



**Transelectrica®**

Compania Națională  
de Transport  
al Energiei Electrice

WE LEAD THE POWER

# Renewable energy in Romania

• present and perspective •

By **Simona Oprea**  
**Renewable Integration Project Manager**

*22 October 2009, Crowne Plaza Bucharest*



# Current situation in Romania

## - Licensing Procedure, Contracts -

- Licenses and authorizations are given by the National Regulatory Authority. The process is regulated by GD no. 540/2004.
- WPPs have the possibilities to sell the energy on the day a-head market or based on bilateral contracts.
- Law 220/27.10.2008 for setting the promotion system for the production of energy out of renewable energy sources:
  - assigns differentially green certificates (GC):
    - 4 GC for 1 MWh from photovoltaic energy,
    - 3 GC for biomass,
    - 2 GC for wind energy;
    - 1 GC for 1 MWh from hydro energy up to 10MW;
  - gives higher price limits on competitive market of green certificates (minimum value 27 Euro/GV, maximum value 55 Euro/GV);
  - sets equal distribution of grid connection costs between investors, TSO and/or distribution operators.



# Current situation in Romania

## **Operational rules (Priority in dispatch, obligations to RES plants) Connection to the grid (connection interfaces, rules, cost allocation)**

- For the moment there is no WPPs that can be dispatched, but similar to energy that is produced by SC Hidroelectrica S.A. when the debit is high, this energy has priority in order to prevent the loss of primary resources. If we consider that wind can be used or lost, the same approach might be imposed.
- Some RES are uncontrollable and therefore they are not responsible for unbalances.
- The connection permits are issued by the grid operators depending on the voltage level. They are limited to 3 months for WPP connected to the distribution grid or 6 months for WPP connected to the transmission grid. The access to the grid is regulated according to the GD no. 90/2008. The access priority is given to the RES according to Law no. 220/2008. Cost allocation is mentioned, but the detailed norms have not yet been issued.



# Current capacity (by RES type)

## RES TYPE INSTALLED CAPACITY EXPECTED EVOLUTIONS

- Wind 13,81 MW
- Small Hydro 69,97 MW
- Photovoltaic 0 MW
- Biomass 8,08 MW

Total 91,86 MW

The dominant RES in Romanian is wind energy

- Wind farms in operation 13,8 MW
- Wind farms with a contract 1493,13 MW
- Wind farms with technical permitted 2361,49 MW

