

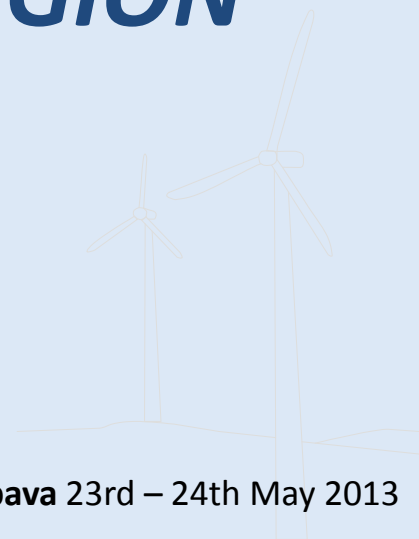


# *Central 2013*

# *Project ENERGYREGION*

*Barbara Rogosz*

**Transnational conference**  
**„Options towards Regions Energy self – sufficiency“, Opava 23rd – 24th May 2013**



Lead Partner

Project Partners:

# Central Europe Programme

## *Priority 3*

### *Area of intervention 3.3*

**Supporting the use of renewable energy sources  
and increasing energy efficiency**

**Total Project budget: 2 617 600.00 €**

**ERDF: 2 167 360.00 €**



**EUROPEAN UNION**  
EUROPEAN REGIONAL  
DEVELOPMENT FUND



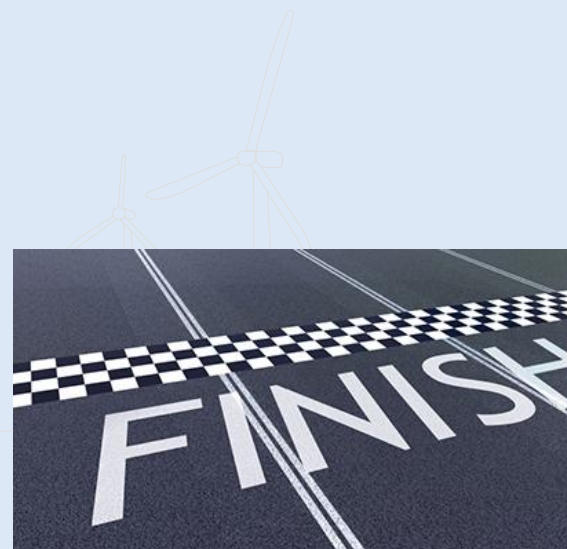
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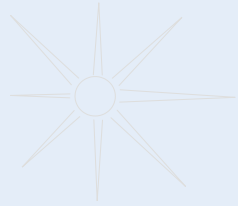
**1st October 2011**

**30th September 2014**



Lead Partner

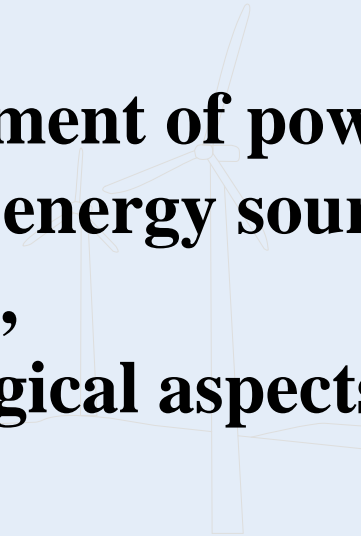
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# ENERGYREGION

## Project main goal?

**Strategy of sustainable development of power engineering based on renewable energy sources in selected regions, regarding social and technological aspects**



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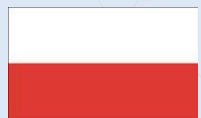
## SPECIFIC AIMS

- identification of RES potential and perspectives of their development
- identification of energy consumers needs
- elaboration of development trends and possibilities for autonomous energy regions establishment
- elaboration of scenarios of dispersed power engineering development
- study of integration of dispersed and conventional energy sources with regional transmission grids
- selection of solutions verified in practice, innovations and know-how for effective application in dispersed energy environment
- energy saving

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# PROJECT PARTNERSHIP



**Poltegor-Institute; Marshall Office of the Lower Silesia Region;**

**Wroclaw University of Technology; Institute of Power Systems Automation Ltd;**



**KEEA Climate and Energy Efficiency Agency; City Council of Baunatal**

**Parish Council of Niestetal Parish Council of Coelbe**



**Porsenna o.p.s; Local Action Group Moravian Krast**



**E-Zavod Institute for Comprehensive Development Solutions;**

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# ENERGYREGION Project structure

