

Discussion Seminar

Current Energy Issues in Central Europe

Competitiveness of RES for Power Generation - Case Example of the Czech Republic

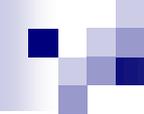
Jaroslav Knápek

CTU in Prague, Fac. of Electrical Engineering



JAN EVANGELISTA PURKYNĚ UNIVERSITY IN ÚSTÍ NAD LABEM

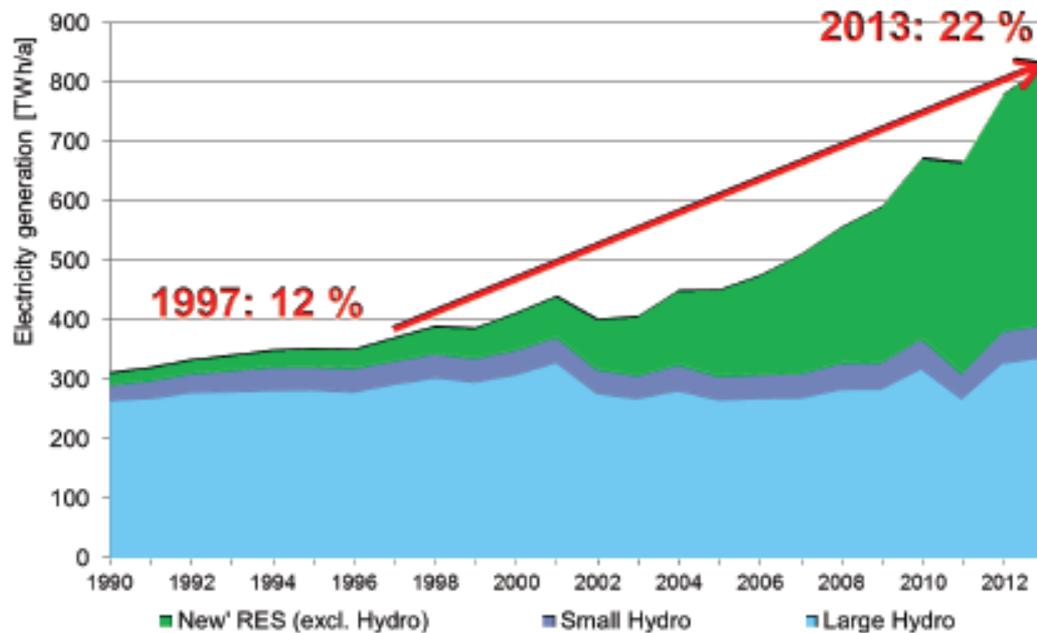




Content

1. Biomass as the decisive RES source in EU and the Czech Republic
2. Biomass potential – do we have realistic expectations?
3. Methodology of biomass potential determination in relation to soil and climate condition
4. Standard and additional biomass potential
5. Economic reality – three looks to biomass potential
6. Conclusions