Total 3868,43 MW

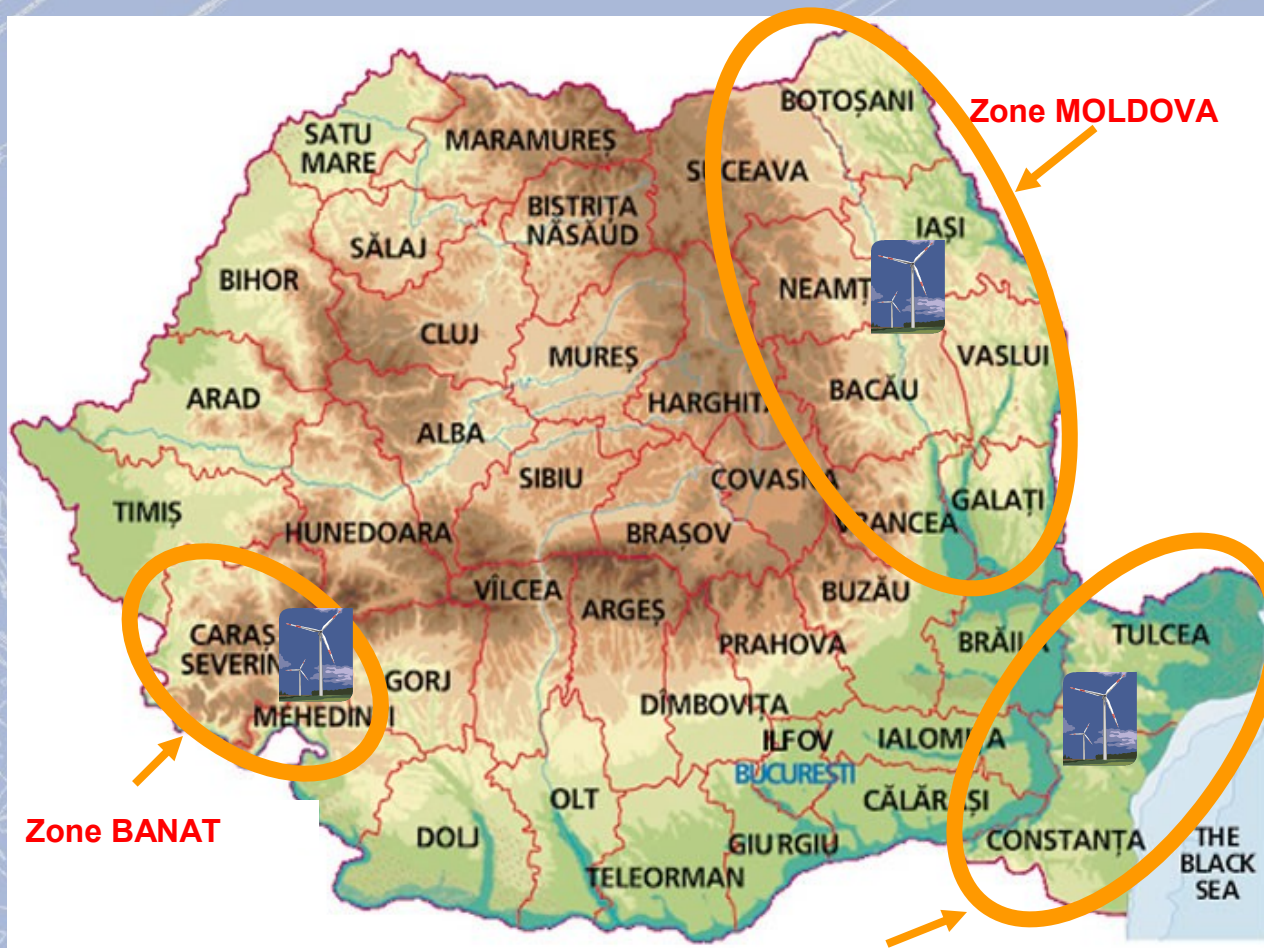


# Wind potential in Romania

Applications:  
20 000 MW

Installed power:  
14 MW

Summen Peak  
about 9500 MW



Zone DOBROGEA



# Romanian Transmission System Operator “Transelectrica” joint stock company

- Planned new infrastructure to connect WPPs based on the advance projects and system needs
- Set the minimum requirements for WPPs in order to smooth wind integration (Order no. 51/2009)
  - Frequency and voltage regulation
  - behavior during contingencies and Fault ride through
  - Quality requirements
- Determined the limits of the system based on the existing back-up reserves and ways to exceed the limits



