

Small wind industry in Poland in the light of the draft of Renewable Energy Act

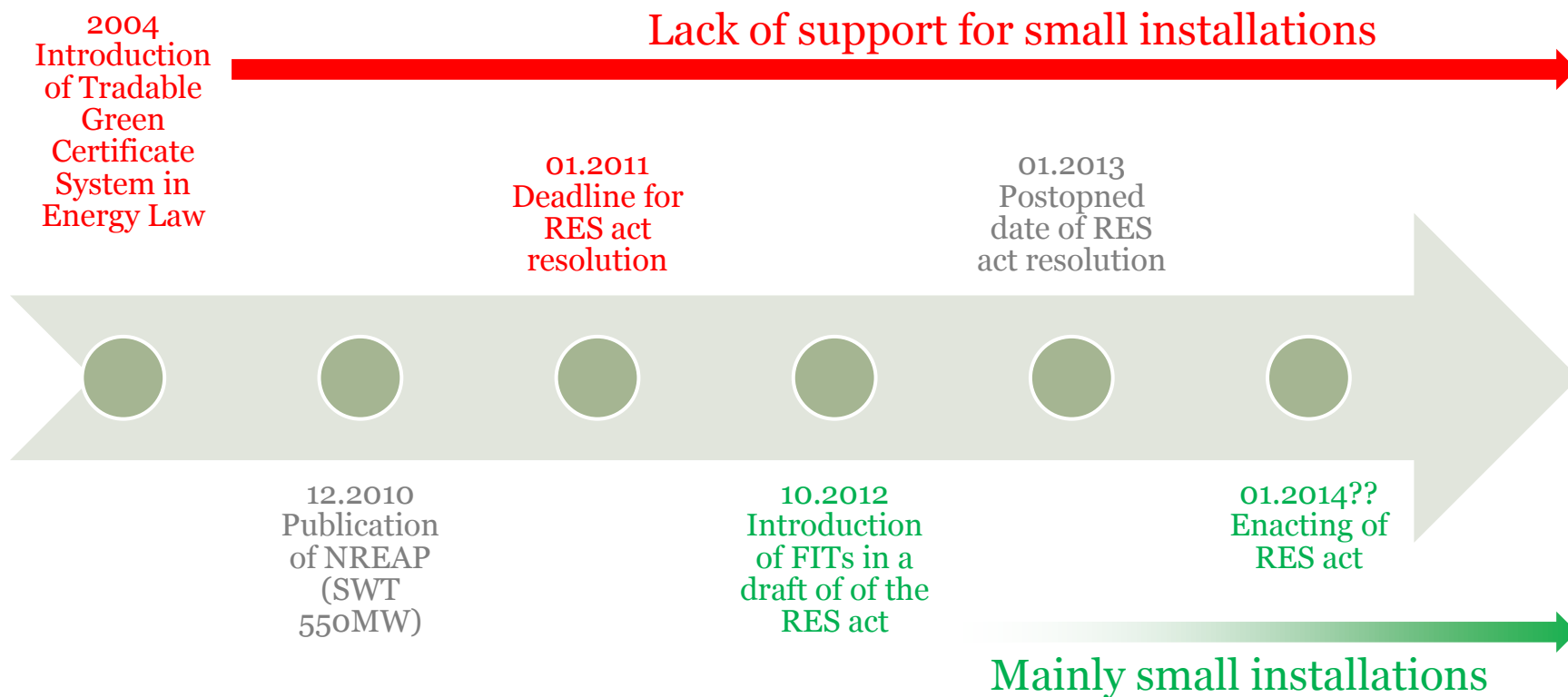
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4th World Summit for Small Wind
Husum, 22nd March, 2013

