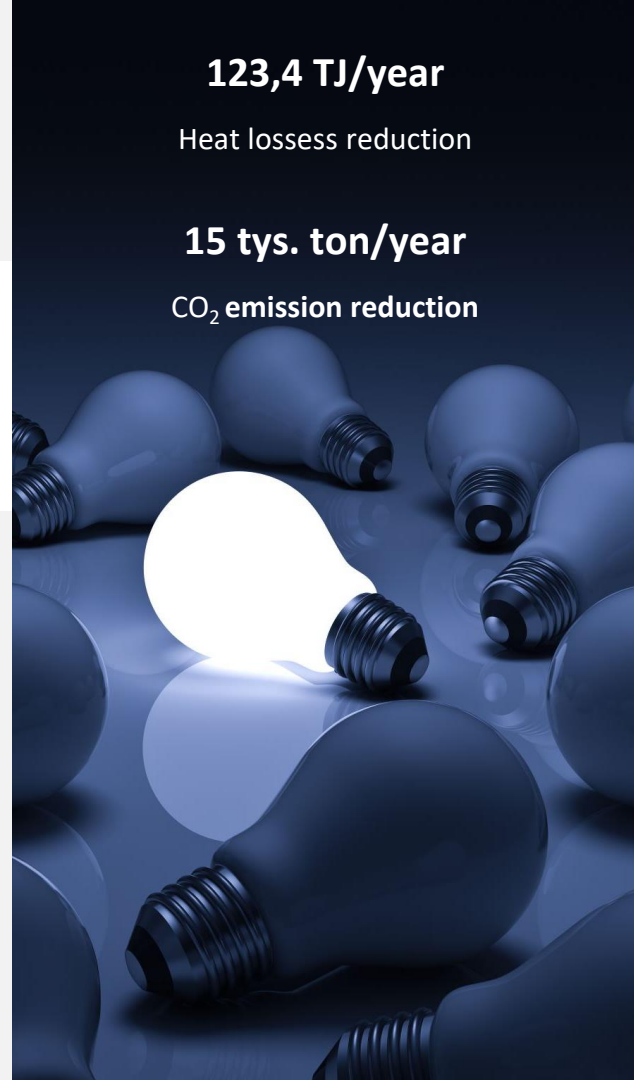


123,4 TJ/year

Heat loss reduction

15 tys. ton/year

CO₂ emission reduction



SMART DHN

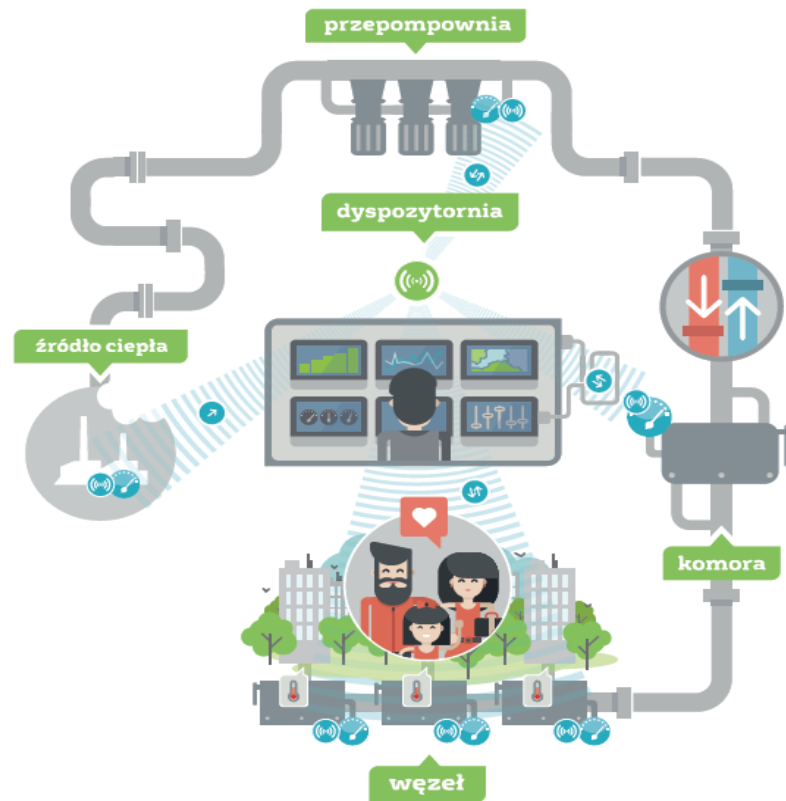
Investments in infrastructure

3
pumping
stations
remotely
controlled

27
chambers
remotely
controlled

2500
substations
remotely
controlled

52
chambers
telemetric

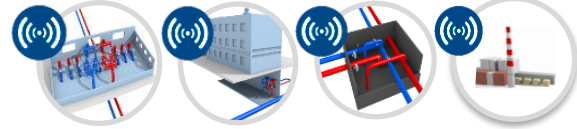


SMART DHN

Development of IT tools



MEASUREMENTS



DATA SAVING

- **PI** – Central data repository (400 000 parameters)