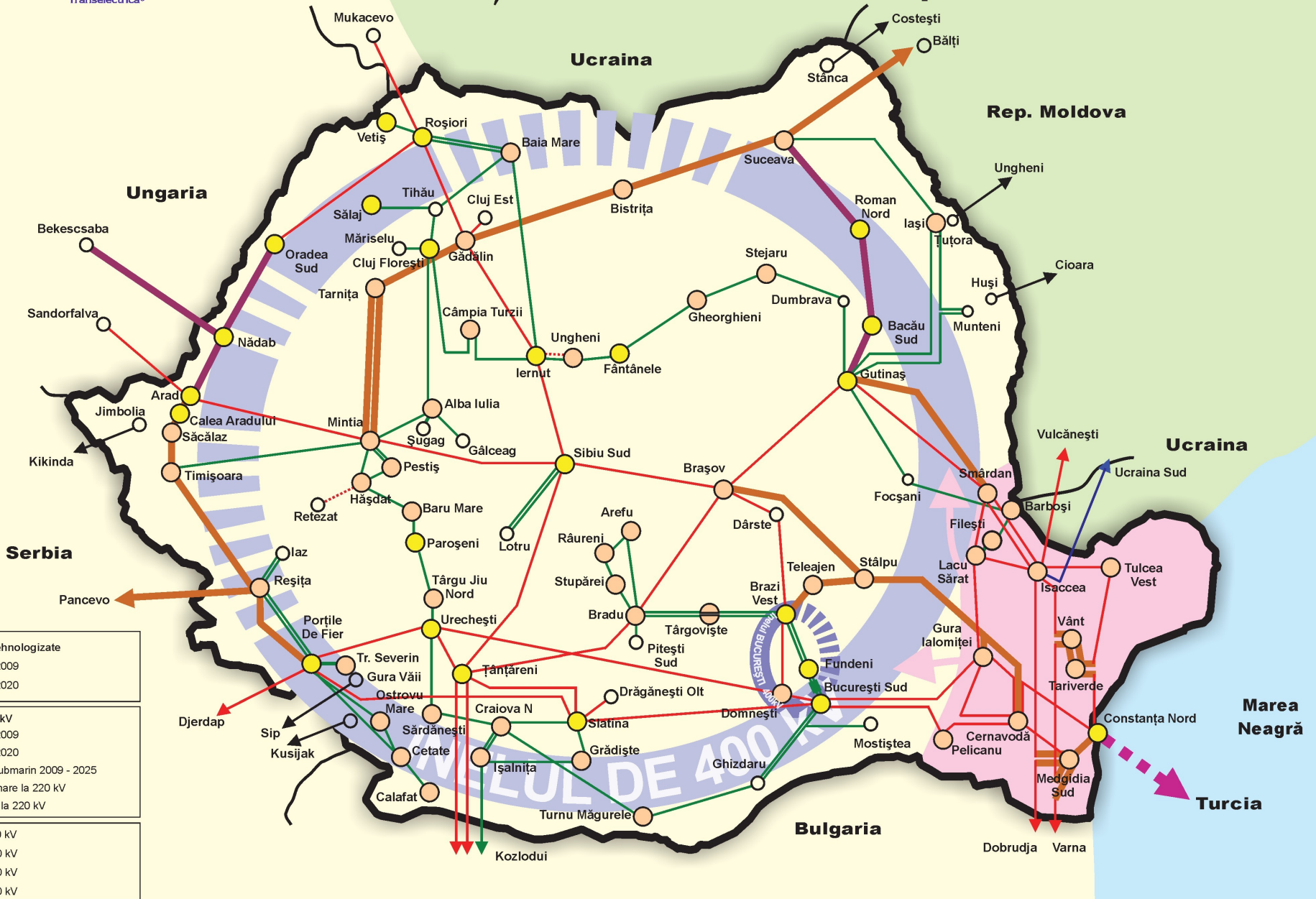
# Reinforcement of transmission grid

In Dobrogea area doesn't exist enough grid capacity due to a lot of WFs applications and also 3rd and 4th unit at CNE Cernavoda (nuclear power plant 2x700MW) will be installed in the same area. New lines and substations have been planned:

- Construction of 400kV SS in Tariverde;
- Construction of 400kV SS in Rahmanu;
- New 400 kV transmission line Tariverde-Rahmanu d.c.
- Tariverde IN-OUT on 400 kV OHL Constanta-Tulcea;
- Rahmanu and Medgidia IN-OUT on 400 kV OHL Isaccea-Dobrudja;
- Medgidia IN-OUT on 400kV OHL Isaccea-Varna;
- New 400 kV transmission line Medgidia-Constanta;
- New 400kV OHL Cernavoda-Stilpu d.c., one circuit goes through Gura Ialomitei
- New 400 kV transmission line Smardan-Gutinas d.c.



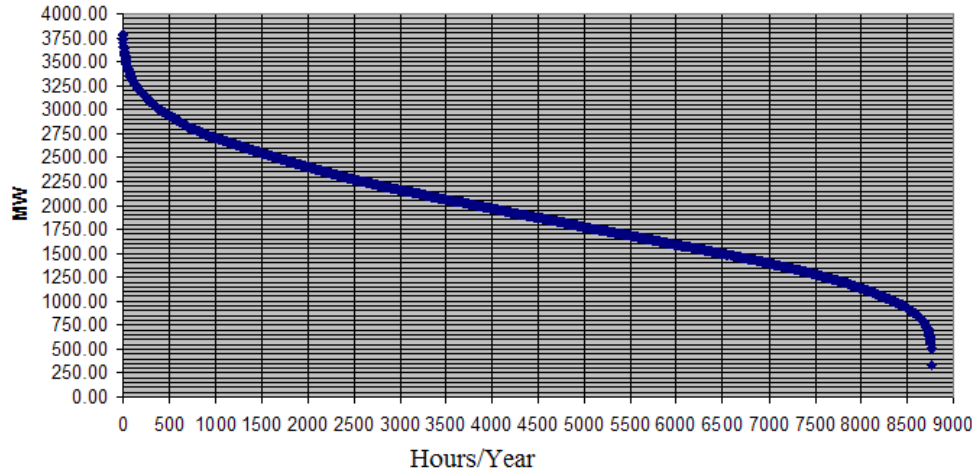
# Transelectrica - Rețeaua Electrică de Transport din România