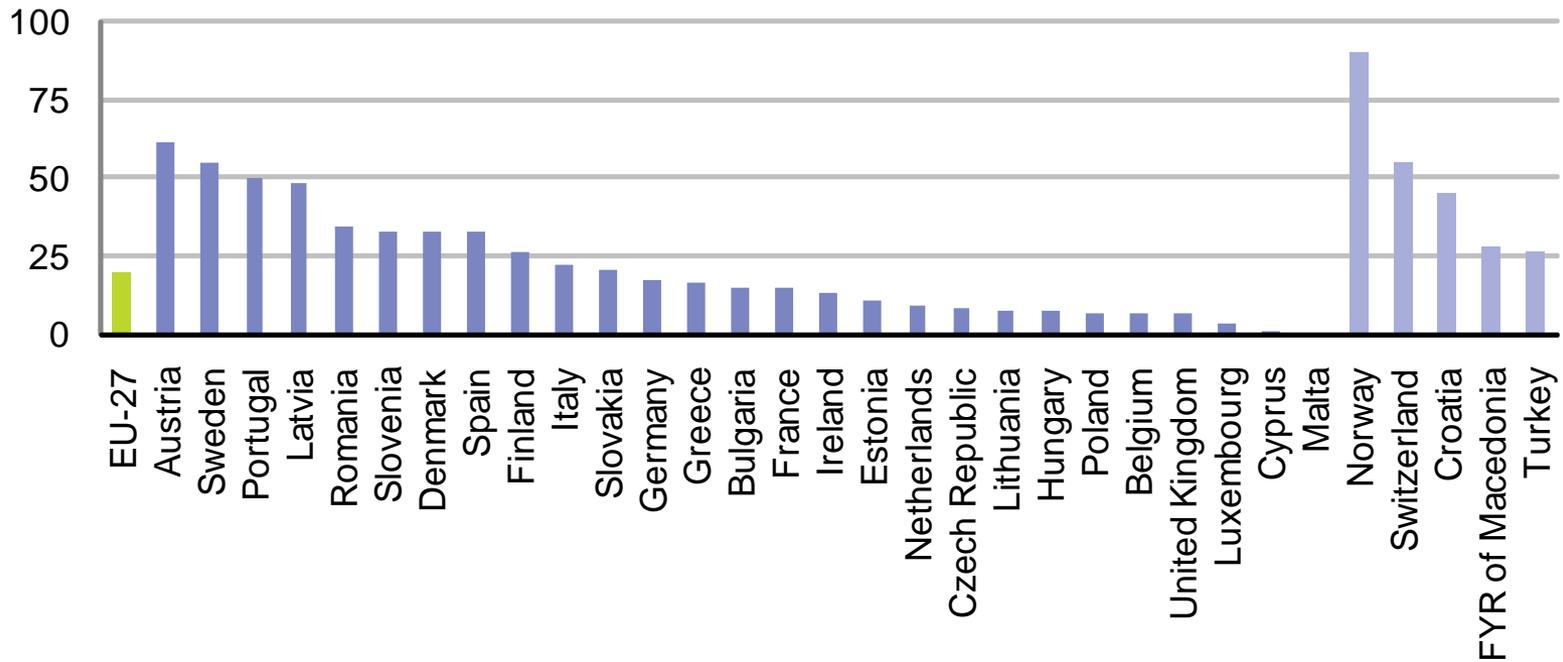
Significant role of RES for power generation in EU