**WP-1 Project management and co-ordination**

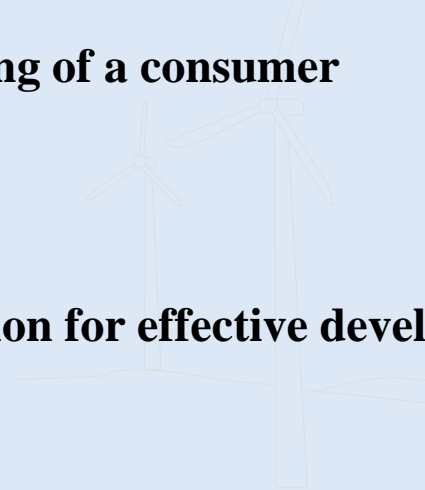
**WP-2 Communication, knowledge management and dissemination**

**WP-3 Identification of demands - Power engineering of a consumer**

**WP-4 Identification of energy potential in Regions**

**WP-5 Energy savings potential evaluation**

**WP-6 Knowledge transfer, know-how and innovation for effective development  
of dispersed energy**



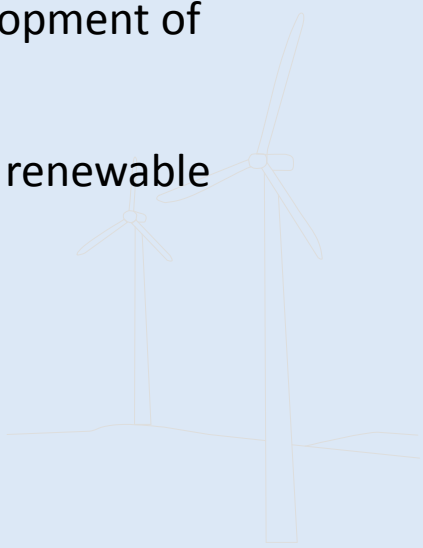
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A decorative sunburst graphic with a central circle and radiating lines, positioned to the left of the main title.

## Main ENERGYREGION Project outputs


- Integrated transnational data base of renewable energy sources referring to selected regions in particular countries
  - Strategies, scenarios, concepts of dynamic development of renewable energy resources in particular regions
  - Handbooks of the best practices in the range of renewable energy sources and energy efficiency
  - Wind potential measurements
  - Biomass utilization tests
  - Promotion materials
- 
- A faint, light-colored illustration of a wind turbine, showing the tower, nacelle, and three blades, positioned on the right side of the slide.

Lead Partner

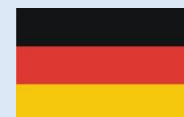
Project Partners:



# RENEWABLE ENERGY DATABASE



Renewable energy database aims at gathering the most complete and the most recent information on conventional and unconventional energy sources in selected regions of:



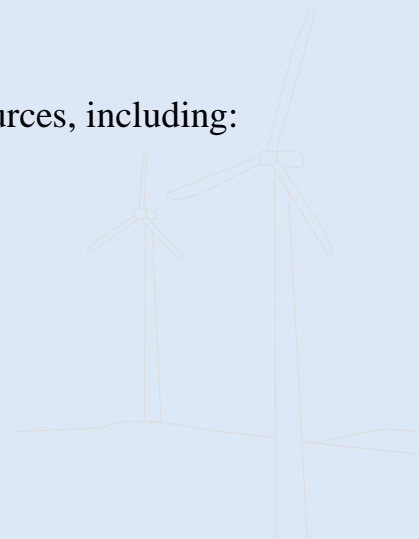
The database will contain data on:

➤ current status of different types of renewable energy resources, including:

- ✓ biomass energy
- ✓ water energy
- ✓ wind energy
- ✓ geothermal energy
- ✓ solar energy

➤ current status of conventional energy resources, including:

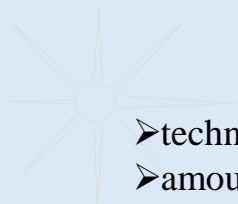
- ✓ brown and hard coal
- ✓ gas



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# RENEWABLE ENERGY DATABASE

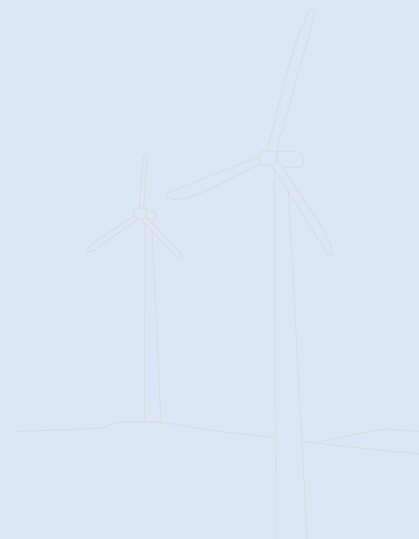


- technologies of producing and transforming renewable energy from different sources
- amount of produced RES energy
- general data that characterize regions selected within particular countries will be also included:

- ✓ administrative structure
- ✓ total area
- ✓ number of citizens
- ✓ access to energy network

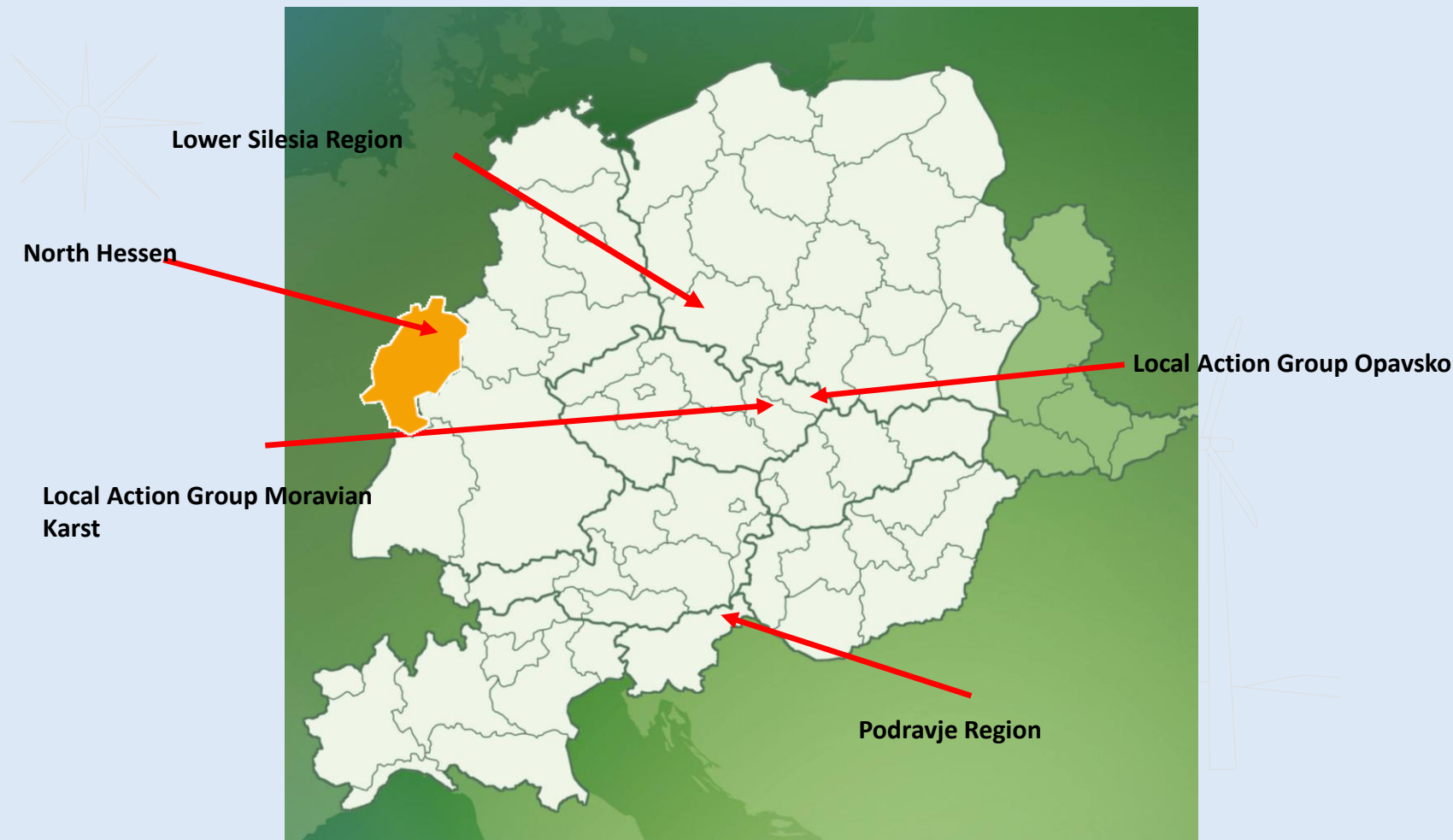
- application of unconventional energy sources in:

- ✓ agriculture
- ✓ real estate
- ✓ recreation and tourism



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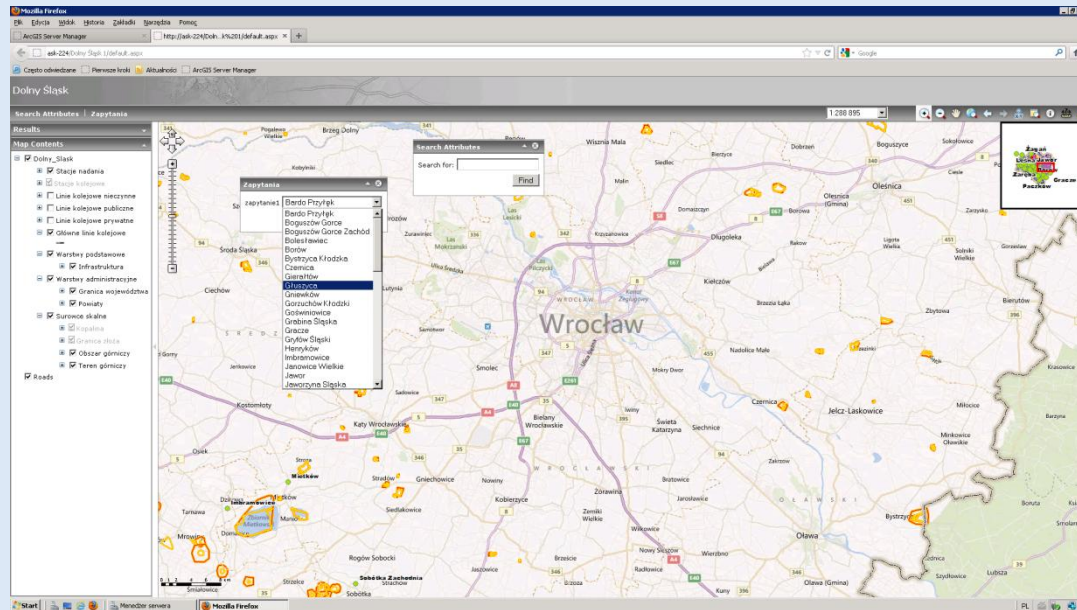
PORSENNA o.p.s. (CZ)    LAG Moravian Krast CZ    E-zavod (SI)    City Council of Baunatal (DE)  
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 KEEA (DE)    Wrocław University of Technology (PL)    Parish Council of Coelbe (DE)

# DATA VISUALIZATION

Based on the database maps of selected regions will be developed. They will include information on:

- ✓ current RES utilization
- ✓ resources of renewable energy
- ✓ conditions facilitating or limiting RES usage and development in particular regions
- ✓ amount of energy produced from renewable sources

ArcGis software  
will be used



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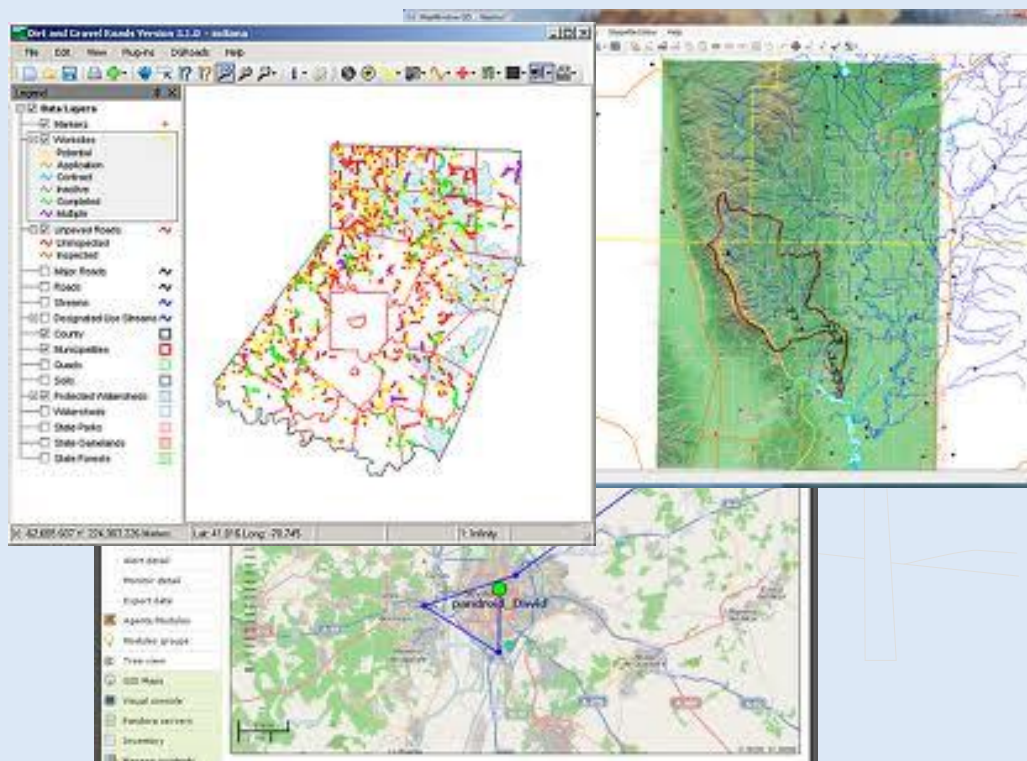


