



# Potential of the wind energy in Lithuania and regulation of the sector

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# Significant

- ▶ Wind energy clearly has very significant potential in renewable electricity production
  - ▶ Mature technology
  - ▶ Easily scalable
  - ▶ Improved grid integration however TSOs still have to learn

Installed MW	On/ offshore	Production, TWh
650	650/0	1,5
1000	650/350	2,6
1500	750/750	4,07
2000	800/1200	5.6

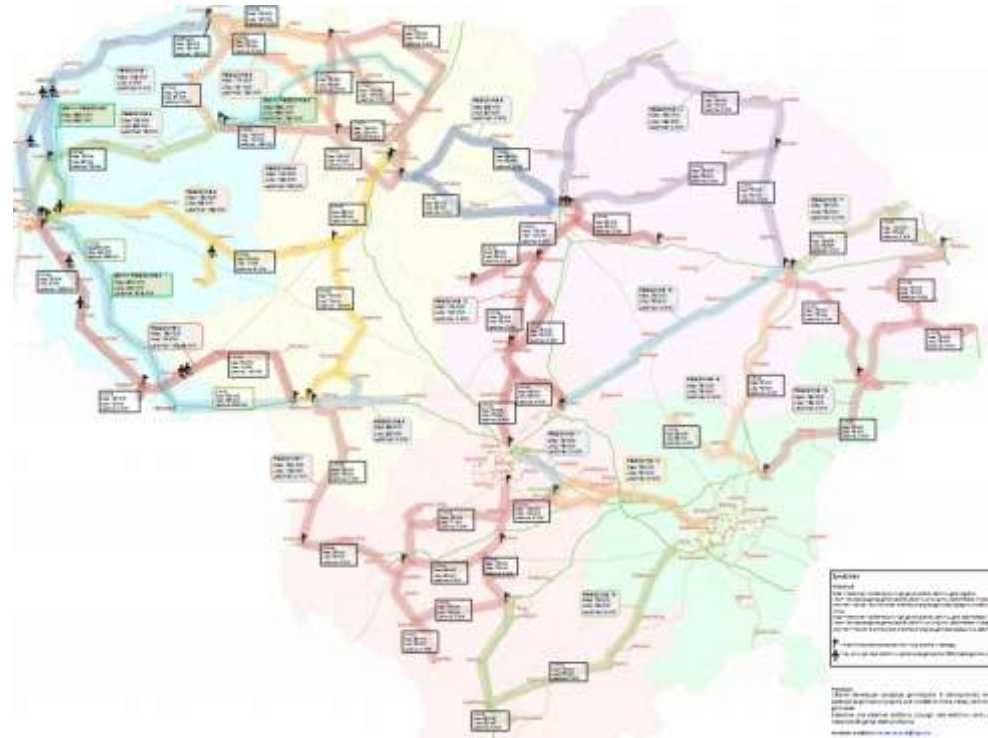
- ▶ In comparison Visaginas NPP 1300 MW would produce around 11TWh; provided 1/3 is “owned” by Lithuania – 3,6 TWh

# Affordable

- ▶ Wind energy price in Lithuania (87 EUR/MWh) is comparable with /cheaper than the price of electricity from old gas CHPs where no capital costs are taken into account and heat price regulated
- ▶ New CHPs are claimed to be cheaper due to higher efficiency however they are subsidized on the investment level (e.g. 176 MEU grant for Elektrenai) or through regulated heat price; CO<sub>2</sub> and other environmental cost not taken into account
- ▶ Wind energy is subsidized for 10-12 years; rest of the time it is cheapest energy on the market;
- ▶ Looking at the global developments fossil energy price will grow
- ▶ Negative impact on the end consumers could be further more limited as first the most expensive energy is replaced
- ▶ Several studies in EU show that higher wind penetration brings market prices down!