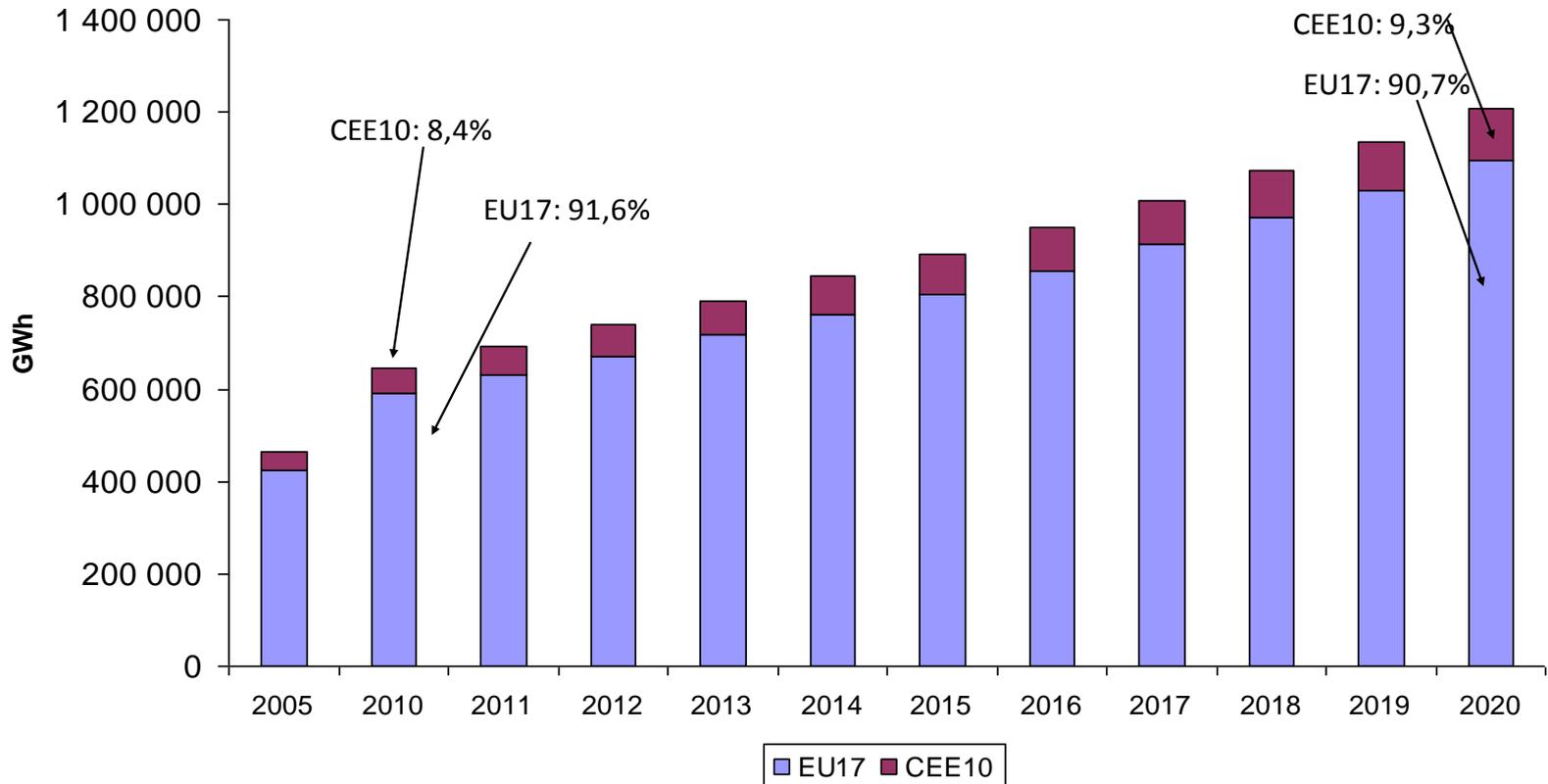
Power generation using RES accelerated in last 10 years – the role of „new RES“

Unique conditions for RES for power generation in EU MS