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# Visualization of the data base will be available on ENERGYREGION Project website



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## Pilot activities focused on wind energy and biomass utilization

### What are pilot activities ?

#### Biomass utilization

Laboratory tests focused on:

- ✓ quality evaluation of common and niche biomass types
- ✓ demonstration of actual heating power production from biomass combustion and gasification
- ✓ pointing out pros and cons of using a biomass boilers

#### Wind potential measurements

Field tests aimed at collecting the data necessary to identify :

- ✓ average wind velocity in each month
- ✓ average wind velocity per year
- ✓ distribution of wind directions
- ✓ analysis of potential energy production
- ✓ economic analysis of investments

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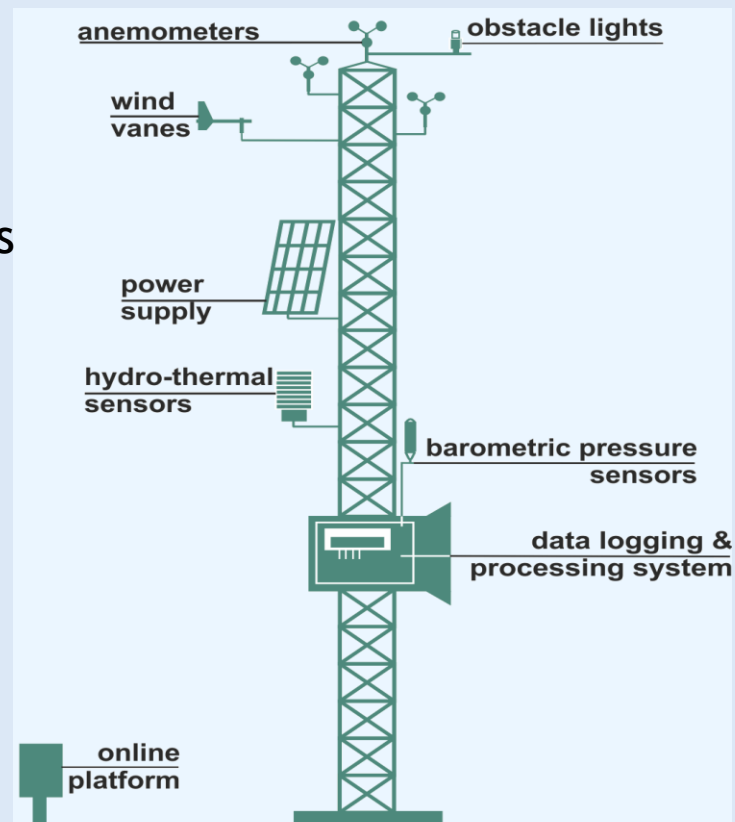
# Wind measuring system WMS



## Components :

- ✓ anemometers
- ✓ wind vanes
- ✓ humidity and temperature sensors
- ✓ atmospheric pressure sensors
- ✓ data logger
- ✓ communication module
- ✓ autonomic power supply

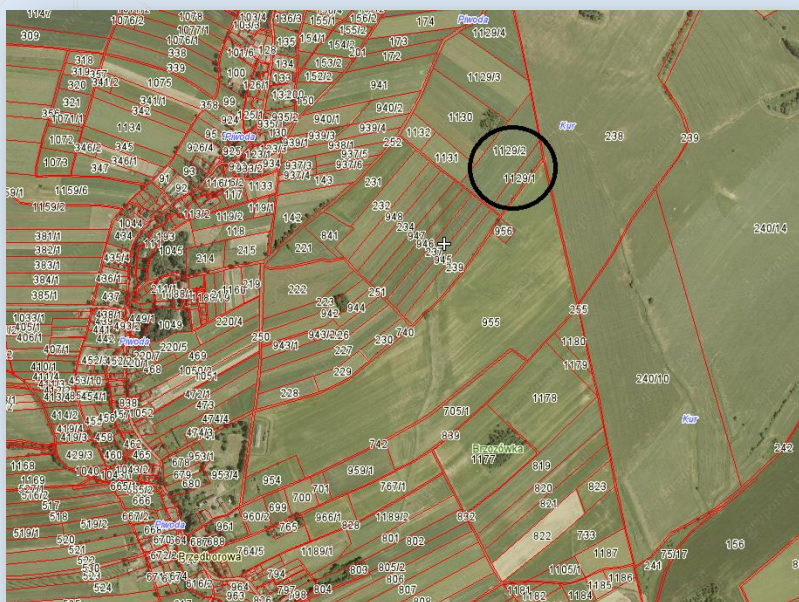
Measurement of wind potential is conducted at the height **50m** the maximum height of wind turbine will be about **70m**.