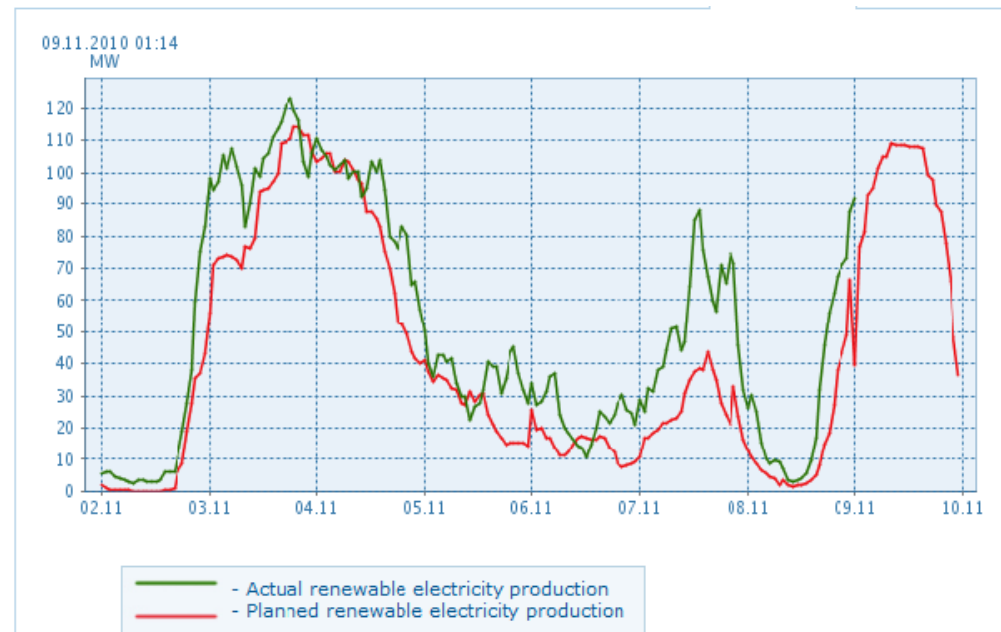
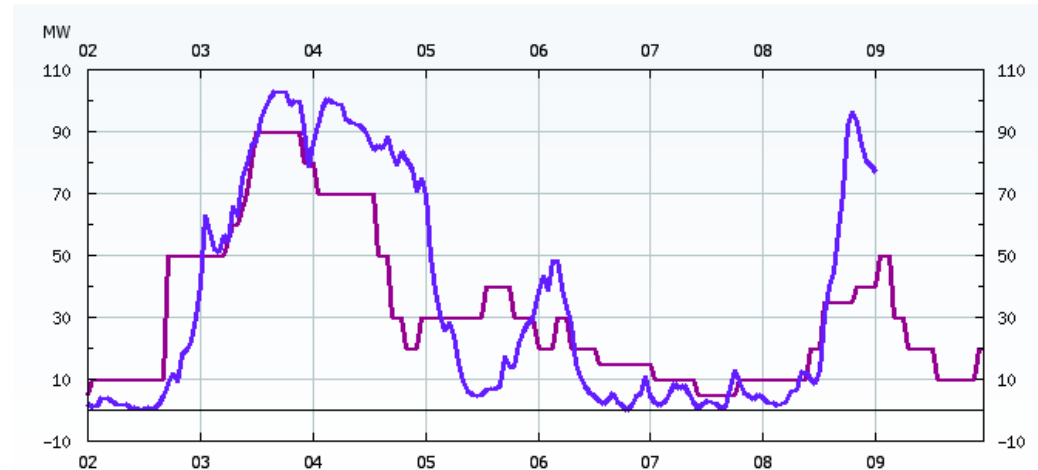
# Technically sound

- Typically the most costly problem to solve when expanding wind generation
  - Lithuania is in pretty good position:
    - 110 kV grid - 1590 MW
    - 330 kV – 2350 MW (total with 110 kV – 2950 MW)
    - some possibilities on the distribution network
- (Source - Lithuanian energy institute, 2009)



# Balancing

- Day ahead hourly forecasts 10 - 15% error from installed capacity
- Intraday forecasting (1 hour) – 4-5% accuracy
- Forecasts accuracy increase in larger geographical areas
- Region is well interconnected by 2015 both to large external markets (Nordpool and FSU) as well as within Baltic countries
- Several studies suggest the balancing cost to be 1-4 EUR/MWh



# Law on renewable energy

- ▶ Law on renewable energy has been adopted in May 2011
- ▶ Development took almost two years
- ▶ Far from perfect however still a step forward
- ▶ Main provisions:
  - ▶ Amount of wind energy supported – 500 MW at first (once reached, new legislation should be prepared)
  - ▶ Form of support – feed-in
  - ▶ Size of the feed-in – to be established in tenders in each connection area
  - ▶ Method of allocation - auction

