



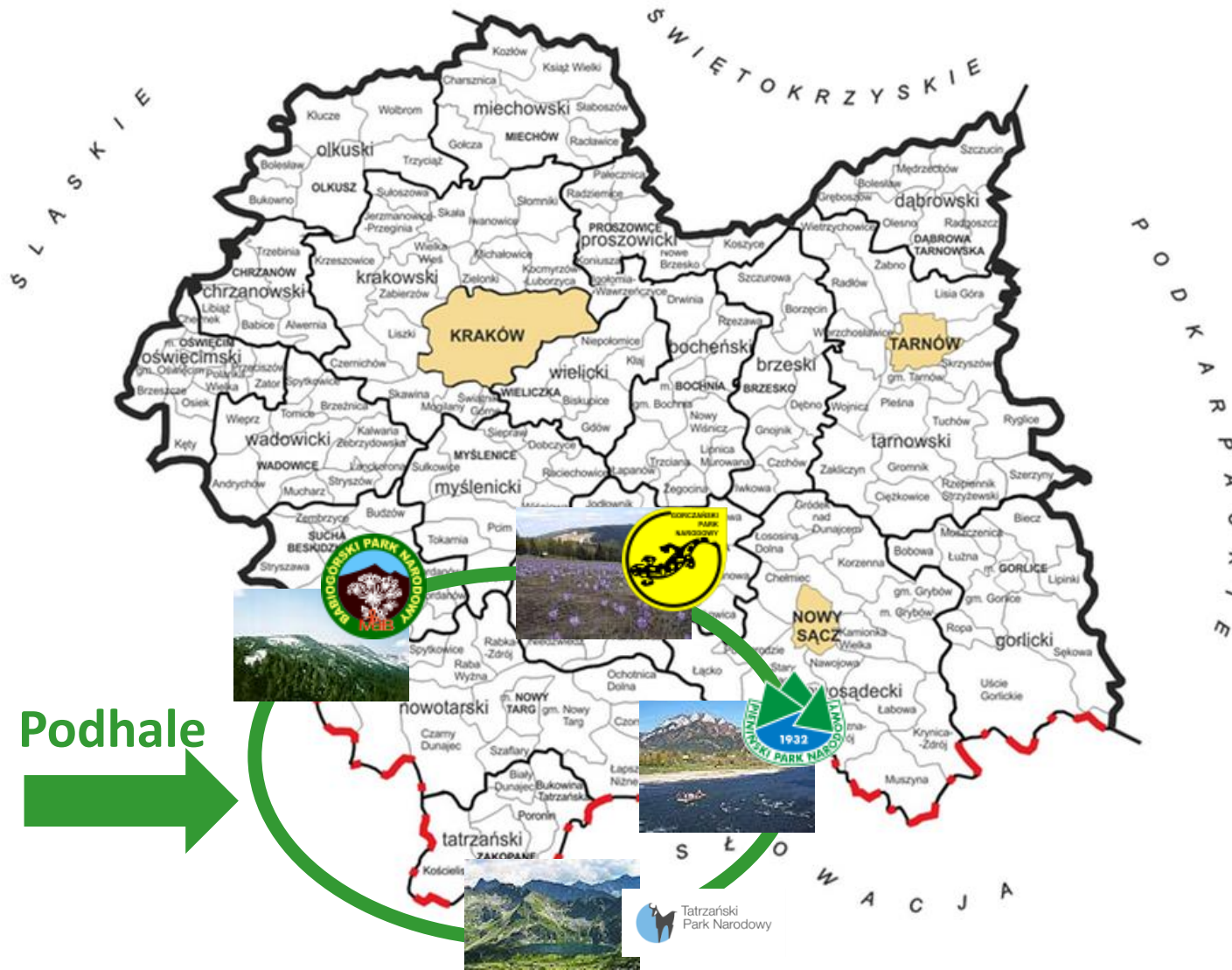
ZIELONE PODHALE
KLASTER ENERGII

Energy Cluster Green Podhale

Cooperation network
to make the most of local energy resources

6 December 2017

Podhale - location





tourism – the engine of local economy

- 1 million tourists accommodated in Podhale
- 3,5 million entries to the Tatra National Park

of inhabitants:

Podhale — 246 000, Zakopane — 27 500



challenges:

- air pollution caused by domestic heating and heavy holiday traffic
- landform (huge valley) obstructing ventilation

crucial issue: air quality improvement

Energy Cluster Zielone Podhale



Long history of cooperation of local stakeholders with AGH UST in exploring effective ways to fully benefit of local advantages and synergies – cluster established in May 2016



Energy Cluster Zielone Podhale - partners

- **municipalities and communes** (Nowy Targ, Zakopane, Szczawnica, Rabka Zdrój, Biały Dunajec, Bukowina Tatrzańska, Jabłonka, Kościelisko, Krościenko, Lipnica Wielka, Łapsze Niżne, Nowy Targ, Ochotnica Dolna, Poronin, Spytkowice, Szaflary)
- **counties** (Nowotarski, Tatrzański)
- **municipal companies** (MZWiK, MPEC, PPK, SEWIK, Tesko)
- **energy companies** (ZEW Niedzica, Geotermia Podhalańska, Tauron EcoEnergy)
- **important institutions** (regional hospital, Tatra National Park)
- **academia** (AGH UST – coordinator, Podhale State College of Applied Sciences, Polish Academy of Sciences)

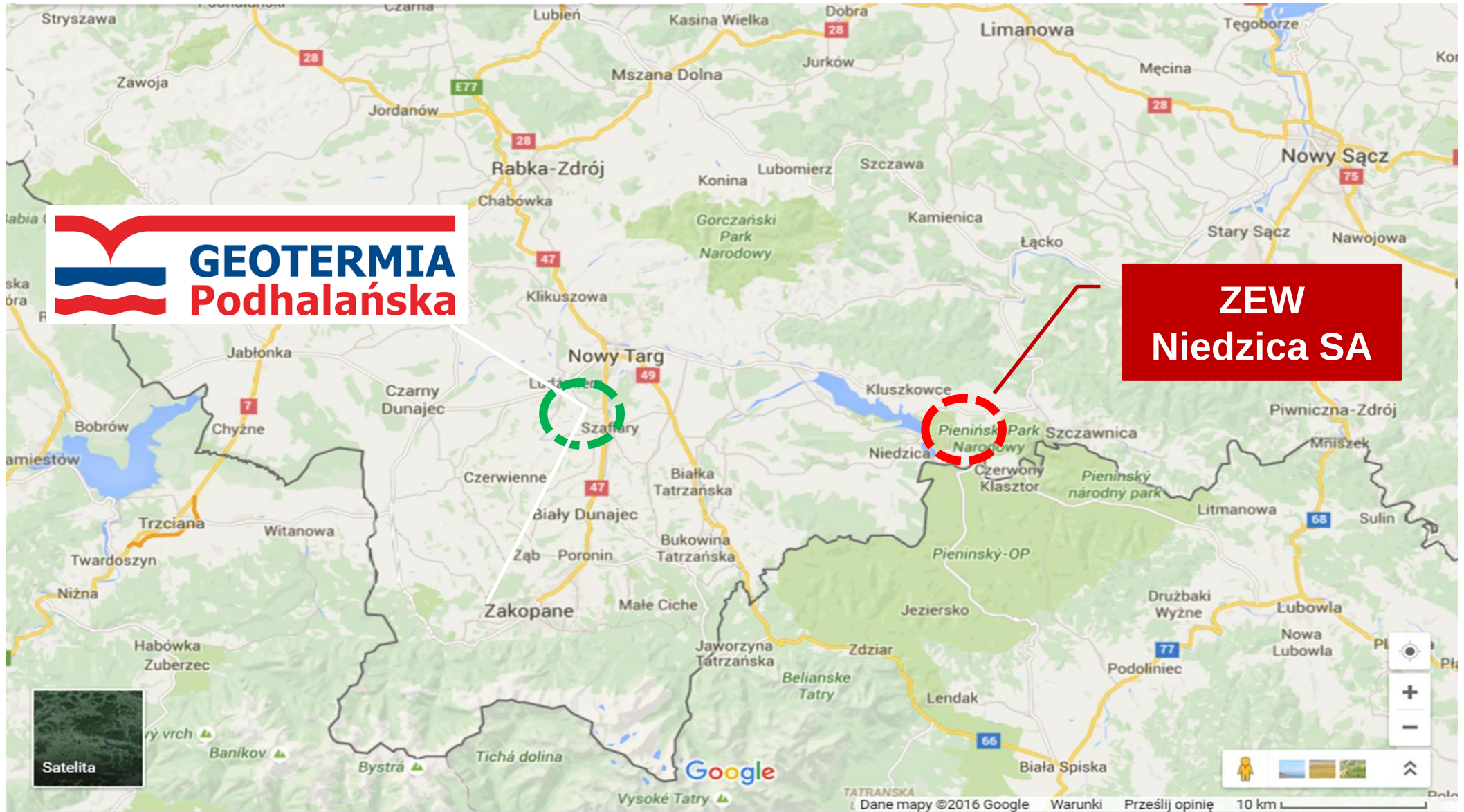
Energy Cluster Zielone Podhale - objectives



- radical improvement of environment, especially of air quality
- improvement of energy safety and
- strengthening of local economy

by means of optimal utilizing of locally available distributed energy resources, including renewables, as well as other energy efficiency measures

2 pillars of local energy system

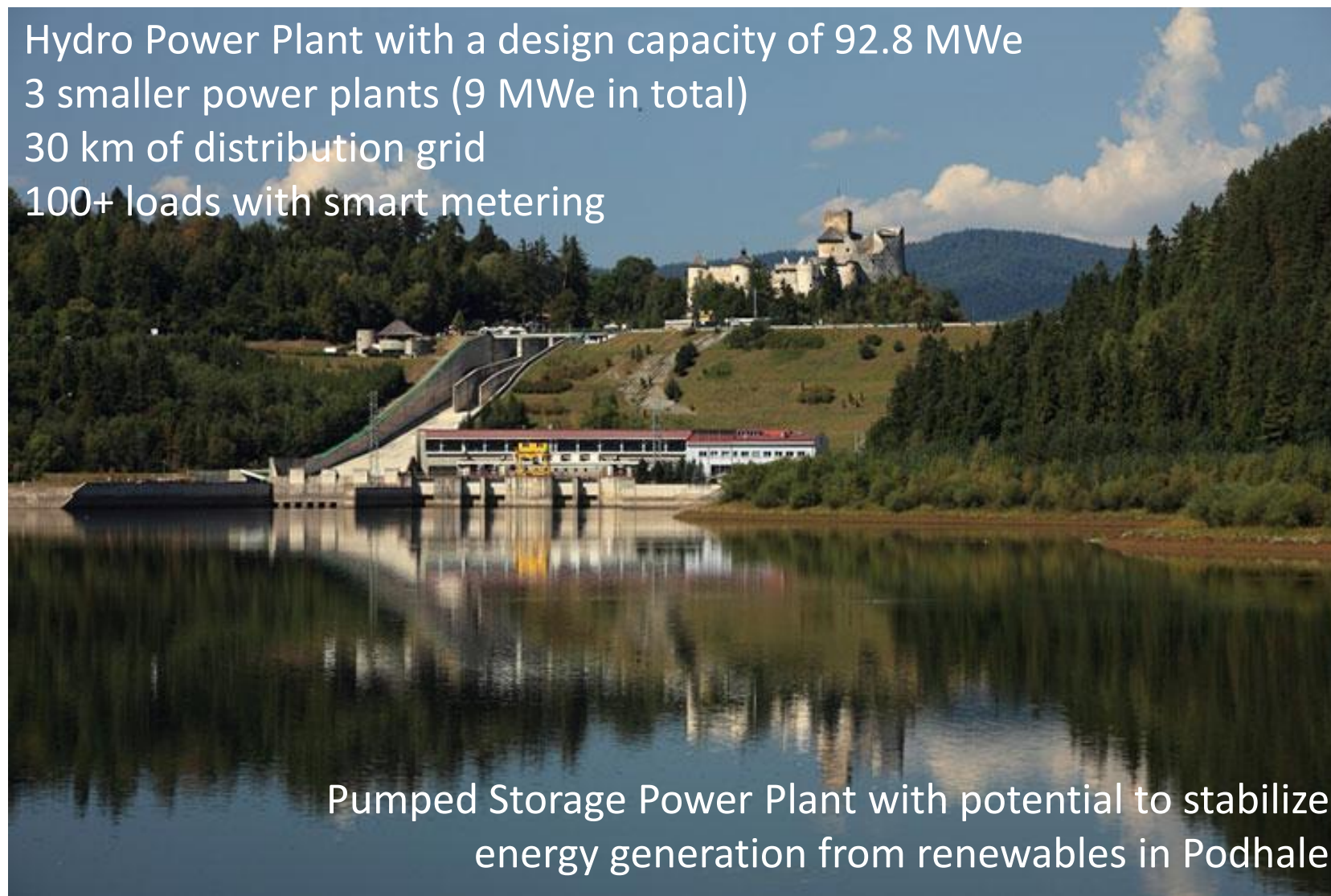




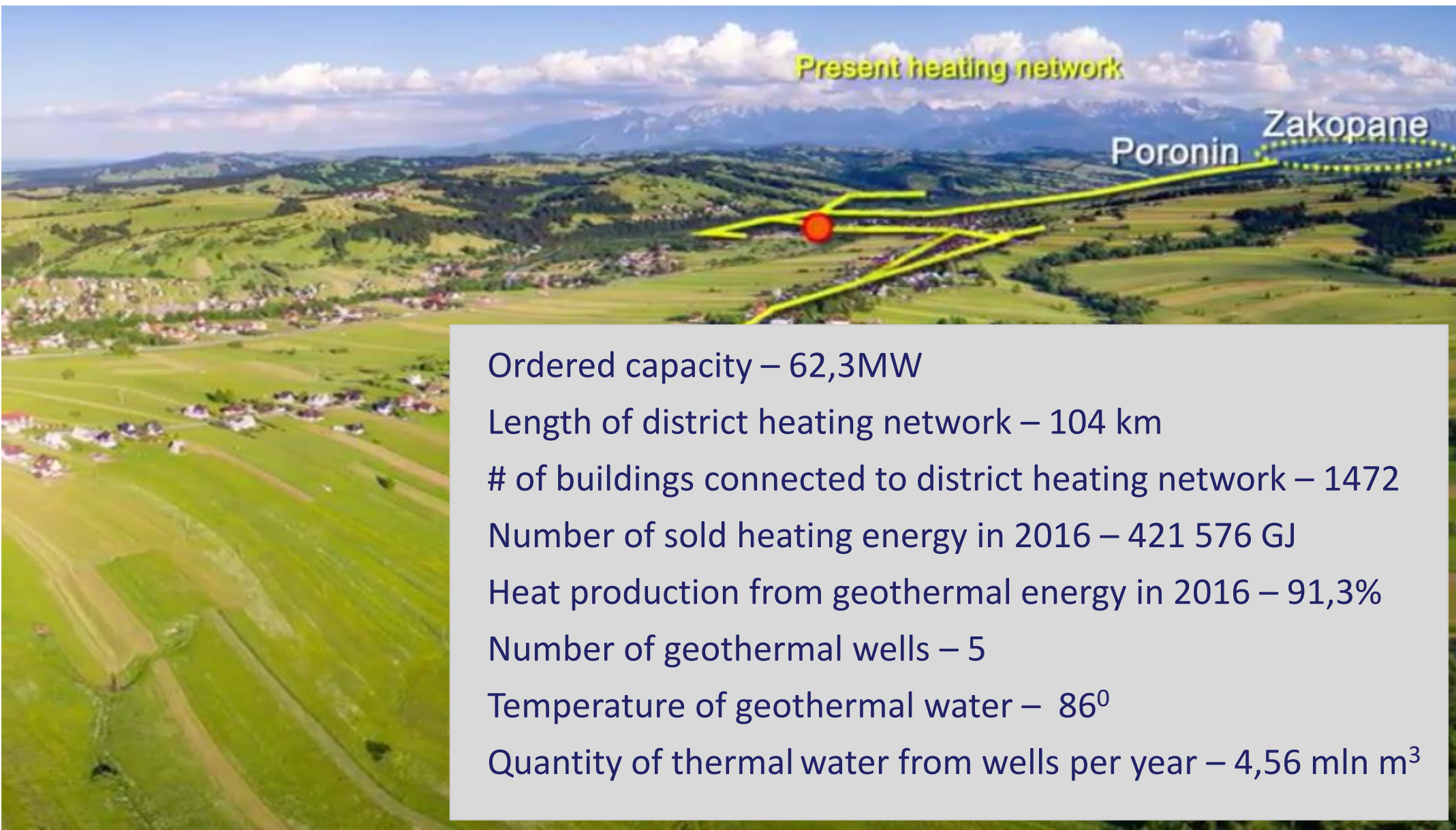
Zespół Elektrowni Wodnych Niedzica S.A.



Hydro Power Plant with a design capacity of 92.8 MWe
3 smaller power plants (9 MWe in total)
30 km of distribution grid
100+ loads with smart metering



Pumped Storage Power Plant with potential to stabilize
energy generation from renewables in Podhale



Ordered capacity – 62,3MW

Length of district heating network – 104 km

of buildings connected to district heating network – 1472

Number of sold heating energy in 2016 – 421 576 GJ

Heat production from geothermal energy in 2016 – 91,3%

Number of geothermal wells – 5

Temperature of geothermal water – 86°

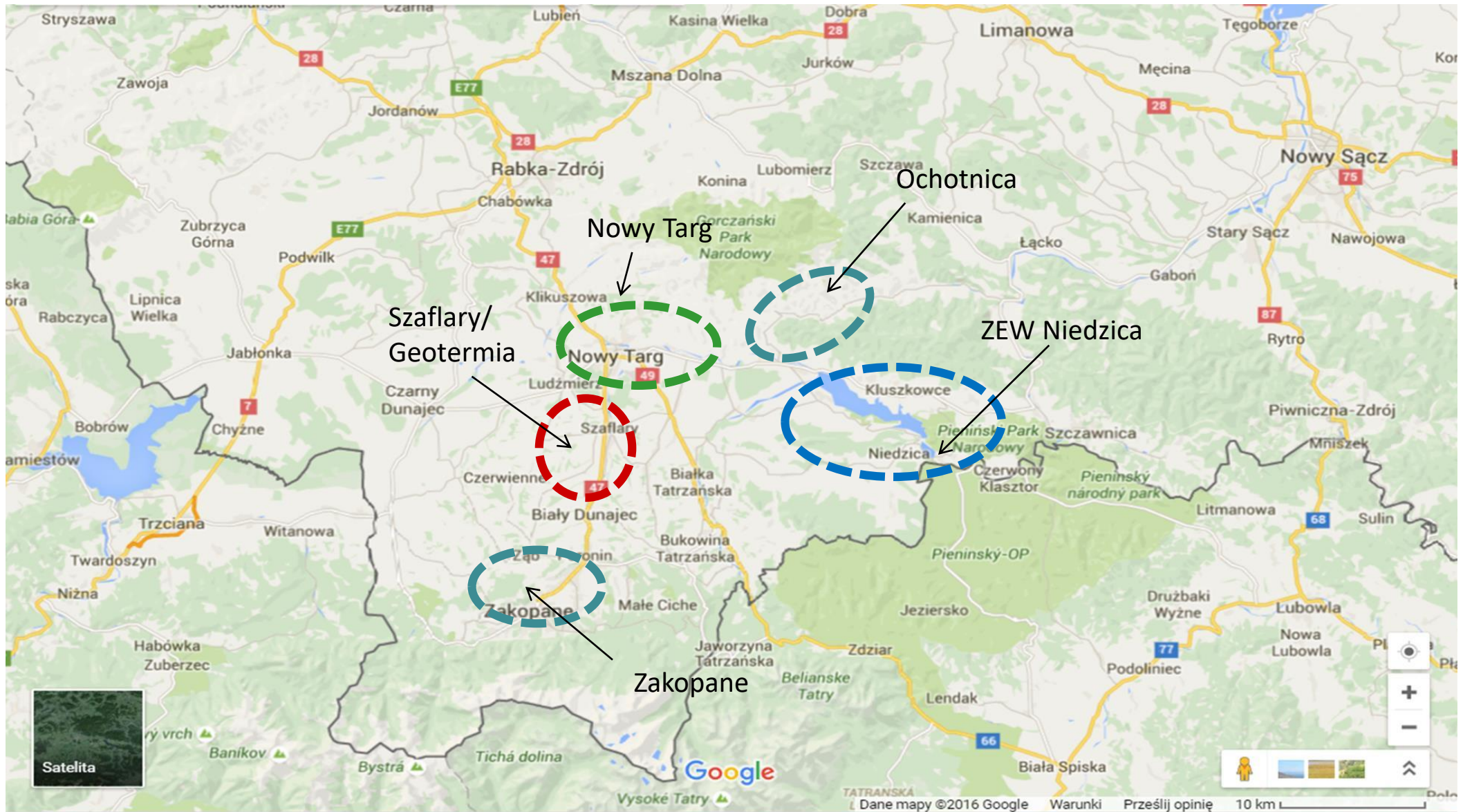
Quantity of thermal water from wells per year – 4,56 mln m³

Energy Cluster „Zielone Podhale” – basic rules

- cluster is a cooperation network open to participation of new partners
- cluster is the „umbrella” for specific initiatives resulting from in-depth analyses and feasibility studies
- the cluster agreement is flexible and will be modified, refined and adjusted to changing circumstances when needed
- as a result of more thorough research the concepts of energy clusters in accordance with the new renewables government regulations (RES act) will be built



local energy clusters



local energy clusters

- Wirtualna Zielona Elektrownia Ochotnica (prosumer cluster— 850 PV installations, coordinator — local authority)
- Zielona Generacja Nowy Targ (virtual CHP plant, open heating network, coordinator — MPEC)
- Serce Podhala Szaflary (commune of Szaflary + Geotermia Podhalańska — coordinator)
- Klaster Energii Zbiornika Czorsztyńskiego (3 communes, municipal company + ZEW Niedzica — coordinator)
- Słoneczna Elektrownia Tatry (PV, electromobility, small hydropower plants, coordinator — Tatra county)



conclusions

- there is no one universal model for energy cluster/community
- the optimal solution depends on local circumstances, needs and objectives
- crucial role of public value delivered by the cluster
- cooperation with locally acting utility of vital importance
- key to the future: building knowledge base and cooperation spirit to mobilize community and boost entrepreneurship

Sławomir Kopec

Chairman of the Steering Group of Energy Cluster Zielone Podhale

Head of Centre of Advanced Technologies for Future City

AGH University of Science and Technology

slawomir.kopec@agh.edu.pl

+48 603601226