RES contribution to power power generation, 2010



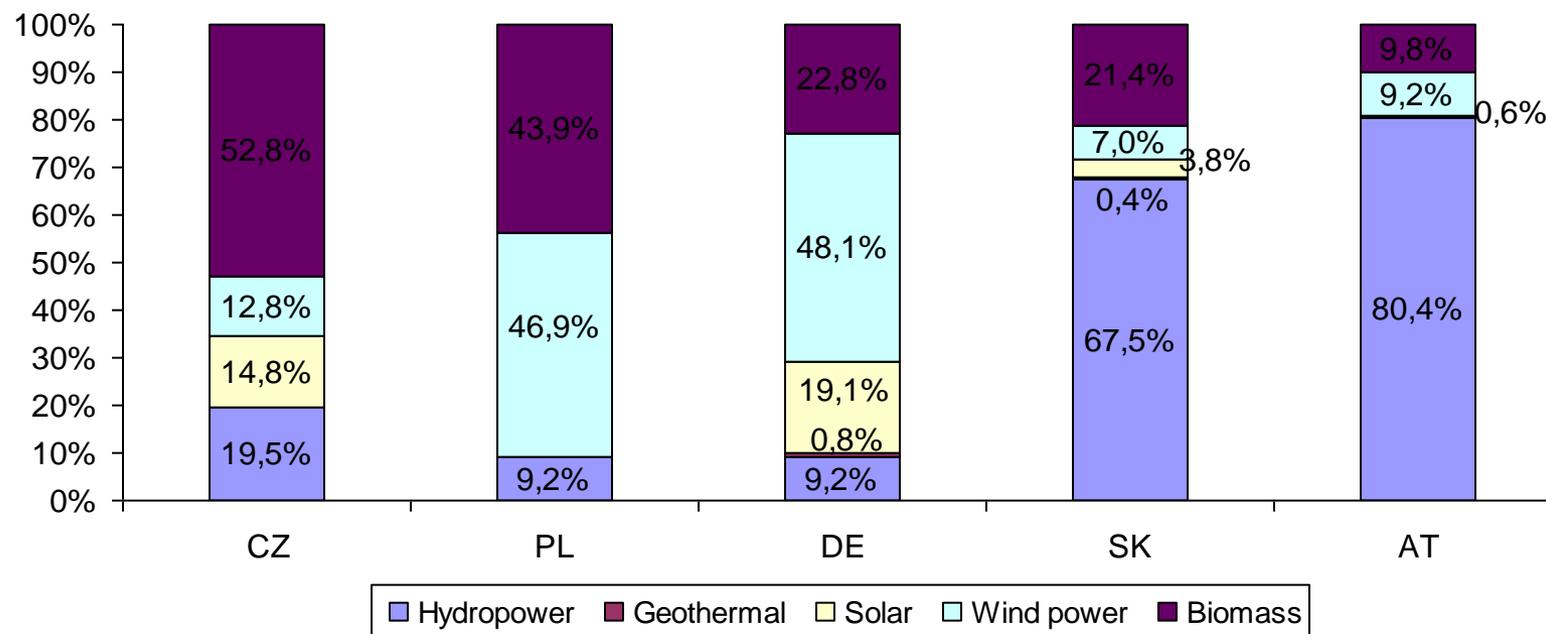
Fast increase of REs for power generation in EU



CEE10: 2010 to 2020 growth: 109%, **EU17:** 2010 to 2020 growth: 85%

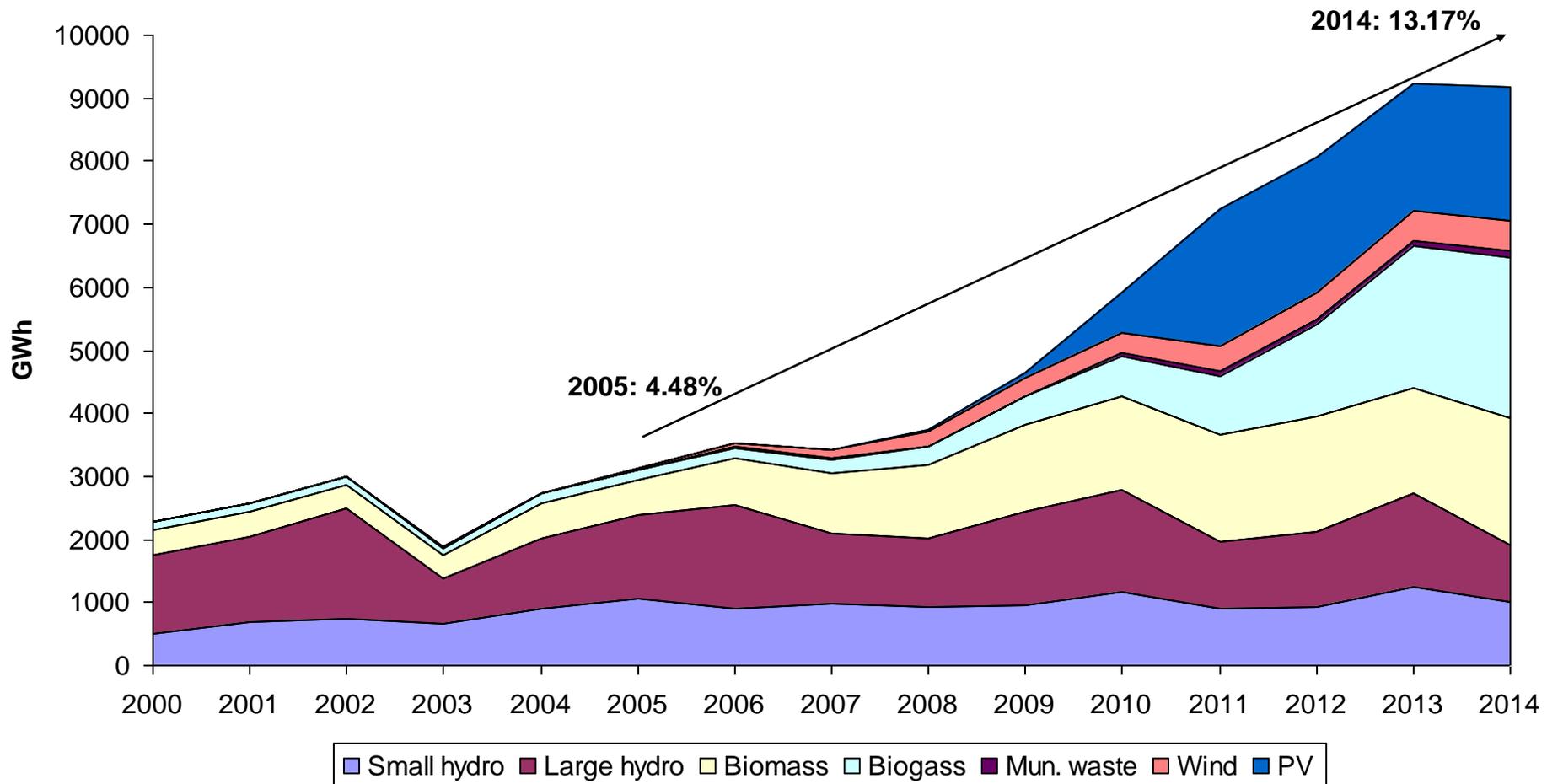
Example of differences between states

RES power generation, NREAPs, 2020



Regions **CEE10** and **EU17** differ significantly, but much higher differences between MS in both regions can be found – see example for CZ, SK, HU

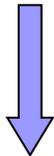
RES for power generation in Czech Republic



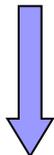
Introduction of legal framework for RES support since 2006 resulted in relatively quick development of RES power generation

Aim of the CZ RES-E Support Scheme – Act 180/2005 Col.

RISK MINIMIZATION FOR THE INVESTORS



Creation of stable and favorable conditions for the investors



Creation of conditions to meet national indicative target for 2010



Risk reduction means reduction of adequate (fair) rate of return



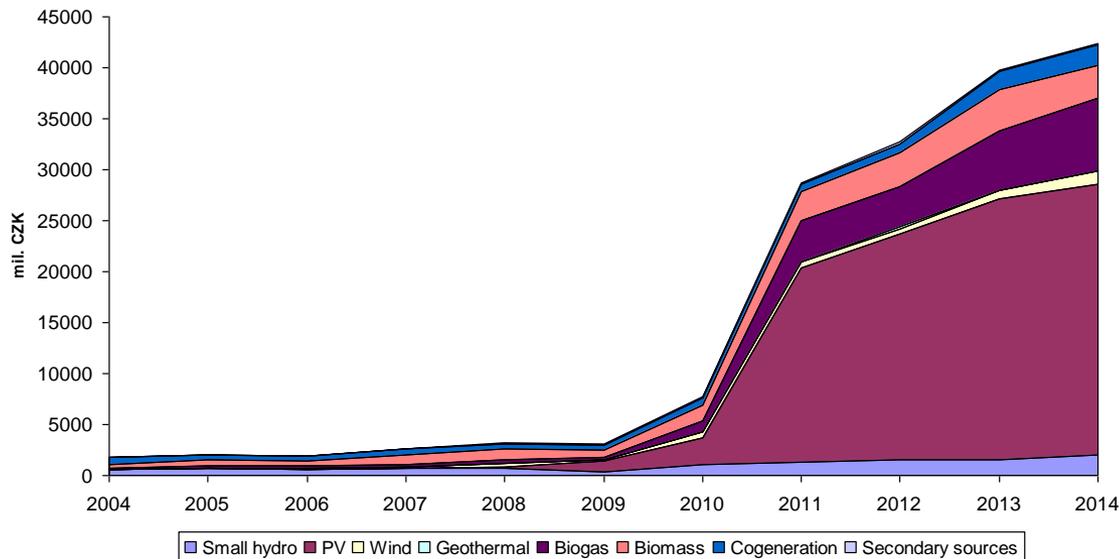
Expected cost effective solution – minimization of economic impact to power consumers

Scheme was regarded as reasonable solution till 2008

Imperfections of Czech RES support schemes

- ❑ RES support scheme (Act 180/2005 Col) based on FIT and GB
 - ❑ guarantee of FIT for technical lifetime (20 year)
 - ❑ rate of return approach used for FIT calculation (all RES types and RES technologies had the same R of R)
 - ❑ input data for reference projects periodically updated
 - ❑ responsibility for power deviation on side of power distributors
 - ❑ support cost fully transferred to the final power consumers (no differentiation)

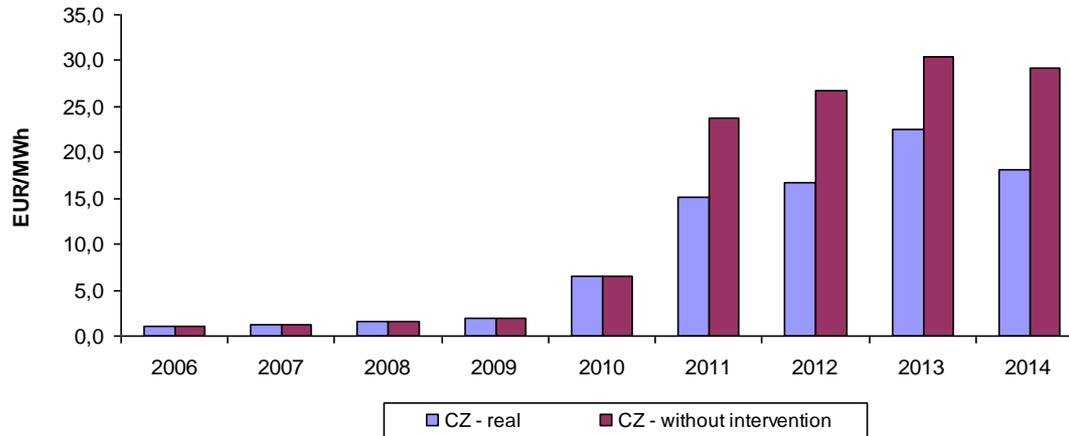
RES support cost skyrocketed in 2009 and 2010



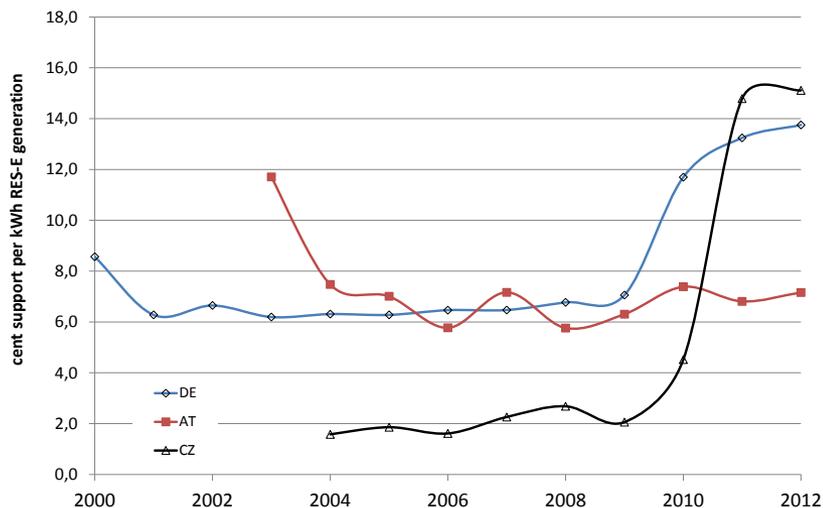
Increase of RES support cost was not under control in 2009-2011

(namely PV boom and biogas)

Increasing RES fees started to be real burden and since 2011 was not possible to transfer all the cost to final power consumers