# Support scheme

- ▶ Feed-in in principle good way to encourage investments, especially in small States where cost of participation in the electricity market could be high especially for small parks
- ▶ The only better way – option between feed-in and market plus support schemes to be chosen by the producers/investors
- ▶ However:
  - ▶ Feed-in tariff will be established via auctions
  - ▶ Ceiling to be set by the Regulator
  - ▶ Tenders will be arranged in each separate connection region
- ▶ High risk of underbidding and stopping any development of the wind sector as happened in several States before
- ▶ Precautionary measures:
  - ▶ Participants have to be prepared (spatial planning finished, protocol of intent signed with TSO)
  - ▶ 50 th LTL/MW guarantee fee has to be paid
  - ▶ Ceiling has not to be set too low

# Capacity limitations

- Law sets a goal to reach no less than 500MW installed capacity by 2020
- Once this amount is reached, Government should set new targets and support schemes
- 220-280 MW will be constructed using the “old” support schemes so around 220 - 250 MW are to be distributed in tenders
  - one Investor in each tender will be awarded a capacity quota
  - lowest price
  - in case of equal price – the one offering more capacity to be installed
  - Pretty high risk of investors offering same price and same capacity (max free capacity in the lines)

Estimation of wind energy share in RES

		EST	LAT	LIT
Final energy consumption*, TWh	2005	32,4	46,9	51,9
	2020	40,5	58,6	64,9
Renewable energy share, TWh	2005	5,8	15,3	7,7
	2020**	10,1	24,6	14,9
RES growth, TWh	2005-2020	4,36	9,33	7,25
New wind capacity***, MW	<b>2005-2020</b>	<b>829</b>	<b>1 755</b>	<b>1 379</b>

\* Estimated annual growth rate is 1,5

\*\* According to the EU Climate Package 20/20/20 target

\*\*\* Assuming 50% of the total RES growth to be covered with wind energy

**500 MW of wind is not enough to reach EU targets!**

# Distribution of supported capacity

- ▶ High risk of not reaching even planned 500 MW as:
  - ▶ It takes long time to implement the wind projects
  - ▶ Some projects will never be implemented due to underbidding or other, more “normal” business challenges
- ▶ Therefore more capacity (than missing 220-250 MW) should be tendered
- ▶ New support scheme should be developed pretty early, so investors know what to expect
- ▶ Work should start early to ensure good cooperation with potential partners for statistical transfers
- ▶ With more and more EU states announcing fully green energy targets, also Baltic States should appreciate the advantage of being the early mover in the sector

# Establishing of the tender regions

- Separate tenders in separate regions; Tenders will be initiated by the investors
- Regions - supposedly power lines, however still to be designated by the competent authority
- Around 3000 MW of empty capacity in the lines and only some 250 MW have to be distributed to the investors via tenders
- Designation of the regions is very important to ensure transparency of the whole process

## **Recommendations:**

- There should be no special connection points, only lines, as investors should have possibility to chose connection point closest to their land
- The capacity of the regions should be limited by the technical possibilities, not by some kind of artificial division
- All lines (including 330 kV) with free capacities should be announced as regions (unless technical limitations) to avoid discrimination of investors in certain regions
- Tenders should be organized on first come first served basis

# Offshore

- Offshore wind is more expensive than onshore, however will be needed due space constraints onshore
- Getting more competitive as technology evolves, due to economy of scale and better wind conditions

## **Man provisions in the new Law:**

Marine areas to be allocated for the development of the offshore wind parks by the tenders

- Tenders are only possible in the areas designated in the spatial planning document to be prepared by the end of 2012
- Auctions will be initiated by the interested Investors
- Winners selected based on soft criteria like the preparedness of the projects and capacity of the investors; therefore tender rules will be very important
- Winners gets a chance to work of the development of the park for 4 years and then has to invest or withdraw
- However tender only awards area, not the support; No support schemes for offshore at this stage in the Law
- Current provisions do not really encourage the investors to proceed , however :
  - allows them to start preparation works
  - commands the relevant authorities to start spatial planning process

# Conclusions

- ▶ Wind along with other renewables can and will be the **most important source** of energy in the future
- ▶ Integration of large capacities of wind are technically possible and economically sound especially in long term holistic assessment
- ▶ New law on renewable energy is **not perfect and not sufficient to reach 2020 targets** however leaves possibilities for some development of the sector
- ▶ Its success will largely depend on the secondary legislation which should be developed carefully and responsibly
- ▶ Lithuania should worry about underdeveloping wind and other renewables, not overdeveloping, as gains for the society will be much greater than the cost in the long run

# Contacts

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