INTEGRATION

- **ESB** - Enterprise Service Bus



DATA PROCESSING AND VISUALIZATION

- **SWD**- Decision Support System
- **DOD** - Dispatcher Operations Dashboard
- **Termis** - Hydraulic Simulator





SMART DHN

Benefits - examples

- ✓ **Prediction of the heat demand** - optimization of the orders from the sources
- ✓ **Quick identification of the anomalies** - of the DHN or substation operation
- ✓ **Remote pumping station regulation** - no need for on-call Staff 24/7
- ✓ **Remote regulation of the substation** - less on site interventions
- ✓ **Remote control of the chambers** - possibility of immediate network reconfiguration
- ✓ **Gaining data for analytics** - Big data for future AI?

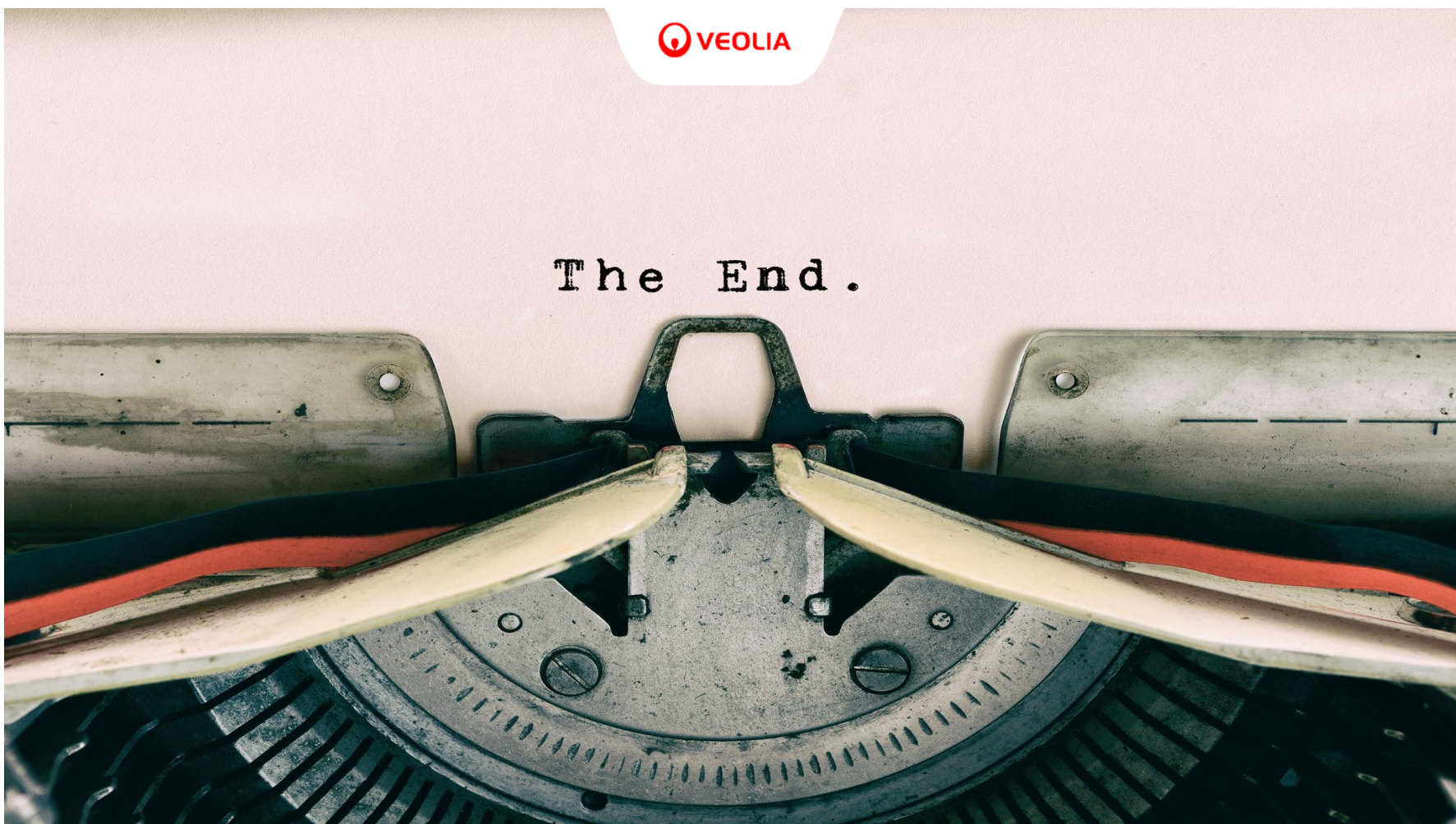
FUTURE?

- **Fit for 55** - Reducing the emissivity of the economy towards climate neutrality
- **Conscious management** of heat consumption by the **Clients**
- Possibility of connecting to the DHN new, **unconventional heat sources**
- Network transformation towards **low parameters**
- **Potential for AI?**





The End.



Odnawiamy zasoby świata

