Homo Environmentalis: New risks faced by the civilization

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The material intensity of different sources using for electricity generation in kg/GWh

	Steel	Copper	Aluminium
Black coal	1750-2310	2	16-20
Lignite	2100-2170	7-8	18-19
Gas	1207	3	28
Nuclei	420-490	6-7	27-30
Photovoltaics	3690-24250	210-510	240-4620
Wind	3700-11140	47-140	32-95
Water	1560-2680	5-14	4-11

Source: Drábová, D.: Rizika a přínosy jaderné energetiky, Pro-Energy journal, 3/2007, pp. 58-62, www.pro-energy.cz/clanky3/4.pdf

The production costs on kWh for different types of power stations

	USA US cent/kWh	Germany Euro cent/kWh	Great Britain p/ kWh	Finland Euro cent/kWh
Nuclear p.s.	4,2-6,7	2,1	2,8-4,3	2,6
Lignite p.s.	4,2	3,0-3,3	3,6-4,0	5,2
Gas p.s.	3,8-5,6	3,6	2,3-2,4	5,2
Water p.s.		7,0	1,6-1,9	
Wind p.s.		7,0	3,2-5,7	4,5
Phtovoltaics p.s.		60		
Biomass				5,1

Source: Drábová, D.: Rizika a přínosy jaderné energetiky, Pro-Energy journal, 3/2007, pp. 58-62, www.pro-energy.cz/clanky3/4.pdf

The investment costs on kWh and prospective period of construction for different types of power stations

	Investment costs in USD/kWh	Period of construction in years without approval process
Nuclear p.s.	2000-2500	6-7
Lignite p.s.	1000-2000	4-5
Gas p.s.	500-900	2-3
Water p.s.	-	-
Wind p.s.	1250-2000	1
Photovoltaics p.s.	15000-25000	1

Source: Drábová, D.: Rizika a přínosy jaderné energetiky, Pro-Energy journal, 3/2007, pp. 58-62, www.pro-energy.cz/clanky3/4.pdf

The energy intensity of different sources and its return period

	Energy intensity without fuelling in kWh prim./kWh	Return period on energy input in months
Black coal	0,28-0,30	3,2-3,6
Lignite	0,16-0,17	2,7-3,3
Gas	0,17	0,8
Nuclei	0,07-0,08	2,9-3,4
Photovoltaics	0,62-1,24	71-141
Wind	0,05-0,15	4,6-13,7
Water	0,03-0,05	8,2-13,7

Source: Drábová, D.: Rizika a přínosy jaderné energetiky, Pro-Energy journal, 3/2007, pp. 58-62, www.pro-energy.cz/clanky3/4.pdf

The appropriation of land for power station with generated capacity 1000 MW

Power station	Land in km^2
Nuclear	0,25-4
Coal	0,85-1,5
Gas	0,16-0,25
Photovoltaics	20-50
Wind	50-150
Biomass	4000-6000

Source: Drábová, D.: Rizika a přínosy jaderné energetiky, Pro-Energy journal, 3/2007, pp. 58-62, www.pro-energy.cz/clanky3/4.pdf

Directive 2001/77/EC on the promotion of electricity from renewable sources in the internal electricity market

Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport

Directive 2003/54/EC concerning common rules for the internal market in electricity

Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

"Renewable Energy Road Map – Renewable energies in the 21st century: building a more sustainable future"

"*appropriate and achievable goals include 20% of energy from renewable sources and 10% of energy from renewable sources in transport...*"

Directive of EU 77/2001

Requiment of EU members to generate 22,1% of total energy from RS.

The initial goal of this direction was dicrease CO_2 emmissions

Trying to achive this goal we must take in account expenses.

CZ Act 180/2005 Sb. – About support of electricity generation from RS

Main problem – redemption price el. energy from RS is reflected in price for customer.

Cost of reduction of CO2 equivalent emissions (CZK/tonne)

1EUR=23CZK

Photovoltaics	6000 – 12200	260-530
Building insulation	2000 – 9100	87-396
Heat pumps	1500 – 8800	66-383
Thermo-solar	2000 – 8000	87-348
Wind power	2000 – 5000	87-218
Geothermal energy	3000 – 4000	131-174
Biomass	1500 – 4000	66-174
Biogas	3000 – 3500	131-153
Small hydro-plants	2000 – 2500	87-109

Source: Zajíček, M., Zeman, K.:Účet za 700 miliard, Fotovoltaika a růst cen elektřiny, CEP Proceedings, 86/2010, pp. 55-80

Development of regulated purchase prices for electricity generated by photovoltaic facilities

commisioning	Yearly rate (CZK/kW-h)				
	2006	**2007**	**2008**	**2009**	**2010**
2005	**6.28**	**6.41**	**6.57**	**6.71**	**6.85**
2006	**13.20**	**13.46**	**13.80**	**14.08**	**14.37**
2007	**x**	**13.46**	**13.80**	**14.08**	**14.37**
2008	**x**	**x**	**13.46**	**13.73**	**14.01**
2009	**x**	**x**	**x**	**12.79**	**13.05**
2010	**x**	**x**	**x**	**X**	**12.15**

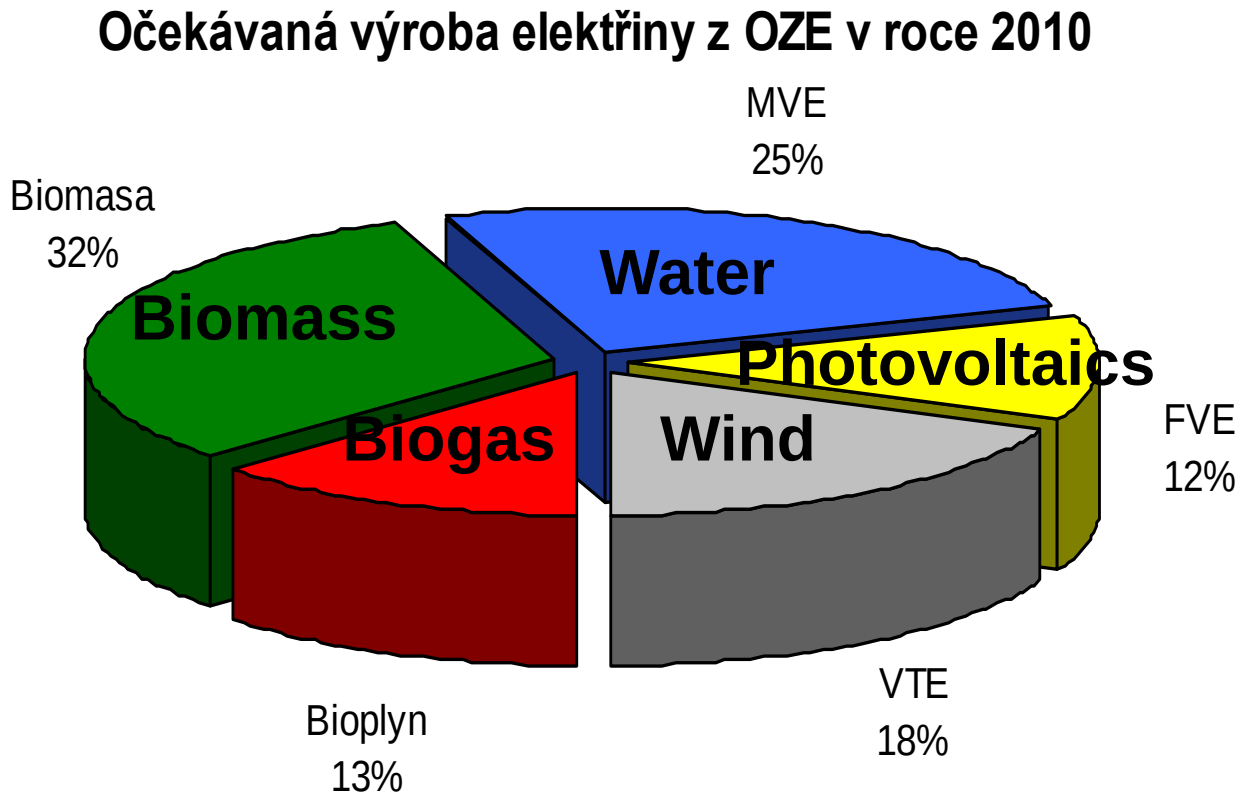
Source: Czech Energy Regulatory Office, 2010

The effectivness of utilization RS by conditions of the Czech Republic

Type of RS	Average year period utilization of maximum install capacity (hours/year)	Average year period utilization of maximum install capacitance (%)
Wind p.s.	1 900	22 %
Small water p.s.	3 700 – 5 700	42 - 65 %
Burn biomass p.s.	5 000	57 %
Biogas station	7 500	86 %
Geothermal power	5 700	65 %
Photovoltaics p.s.	**980 - 1000**	**11 %**