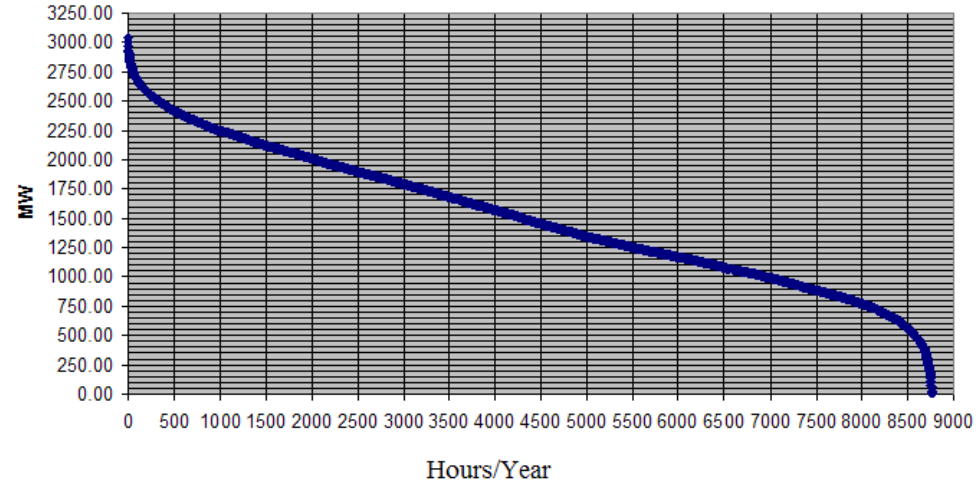


# Ranked curves of hourly RTR values scheduled for previous year

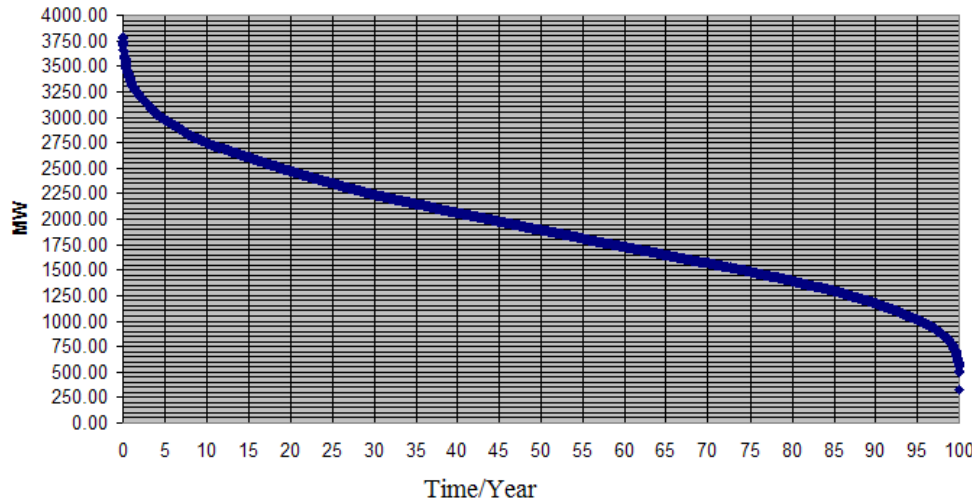
Loading



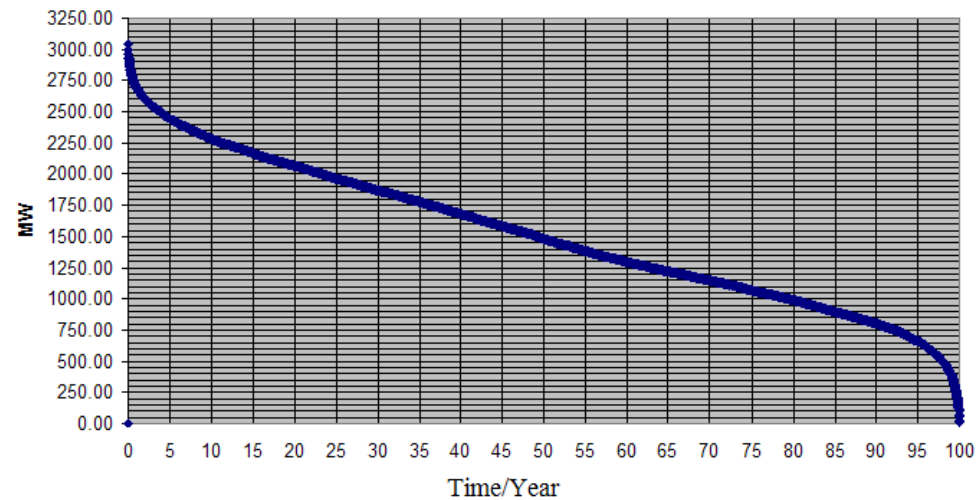
Unloading



Loading



Unloading





# Conclusion

***Applications for WPPs are much higher than Romania's consumption  
20000:9500 MW***

***Application for WPP are much higher than the existing installed power  
20000:14 MW***

***There are some limits of the system that can be exceeded***

***National legislation should clarify a couple of aspects:***

- share of the connection costs*
- unbalances in case of large wind generation integration*
- responsibility in regard with forecast of WPPs' output*

***Transelectrica sustains WPPs integration:***

- performing dedicated studies and connection studies to the grid*
- planning new infrastructure to connect WPPs*
- setting the minimum requirements for WPPs*
- determining the limits of the system based on the existing back-up reserves and ways to exceed the limits*



***Thank you for your attention!***