RES support cost skyrocketed in 2009 and 2010

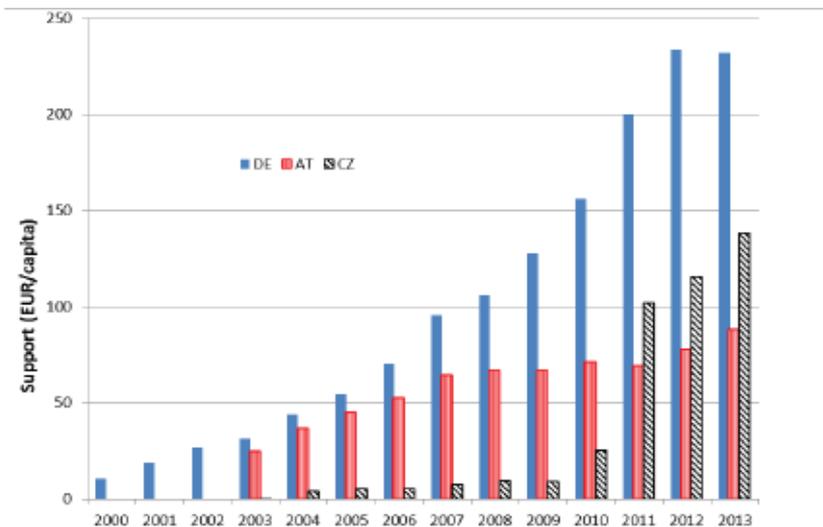


Change in the logic of RES support scheme

- switch from R of R approach to the simple payback time (15 years) – Act. 165/2012 Col.
- stop of operational support for new plants in 2013-2015

CZ RES support for power generation created high burden also compared with AT and DE

Part of RES support cost had to be financed from state budget (but some of measures to collect money were not finally fully effective – tax on EA, international arbitrations, etc.)



Lessons Learnt from CZ Case

FIT scheme is theoretically effective, but:

- Application of the same rate of return has led to the different motivation for the different RES type
 - *but original motivation has been the same chance !*
- Parallel support of some types of RES projects (e.g. biogas stations were eligible for investment support 30-60% from EU funds)
 - *but FIT were calculated assuming no other support*
- Missing the real possibility to reflect the changing priorities of state
 - *but SEP and NAP for RES as the other strategic documents*

Lessons Learnt from CZ Case - 2

FIT scheme is theoretically effective, but:

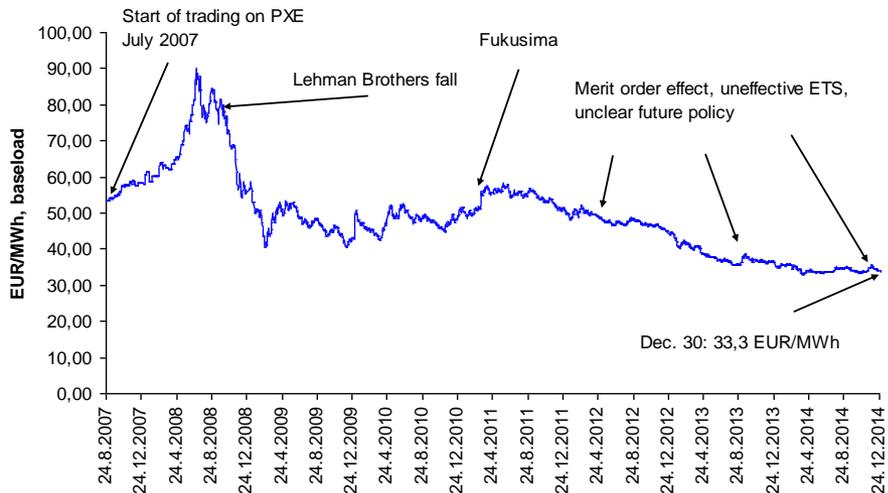
- Green bonuses have been defined to create motivation to the rational behavior for the investors
 - *but high majority of RES-E plant uses FIT scheme !*
- Periodical update of reference projects were seen as the effective tool for FIT definition
 - *but problem of strong lobbyism and data collection*
- Primary orientation to technical indicators (MW and MWh)
 - *but finally great surprise what the costs are and then searching who is responsible*
- Missing solution for utilization of originating heat
 - *it led to the wasting of RES potential (e.g. very high load factor for solid biomass application – no heat utilization)*

Further development of RES requires significant changes in RES support

Facts:

- ❑ many of RES technologies already reached „operational maturity“
- ❑ current support schemes were more or less effective in the start of RES for power generation but are no more applicable
 - ❑ loss of proper investment signals from the market
 - ❑ no or very small motivation of the investors to design and operate their RES projects according to the needs of power grid
- ❑ problems with reliability of power grid operation (e.g. unscheduled loop flows)
- ❑ ambitious target of EU to 2030

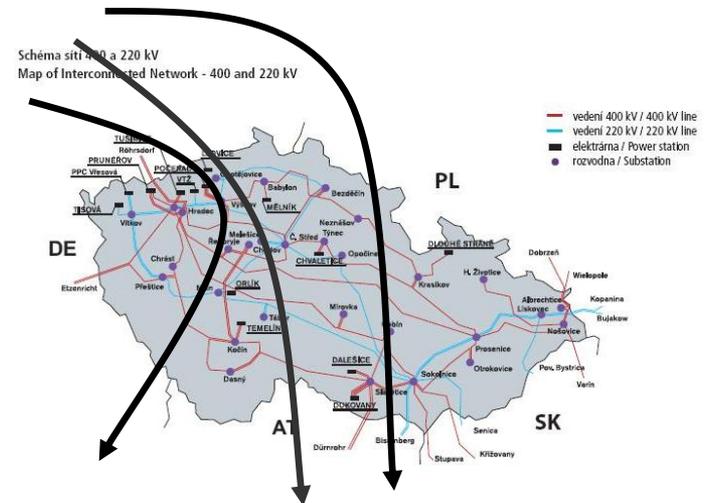
Further development of RES requires significant changes in RES support - 2



PXE: decline of power prices increases the gap between FIT and market price -> increase of RES support cost

Problem: Loop flows from N. Germany to S. Germany and Austria, end of 2014: > 3400 MW from Germany to Austria

Threat for TS stability, installation of “phase shifters”, 1st installation in 2015-2016 (Hradec)

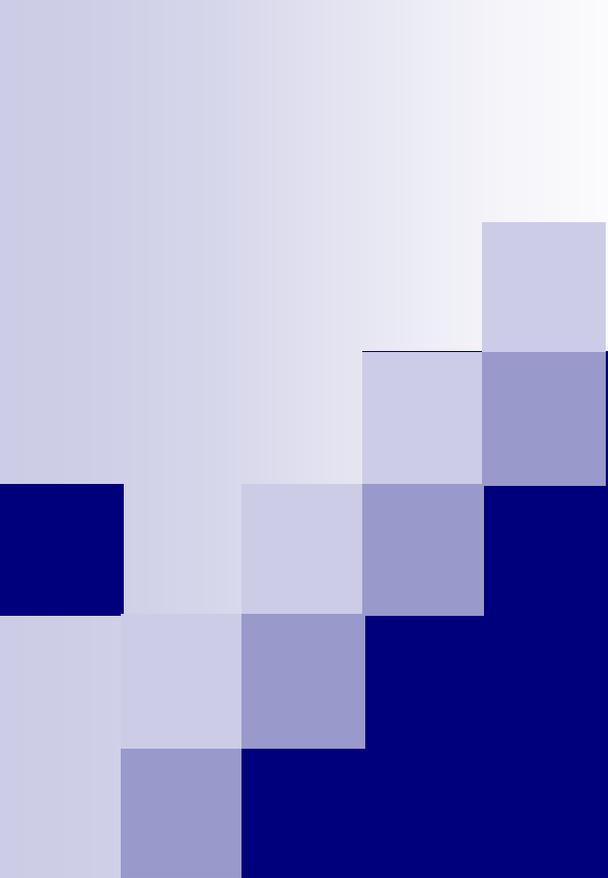


Further development of RES requires significant changes in RES support - 3

„From 2017 on, operational aid to all new renewable energy installations will be granted through competitive bidding processes“

Guidelines on State aid for environmental protection and energy 2014 - 2020, C(2014)2322

- ❑ an attempt to increase efficiency of RES support, to reduce uncontrollable increase of RES support cost
- ❑ need to find the optimum way of RES power integration into power market and grid operation
 - ❑ storage
 - ❑ smart grids
 - ❑ economic incentives on both sides – consumer and producer
 - ❑ reliability issues, new models for conventional PP



Děkuji za pozornost!

*Thanks for the
attention !*