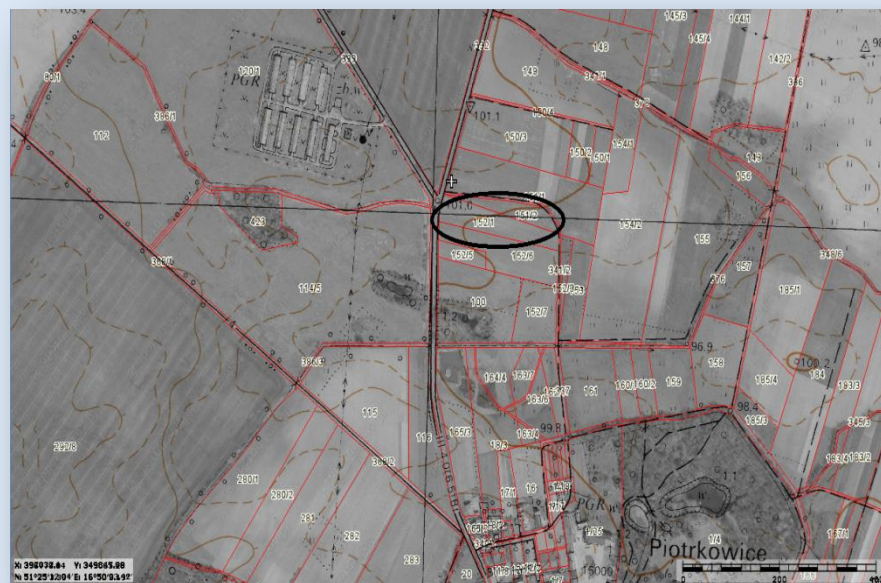
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1<sup>st</sup> WMS location  
Budzów



2<sup>nd</sup> WMS location  
Piotrkowice

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## Goals of pilot activities focused on wind energy

- determination of actual wind potential in terms of use of wind turbines in selected locations
- determination of power and time for effective work of turbine during energy generation
- supporting optimization of wind farm construction and exploitation process for communities interested in wind energy

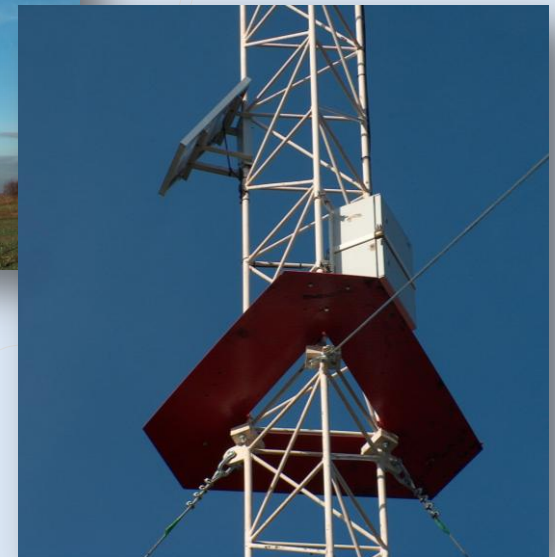
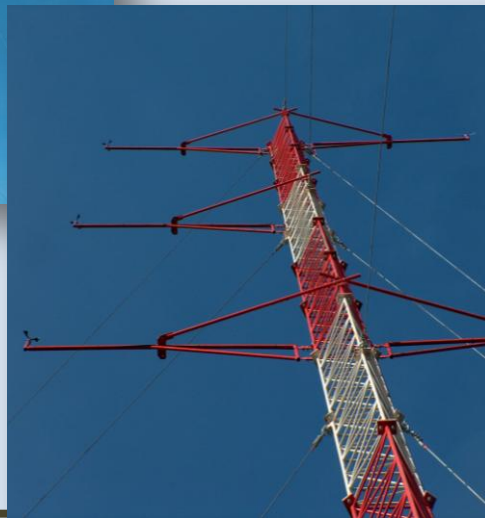