Employers Association (*Arbeitgeberkoalition*) Polish Renewable Energy Forum

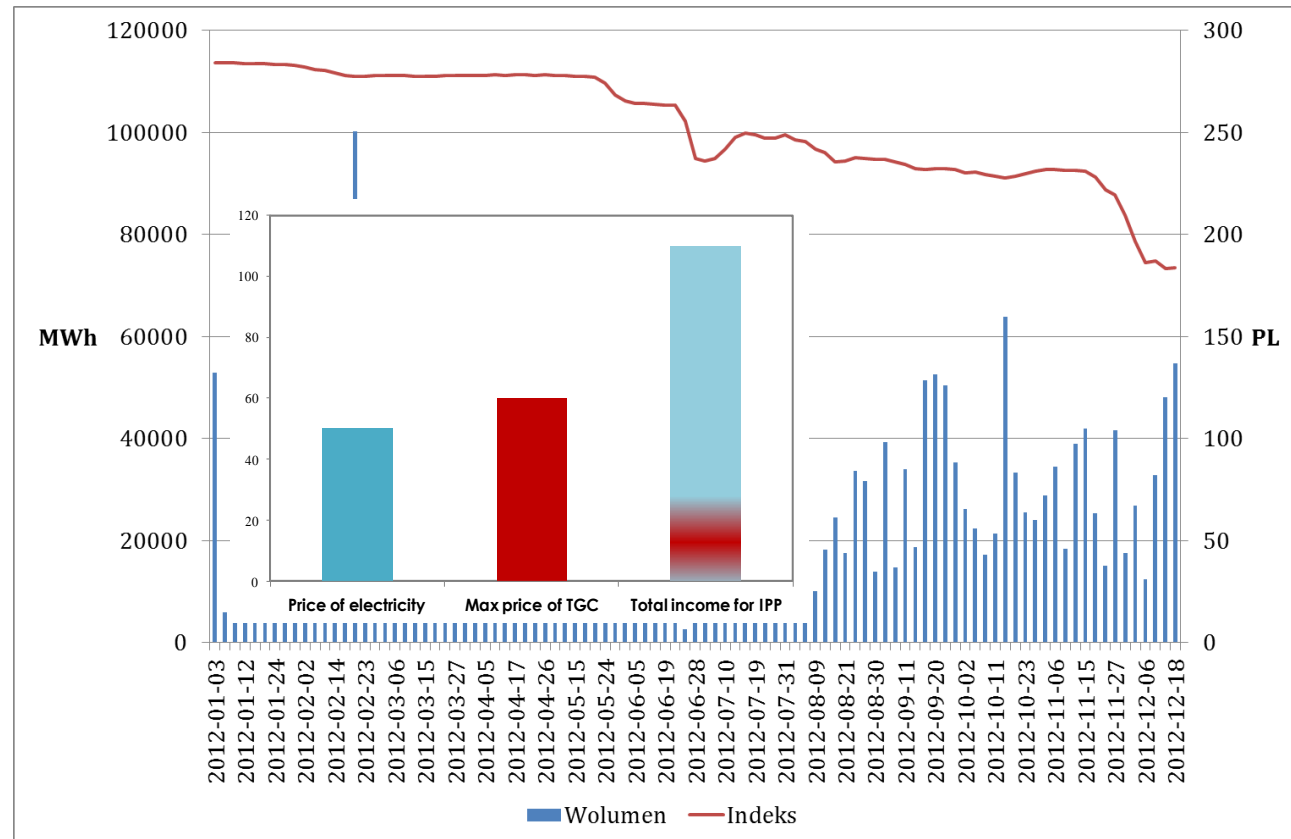


Support system of green electricity in Poland 2004-2013

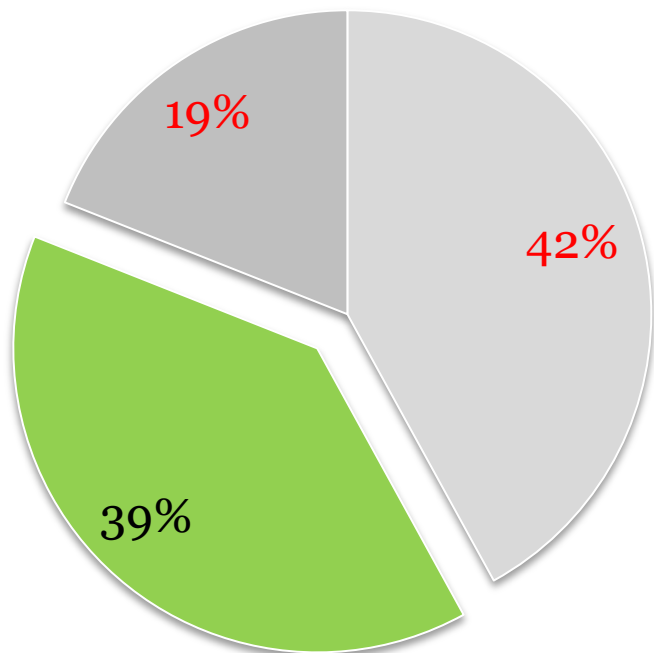


Major problem of current support system

- „Green certificates” are suitable only for large installations
- Risk of inappropriate interpretation of law principals
- No investment support
- Insecure situation of „green certificates” cost on energy spot market



What does system support in 2013?



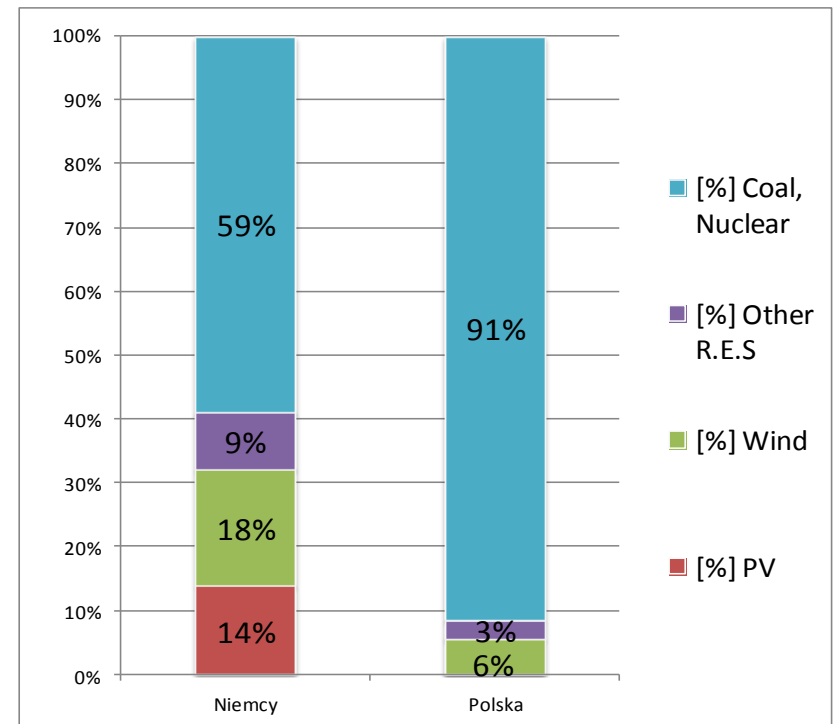
- Co-firing biomass with coal
- New RES capacity
- Large-scale hydropower

- In 2012 energy consumers paid **app. 1 bln €**
- **Only 39%** used for installation new RES capacities

2000 installations of new RES
22 SWTs integrated with a grid

German and Polish Energy System

	Germany	Poland
Installed Capacity [MW]	180 000	35 000
Coal and Nuclear plants [MW]	106 000	32 000
Total: RES [MW]	74 000	3 000
Photovoltaics [MW]	25 000	1
Wind Farms [MW]	33 000	2 000
Other RES [MW]	16 000	999
[%] RES in Energy System	41,1%	8,6%
[%] PV	13,9%	0,0%
[%] Wind	18,3%	5,7%
[%] Other RES	8,9%	2,9%
[%] Coal, Nuclear	58,9%	91,4%



Low and unbalanced wind / PV capacities in Poland

FiT legislation missing, TGC legislation doesn't work => RES act necessary

LCOE Analysis - assumptions

$$\text{LCOE} = \frac{\text{Total Lifetime Costs}}{\text{Total Lifetime Energy Production}}$$

- **capital expenditures** (cost of devices, installation, project preparation etc.)
- **operating expenditures**, service, replacement costs, fuel (if needed)
- **other factors** (insurance, own work related to investment etc.)

