



West Pomeranian
University of Technology
Szczecin



Regionalne Biuro
Gospodarki Przestrzennej
Województwa Zachodniopomorskiego



Renewable energy and spatial planning: challenges and future perspectives

Inside view from other projects on renewable energy and spatial planning

Determinants and directions of energy efficiency improvement in downtowns

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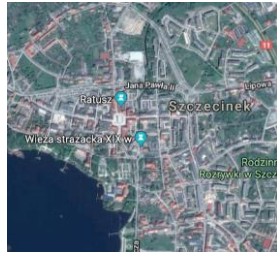
Riga/ Jelgava, January 29-30, 2019

Building energy efficiency improvement in downtowns

Determinants

Proposed improvements are assessed and conditioned in accordance with:

- density of land parcelling, and buildings shape
- duration of the building
- existing construction and technical tissue
- influence of the building surroundings
- potential archaeological sites
- legal restrictions



Directions

Delivering energy efficiency improvements includes a number of actions like

- thermal refurbishment of building envelope
- improvement of technical systems efficiency
- inclusion of energy from RES in the balance of energy demands

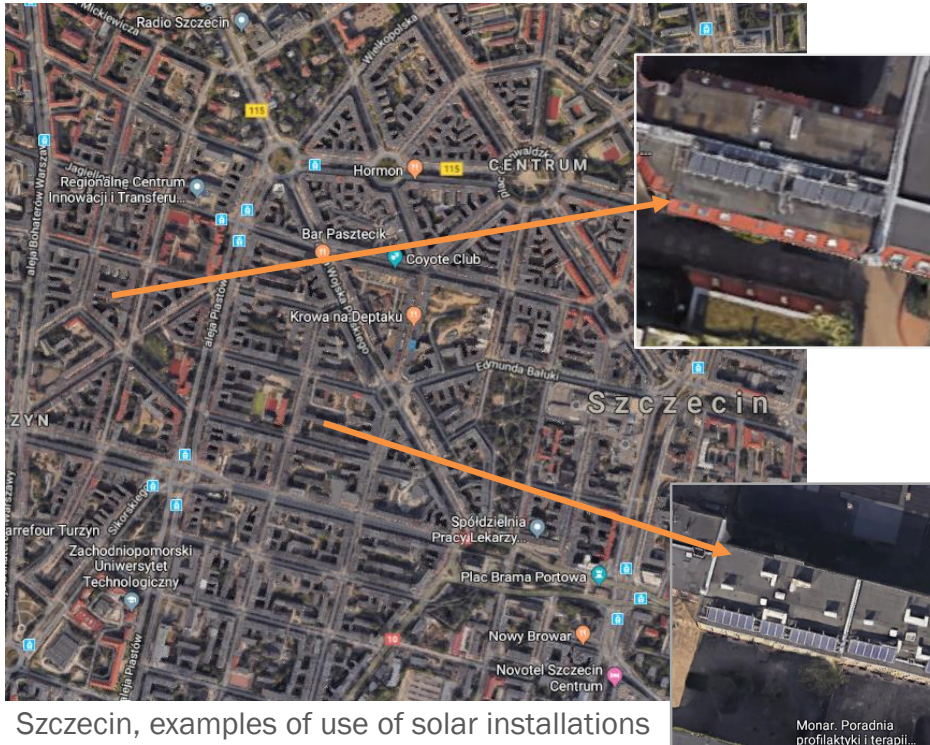


source: GoogleMaps

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Renewable energy sources in downtowns space



Szczecin, examples of use of solar installations

Solar installations made on the roofs of buildings located in the second row of buildings

Limitations

In a dense city centres there are some limitations to a renewable energy sources availability like

- space limitations
- dense underground infrastructure
- possible noise pollution (e.g. when using air-source heat pumps)
- investments costs



Directions of RES using in municipal construction

- mainly using of roof surfaces for solar installations: solar panels and photovoltaic systems
- energy supplementation of central systems, e.g. central hot water preparation



source: GoogleMaps

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Examples of RES use in non-residential buildings



Szczecin, Zduowo Hospital

Ground source heat pumps

Zduowo Specialist Clinical Hospital *

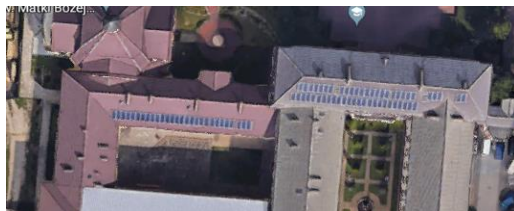
- main buildings of the complex under law protection
- combined energy sources for complex of hospital buildings
- ground source heat pump with more than 200 vertical U-probes providing around 85% of energy demands for space heating and cooling annually
- solar panels plugged into the DHW system

Poseidon Building (business and conference center and 2 hotels – under construction)

- ground source heat pump with 48 three hundred meter boreholes from where heat energy will be extracted

Solar installations

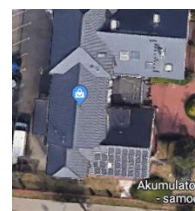
The other way that a renewable energy is mainly being used for is on a small and a medium sized photovoltaic systems. We can see some examples of photovoltaic installations on an educational, sport facilities and other buildings.



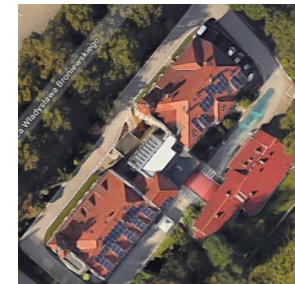
Educational buildings



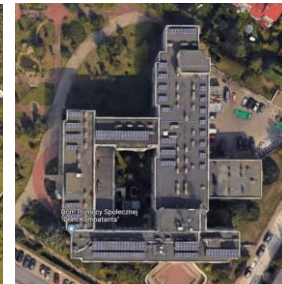
Sports facilities



Economic base buildings



Social welfare homes



source: GoogleMaps, gs24.pl

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BEA-APP
BAL TIC ENERGY AREAS
A PLANNING PERSPECTIVE



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Pomorze
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RES located on buildings under conservation protection or situated in the conservation area

The energy from RES allows to meet the energy saving demands that now a days in Poland are quite restrictive.

The opportunity for an installation of additional renewable energy sources on historical buildings or in conservation zones, is conditioned by receiving a positive decision from the monuments conservator's office.



Building of the Chamber of Tax Administration
in Szczecin *



Building of the Marshal's Office
of the Pomeranian Voivodeship

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thank you for your attention

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