### Final goal

Elaboration of strategic plan as transnational tool for planning investments in wind turbines for regions with similar wind energy potential

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**Lead Partner**



**Project Partners:**

- |  |  |                                  |                               |
|--|--|----------------------------------|-------------------------------|
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| Marshall Office of the Lower Silesia Region (PL) | Institute of Power System Automation Ltd. (PL) | Parish Council of Niestetal (DE) |                               |
| KEEA (DE)  | Wroclaw University of Technology (PL)          | Parish Council of Coelbe (DE)    |                               |



Company: Poltegor  
User: Barbara Rogosz
Logout

Localization management
Administration

Localization

Details

Device configuration

Measurement data

Export data

**Localization: Budzow - 50° 34' 52" N, 16° 40' 3" E - Details**

100 km  
50 mi

(c) OpenStreetMap contributors, CC-BY-SA, Wikimedia

Data record date (GMT): 18-03-2013 08:00:00

Rotate

**Description**  
**Maszt 48m - lokalizacja Budzów (woj. dolnośląskie)**  

- anemometr NP-3 (SN:NP-3-1912), wysokość instalacji wysięgnika: 48m, orientacja wysięgnika: 200 st
- anemometr NP-3 (SN:NP-3-1913), wysokość instalacji wysięgnika: 38m, orientacja wysięgnika: 200 st
- anemometr NP-3 (SN:NP-3-1914), wysokość instalacji wysięgnika: 28m, orientacja wysięgnika: 200 st
- czujnik kierunku NK-3 (SN:NK-3-1287), wysokość instalacji wysięgnika: 48m, orientacja wysięgnika: 20 st
- czujnik kierunku NK-3 (SN:NK-3-1289), wysokość instalacji wysięgnika: 28m, orientacja wysięgnika: 20 st
- IMM (SN:IMM-1040), wysokość instalacji: 45m
- MDL (SN:DL0900053), wysokość instalacji: 13m
- zasilanie solame, wysokość instalacji: 14m

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## Laboratory tests on biomass utilization

Main research installation allows to simulate operating conditions of small heating installation based on combustion furnace or gasification boiler.



With components:  
21m high chimney, gas analyzer,  
set of 8 thermocouples, work station

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Besides the main research installation Poltegor laboratory is equipped to conduct basic tests for all types of biomass, including: heating value, ash and moisture content.

### **Main test objectives :**

- commonly used types of biomass quality evaluation
- possibility of using niche types of biomass available in regions
- study of the combustion and gasification process
- tests on optimization of gasification processes



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## Goals of pilot activities focused on biomass utilization

- Demonstration of actual heating power production from combustion and gasification of different types of biomass
- tests on optimization of gasification processes
- indicating pros and cons of using biomass boilers
- presentation of potential benefits of using biomass instead of fossil fuels (*Heating cost reduction, benefits associated with use of regional fuels, etc.*)



### Final goal

Elaboration of strategic plan titled “Biomass potential assessment” as a set of guidance helpful in designing and exploitation of biomass installations

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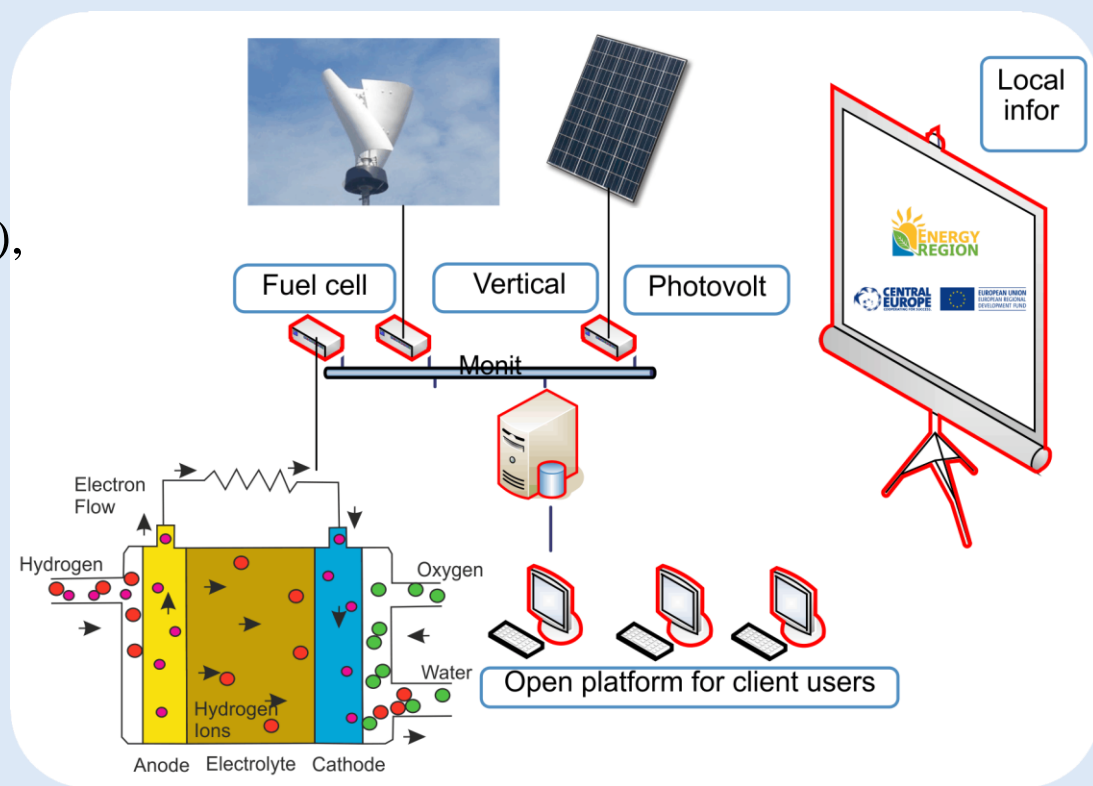
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# Construction of hybrid mini systems of dispersed generation