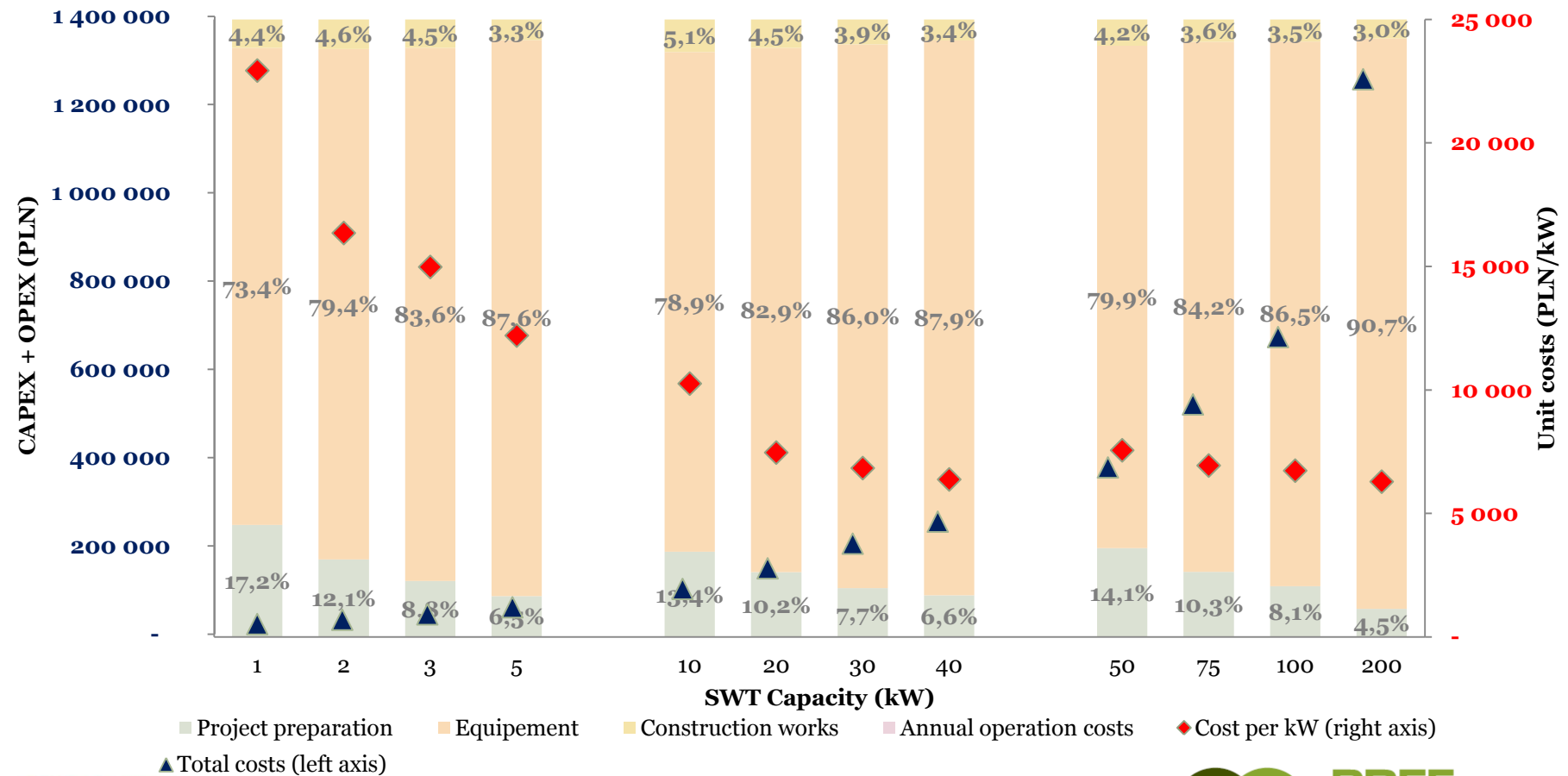
LCOE model assumptions

Lifetime	- 15 years
Duration of FiT system	- 15 years
Value Added Tax	- 23 %
Rate of depreciation (devices)	- 10 %
Rate of depreciation (ground mounted)	- 4,5%
Cost of own work	- 35 PLN/h
Own financing	- 20%
Share of loan	- 80%
Own capital cost (WACC)	- 8%,
Interest rate	- 8,5%
Loan period	- 9 years
Inflation rate	- 2,5 %

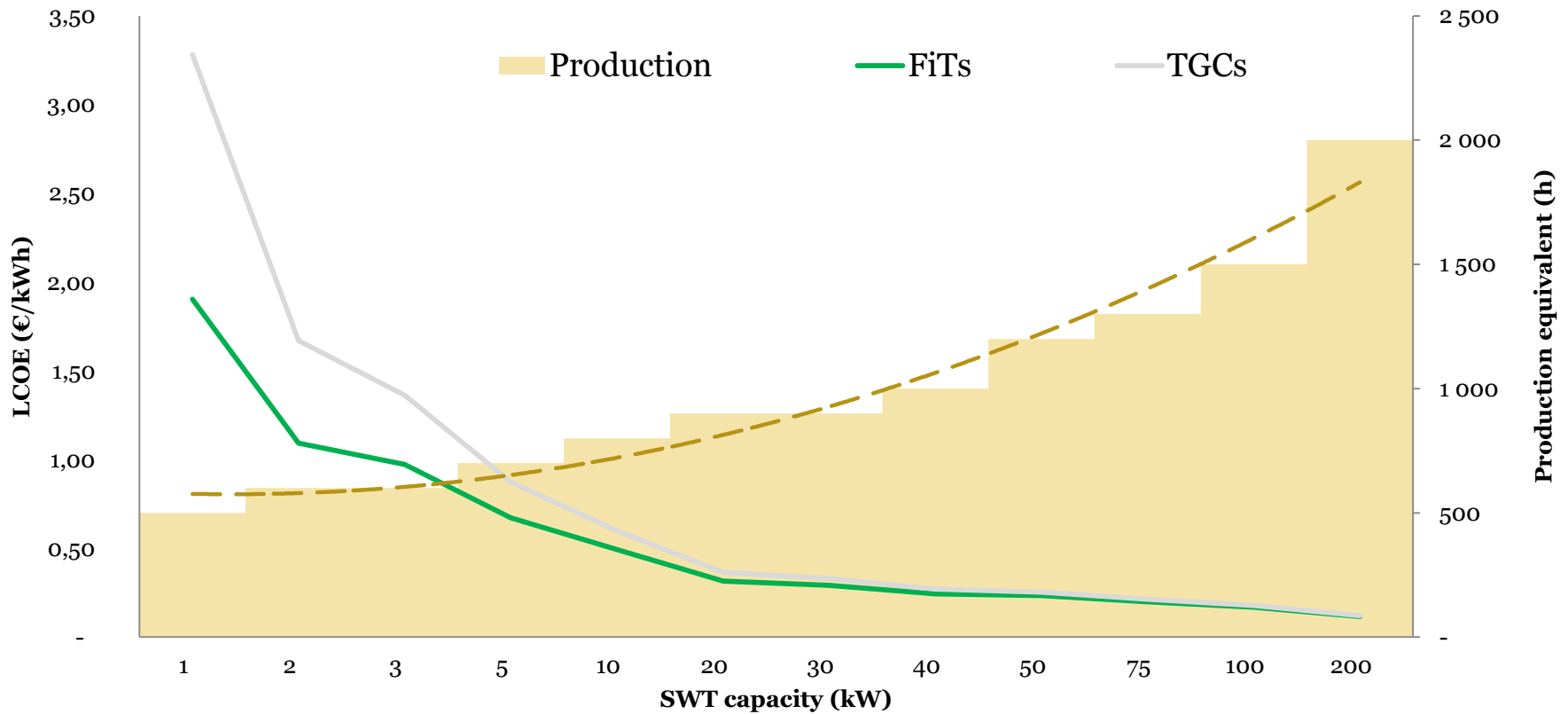
LCOE model of investor

- Home owner already employed
- Type of tax: tax on recorded revenue without deductible costs
- No concession for „green” energy production
- No grid connection cost

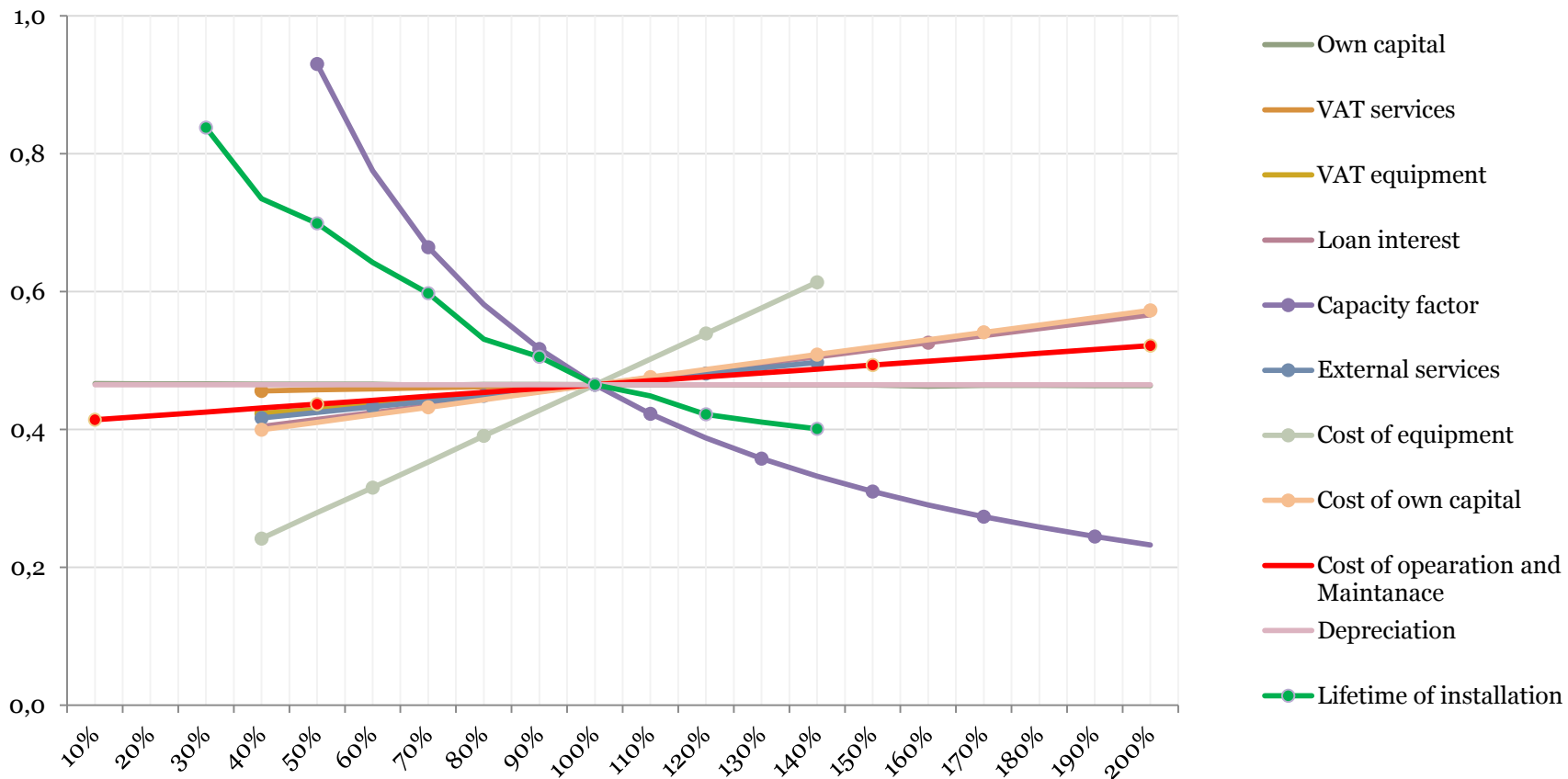
SWT LCOE results



SWT LCOE results



Sensitivity analysis



LCOE versus FiTs in RES acts

R.E.S Technologies	Installed capacity [kW]																					
	5	10	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	150	200	1000
Small Wind Turbines	0,48 €/kWh	0,29 €/kWh (proper location needed)										0,16 €/kWh (proper location needed)										
PVsystems - roof mounted	0,36 €/kWh	0,28 €/kWh	0,26 €/kWh (Profitability with tariff proposed in new R.E.S Act)																			
PVsystems - ground mounted	0,28 €/kWh (Profitability with tariff proposed in new R.E.S Act)																					
Micro- and small- biogas plants	0,37 €/kWh (no profitability with tariff proposed in new R.E.S Act)										0,28 €/kWh (no profitability with tariff proposed in new R.E.S act; possible profitability with min. 50% co-financing)										0,19 €/kWh	0,16 €/kWh
Micro Hydro Turbines	0,17 €/kWh (proper location needed)																					

	No profitability
	No profitability without min. 50% co-financing
	Possible profitability with medium level of co-financing
	Possible profitability without co-financing (only for proper locations of small R.E.S)
	Profitable technology with support system from new R.E.S Act
	No FiT in project of new R.E.S Act

Draft of RES act

- **Feed-in-tariffs** for micro and small scale RES
- **Support for 15 years**; but no longer than by 2028
- **Simplified and free of charge connection procedures** for installations below 40kW
- **Business activity exemption**
- **FiTs rates:**
 - up to 10kW: ~**0,23€/kWh** (0,95zł/kWh)
 - 10 – 100kW: ~**0,16€/kWh** (0,65zł/kWh)
 - 100 – 500kW: ~**0,13€/kWh** (GC system, varies)

SWT market awaits positive changes in law

- **SWTs capacity 8,2 MW**
- **150 companies** offer SWT models, while only 6% of them reported significant annual sales and another 27% only a few units annually
- **4 polish manufacturers** offer 12 SWT models in a capacity range 1 to 75 kW
- **300 full-time jobs**

Key Polish SWT manufacturers



- Dr Ząber (<10 kw)
www.zaber.com.pl
- Enwia (40kW)
www.enwia.pl
- Ecosolar (<10kW)
www.ecosolar.pl
- Ventus Aquael (<10kW)
www.aquael.pl

Latest STW development in Poland



Polbud Eko Energia – the largest SWT factory in CE

www.polbud.com.pl

Initiatives taken by the SWT industry

- **Lobbying by ZP FEO** (Employers Association Renewable Energy Forum) since 2011
- **Roadmap for microgeneration** development in Poland by 2020 by IEO
- **Loans for distributed energy sources** to be introduced by National Fund for Environmental Protection and Water Management in 2013
- **SWT integration in smart grids** – pilot project www.ozerise.pl

Future events in Poland

Follow further events related to RES act in Poland:

- 6th Solar Energy Industry Forum
Torun, 13-14th May 2013
www.solarforum.ieo.pl
- 3rd Small Wind Energy Forum
Poznan, 7-10th October 2013
www.forummew.ieo.pl

Thank you for attention

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