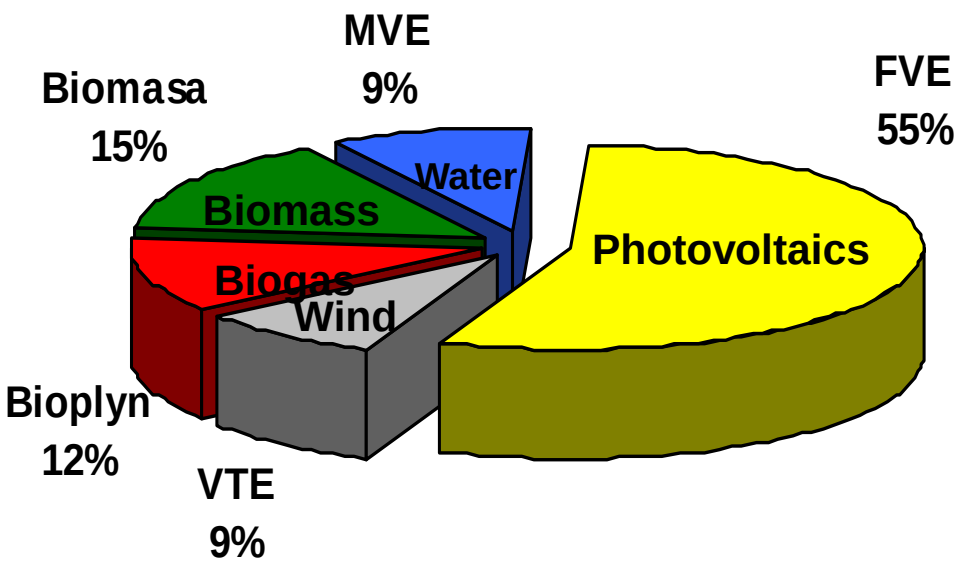
Source: Světlík, J.: Konkurenceschopnost českého průmyslu je ohrožena. In: Fotovoltaika a růst cen elektřiny. Sborník textů. BP tisk Příbram, 2010, s. 9-15. ISBN 978-80-86547-97-8

The electricity generation from RS in Czech Republic in 2010



Source: Světlík, J.: Konkurenceschopnost českého průmyslu je ohrožena. In: Fotovoltaika a růst cen elektřiny. Sborník textů. BP tisk Příbram, 2010, s. 9-15. ISBN 978-80-86547-97-8

The division of expected subvention electricity generetad from RS in the Czech Republic in 2010 according to RS



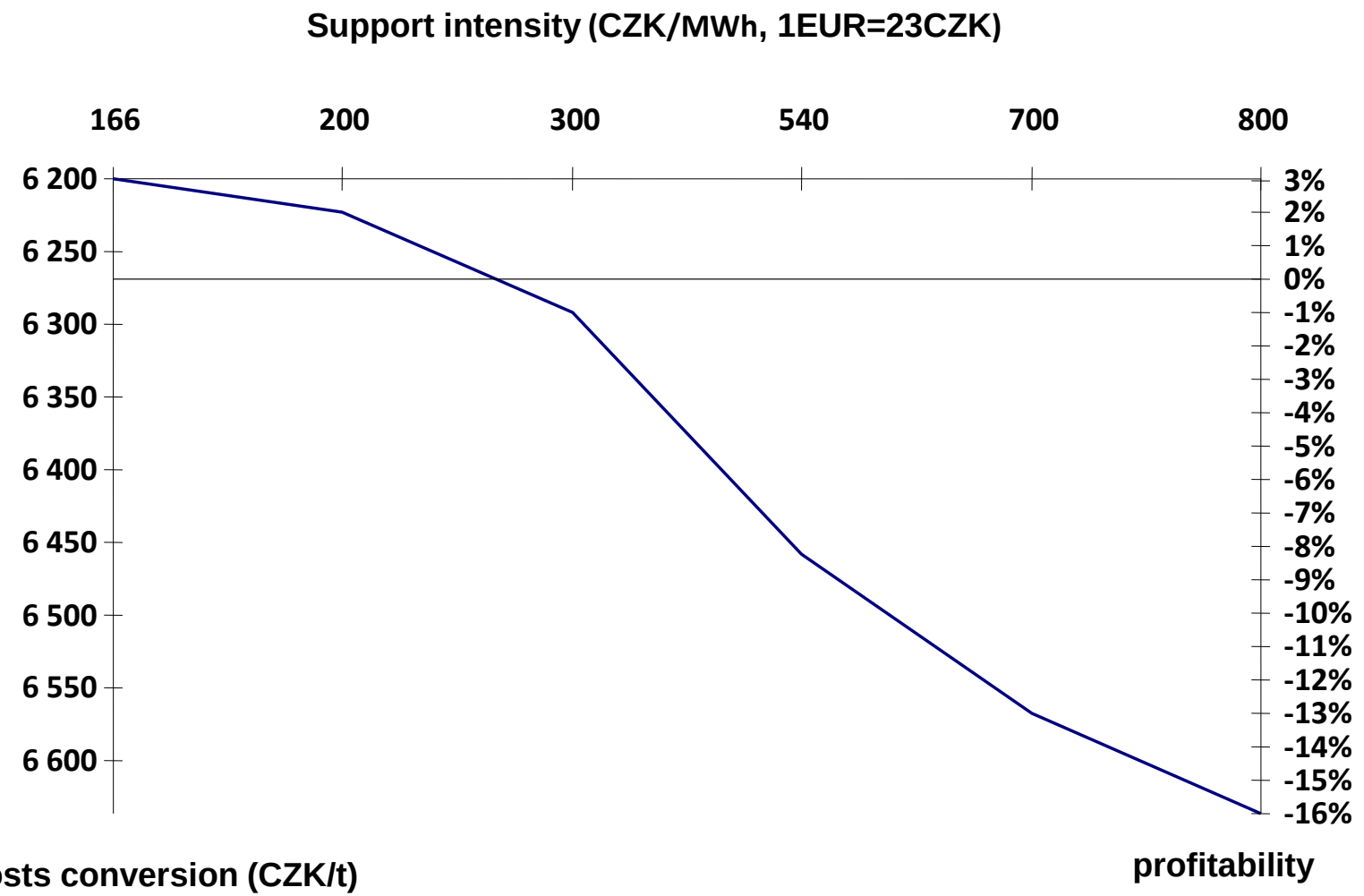
Source: Světlík, J.: Konkurenceschopnost českého průmyslu je ohrožena. In: Fotovoltaika a růst cen elektřiny. Sborník textů. BP tisk Příbram, 2010, s. 9-15. ISBN 978-80-86547-97-8

The government subvention to RS in period 2004 to 2011 in the Czech Republic

2004	**1,785 mld CZK**
2005	**2,017 mld CZK**
2006	**1,958 mld CZK**
2007	**2,659 mld CZK**
2008	**3,203 mld CZK**
2009	**3,665 mld CZK**
2010	**9,109 mld CZK**
2011	**28,1 mld CZK initially** ***16,4 mld CZK expected***

Source: Světlík, J.: Konkurenceschopnost českého průmyslu je ohrožena. In: Fotovoltaika a růst cen elektřiny. Sborník textů. BP tisk Příbram, 2010, s. 9-15. ISBN 978-80-86547-97-8

The inpact of support intensity of RS on production profitability of carbonaceous steel



Source: Vítkovice Machinery Group

The association of big energy consumers made an exclusive survey of business consumers of electricity energy in the CR in October last year. **This survey illustrates the impact of price increase for energy from RS from 166 CZK/MWh to 547 CZK/MWh.** 38 subjects responded with consumption of 6,6 TWh, which is more than 20% of entire industry consumption. The criteria was given by following formula:

$$\text{criteria} = \frac{\text{Cost increase of RS}}{\text{EBIT 2010}}$$

Lost profit by the cost of 547 CZK/KWh from RS

Share of lost profit	0% až 10 %	10 % až 20 %	20 % až 50 %	50 % až 100 %	100 % až 200 %	200 % a více	Loss increase
Number of respondents	10	7	8	2	3	1	7
% of total	26%	18%	21%	5%	8%	3%	18%

Source: Světlík, J.: Konkurenceschopnost českého průmyslu je ohrožena. In: Fotovoltaika a růst cen elektřiny. Sborník textů. BP tisk Příbram, 2010, s. 9-15. ISBN 978-80-86547-97-8

Conslusion

RS are nor economical nor ecological in this moment.

Political decisions, which don´t accept specifics of each EU country bring us more problems than benefits.

Decrease of competitivenes

Evidence of criminal actvity connecting with RS

http://www.lidovky.cz/policie-zadrzela-tri-solarni-barony-d72-/ln_noviny.asp?c=A110204_000062_ln_noviny_sko&klic=241158&mes=110204_0