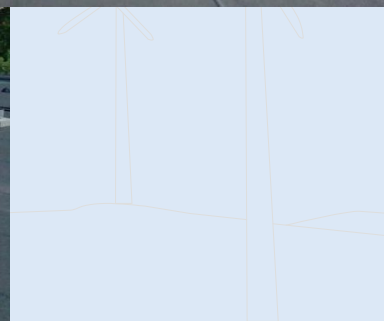
Pilot hybrid power installation  
based on:

- photovoltaic panel (PV),
- vertical axis wind turbine (VAWT),
- fuel cell (FC)



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Lead Partner

Project Partners:



# ENERGYREGION PROJECT WEBSITE

www.energy-region.eu

Effective development of dispersed renewable energy  
in combination with conventional energy in Regions

Home Partners Work Packages Target Groups Current activities Contact

Renewable energy sources

- Renewable energy sources
- Biomass
- Wind energy
- Solar energy
- Hydropower
- Geothermal energy

Database

Conference

- Conference 2012
  - Profile
  - Agenda
  - Excursion
  - Accommodation
  - Venue

SOLAR ENERGY WIND ENERGY BIOMASS ENERGY WATER ENERGY GEOTHERMAL ENERGY

Effective development of dispersed renewable energy  
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Latest Updated on Tuesday, 17 July 2012 09:24 Hits: 796

### Solar Energy

**Renewable energy**

Solar energy is an alternative energy source that involves harnessing the radiant light energy emitted by the sun and converting it into electricity or heat.

Many people use terms solar energy and solar power as synonyms though this isn't exactly the same because term "solar power" means conversion of sunlight into electricity (photovoltaic).

Solar energy has different solar technologies. It can be converted to electricity or heat in two ways:

**Photovoltaic** - the word "photovoltaic" is a combination of the words 'photo', which means light, and 'voltaic', which refers to the production of electricity. Photovoltaic technology generates electricity directly from sunlight (energy). A number of solar cells electrically connected to one another and mounted in a frame is called a photovoltaic module.

Individual cells can vary in size from about 0.5 inches to about 4 inches across. However, one cell only produces 1 or 2 watts, which isn't enough power for most uses. For solar electricity at home, solar cells are grouped together on rooftops.

A photovoltaic cell is a specially treated wafer of silicon, sandwiched between two thin contact plates. The top contact is positively charged and the back contact is negatively charged, making it a semiconductor. That semiconductor absorbs photons of light and release electrons. When free electrons are captured, an electric current results that can be used as electricity.

Photovoltaics is a very rapidly growing global technology. Homeowners, businesses, governments, local bodies, and non-profit organisations throughout the world use Photovoltaic (PV) panels to provide electricity for their needs. Users are found in rural, suburban and urban areas.

**Solar thermal** - at the core of a solar thermal system is the solar collector fitted at an optimal angle on a roof. It transforms the sunlight into heated fluid contained in it to very high temperatures. The fluid is then transferred via the pipes to the storage tank and stored there. There are also collectors which absorb heat from the air. Those systems circulate the air through collectors and transfer large part of energy from the heat from the air. That air returns itself to a heated chamber maintaining the chamber's temperature.

Lead Partner

Project Partners:



# Thank you very much for your attention



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Project Partners: