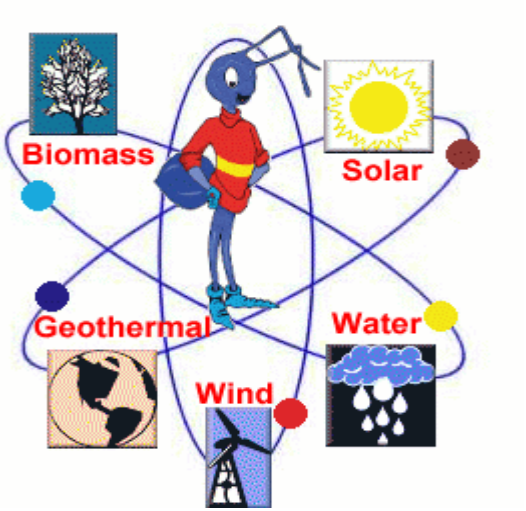
EQUIPMENT FOR THE PRODUCTION OF ENERGY FROM RENEWABLE SOURCES – *the pros and cons from the perspective of spatial planning in the Czech republic*

Kyselka Igor

Institute for Spatial Development, Brno (CZ)

Spa-ce.net Network Conference, Kecskemét, 25-26 October 2012



Share of electricity from renewable energy sources in the Czech Republic – 13 % untill 2020

Ren.source	2006 (MWh)	2007 (MWh)	2008 (MWh)	2009 (MWh)	2010 (MWh)	2011 (MWh)
En sources □ 10MW	964 400	1 001 845	966 884	1 082 683	1 238 819	1 017 878
En. Sources □10MW	1 586 330	1 077 493	1 057 451	1 346 937	1 550 655	945 276
Biomass	728 526	993 360	1 231 210	1 436 848	1 511 911	1 682 563
Biogas	172 589	182 699	213 632	414 235	598 755	932 576
Comun. waste	11 260	11 260	11 684	10 937	35 580	90 190
Wind	49 375	125 098	244 661	288 067	335 493	397 003
Solar	170	1 754	12 937	88 807	615 702	2 182 018
Totally from ren. sources	3 512 650	3 394 224	3 738 459	4 668 514	5 886 915	7 247 504
Consumption of el. energy	71 730 000	72 050 000	72 050 000	68 600 000	70 960 000	72 520 000
Share of ren. energy	**4,90 %**	**4,71 %**	**5,19 %**	**6,81 %**	**8,30 %**	**10,28%**
Price (Kč/MWh)	18,64 Kč	26,14 Kč	81,30 Kč	597,55 Kč	679,00 Kč	752,00 Kč

Dukelská 145
379 82 Třeboň
Tel.: +420 384 706 139

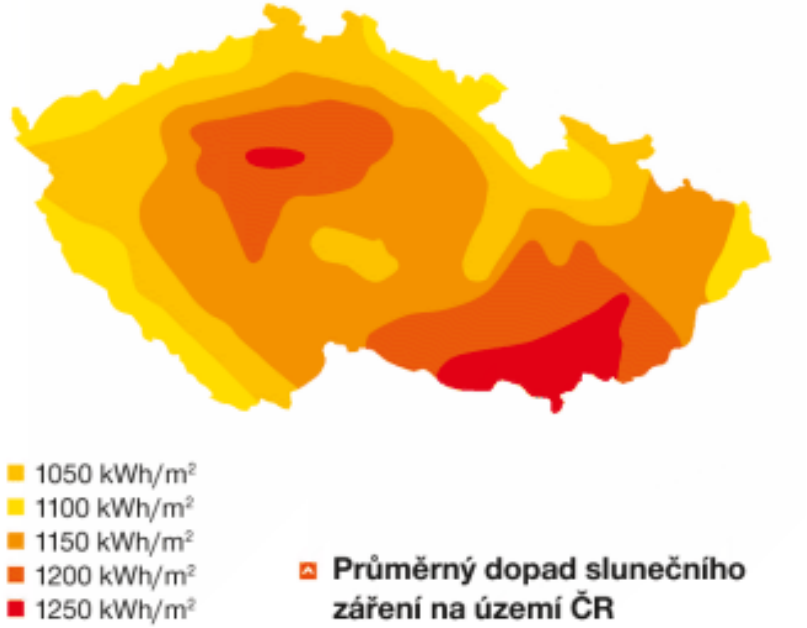
http://www.solarenvi.cz/slunecni-elektrarny/elektroenergetika/podil-vyroby-elektriny-z-oze-v-cr/#

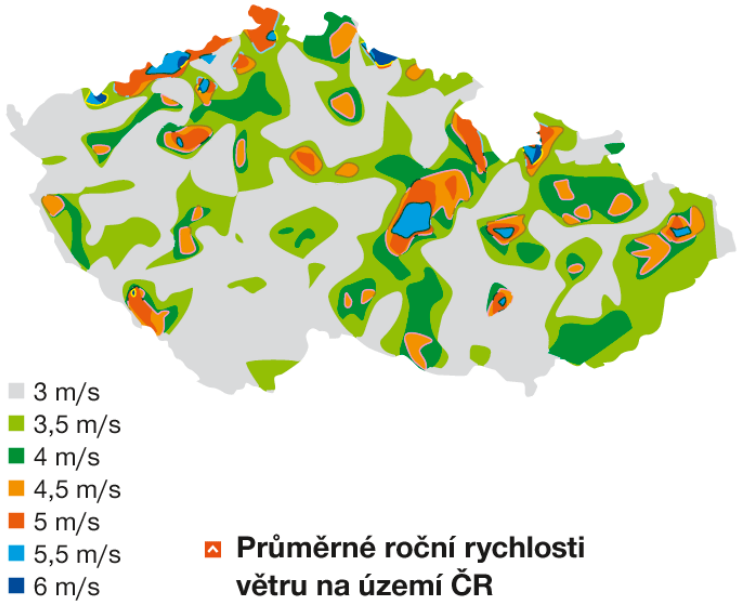
State support for renewable energy sources

- In the years 2009 - 2010 disproportionately increased purchase price of electricity from renewable sources, particularly from solar power plants, thanks to government subsidies, which resulted subsequently in the tax burden.
- Sales of energy from these sources were guaranteed by law. State-guaranteed profit was reflected in increased consumer prices of electricity.
- With increased power supply to distribution networks - risk of Blackouts

Geographic conditions for renewable energy sources in Czech republic

- Average impact of solar radiation varies between 1050 kWh in mountainous regions till the 1250 kWh in South Moravia and Central Bohemia.
- The average annual wind speed is 3 - 3.5 m / s in most of the Czech Republic. In highest mountains the wind speed is 5-6 m / s
- No conditions for large power plants





BUILDINGS AND EQUIPMENT FOR THE PRODUCTION OF SELECTED RENEWABLE ENERGY SOURCES
Guideline for their placement – elaborated by Institute for spatial development

- Introduction to the issue
- Legislation in the field of energy - selection of key terms and concepts
- State concept, government support programs, EU funds
- Selected Renewable Energy - Basic Information
- Placement of buildings and equipment for the production of energy from renewable sources selected
- Examples of applications

MINISTERSTVO PRO MÍSTNÍ ROZVOJ ČR

ÚÚR

Renewable energy sources - pros

- Renewable energy sources are the way to energy independence,
- They can bring jobs and development to certain regions.
- Environmental pollution risk free sources
- The most promising results in the Czech Republic have small hydro, biomass and biogas power plants.

Conditions for placing electricity production from renewable energy sources in the according to the „Guidance“:

- Renewable energy sources are not technical infrastructure
- It´s always necessary to change the master plan
- Usually is necessary to provide the environmental impact assesment
- Most of proposals for photovoltaic and wind power plants require visual impact assesment according Nature protection law

Optimal conditions for placing solar power plants

- Orientation on the south slope of 30°- 60°
- Low quality land (often there are best soils)
- Take into account the erosion vulnerability of slopes with solar panels
- Attention to the glare, mirror effect, undesirable growth of photosynthetic processes
- Unsuitable large dominant in the small scale mosaic landscapes
- Optimal are visual isolated localities
- To use fallow areas – brownfields and roofs

Optimal conditions for placing wind power plants

- Windy location, better 500 m above the sea, no barriers
- Large scale, flat, open, agricultural landscapes

Problems with their placing in landscape

- Unsuitable high dominants in the small scale mosaic landscape especially so called „wind parks“
- Competition wit other landscape traditional dominants (church and castle towers, typical hills), reduction of landscape attractiveness
- Conflicts with bats and birds in the night and fog
- Low permanent sound, frost departing within 10 km

Placing of solar and wind power plantsin terms of nature and landscape conservation – Guidance from Ministry of Environment

- **Inappropriate territorries - red zones**

National parks, Natura 2000 sites, natural parks, other protected areas, birds and bats localities

- **Rather unsuitable territorries - yellow zones**

Protect zones of nature protected areas, highly valued landscape areas, territorrial systém of environmental stability components

- **Inappropriate territorries – green zones**

Other territorries, lower valued or damaged landscape areas

Water energy

- Only 3,02 % from water power plants + 0,83 % from pumped storages power plants from all electric energy in Czech republic (1 400 water power plants)
- Potential of vallea profils suitable for big water plants is almost exhausted
- Small water power plants could use the facilities of the former mills, sower mills or sand mills
- Limits are usable gradient and water flow
- Environmental impact assesment is necessary

Biogas stations - pros

- Used as the wastes or energic plants
- Field production – form of agricultural – means how to create jobs in and to preserve landscape character
- Use of brownfields

Biogas stations - cons

- High air pollution threatment, especiall by waste used biogas stations, they need large protect zones
- Uncontrolled spread of technical plants as invasive neofyts into surrounded landscape

Thanks for your attention!