



Transelectrica®

Compania Națională
de Transport
al Energiei Electrice

WE LEAD THE POWER

Integrating Renewable Energy in the Black Sea Area: Transelectrica's view

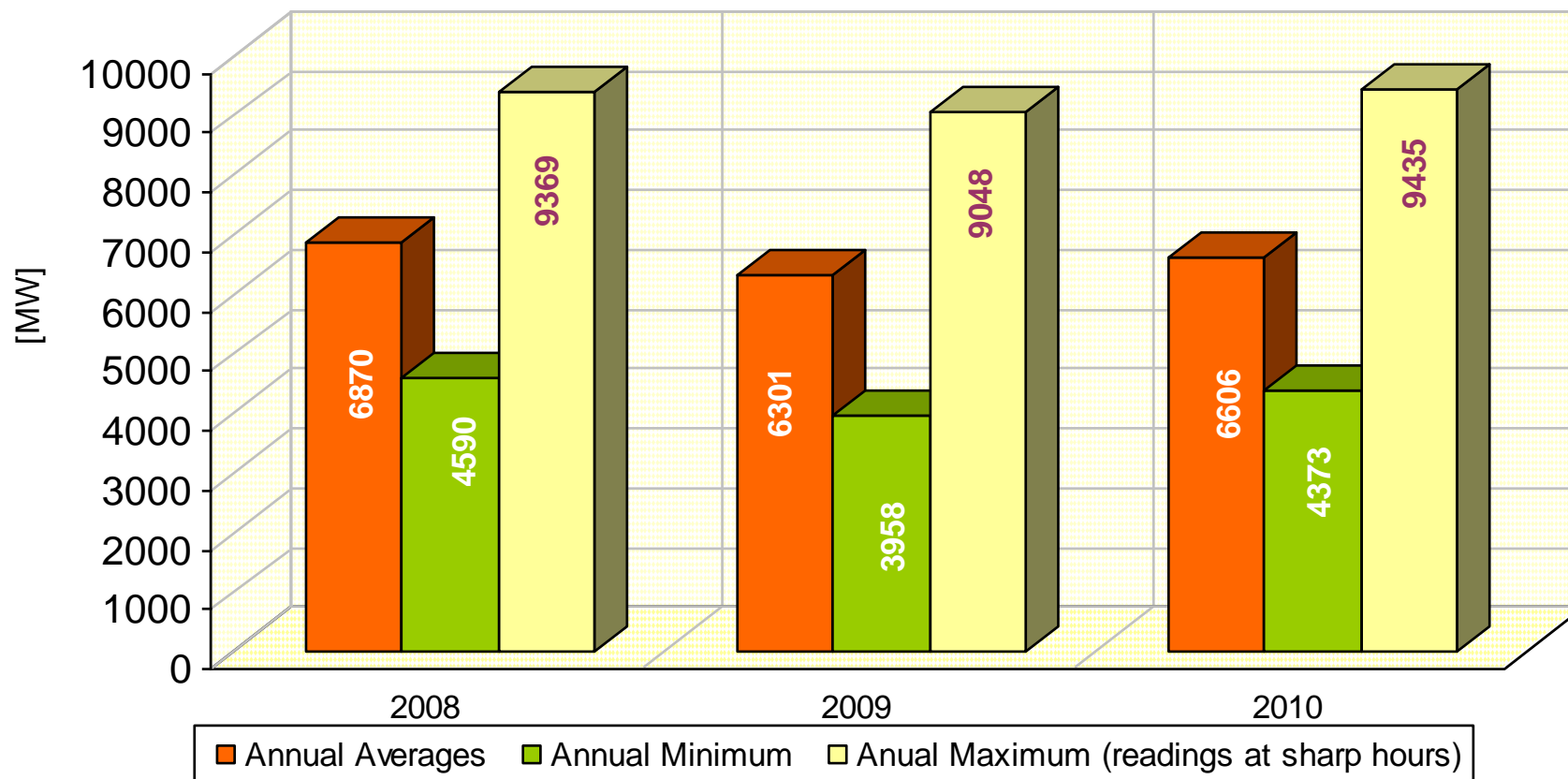
dr. Dan Preotescu – Transelectrica, Romania

[MW]

	Installed power	Available installed power*
TOTAL	19,932	17,779
Hydro power plants	6,465	6,099
Nuclear power plants	1,413	1,300
Thermal power plants	11,247	9,592
Wind Power Plants	1,140	1,040
Photovoltaic Power Plants	1	1
Byo-mass Power Plants	25	24

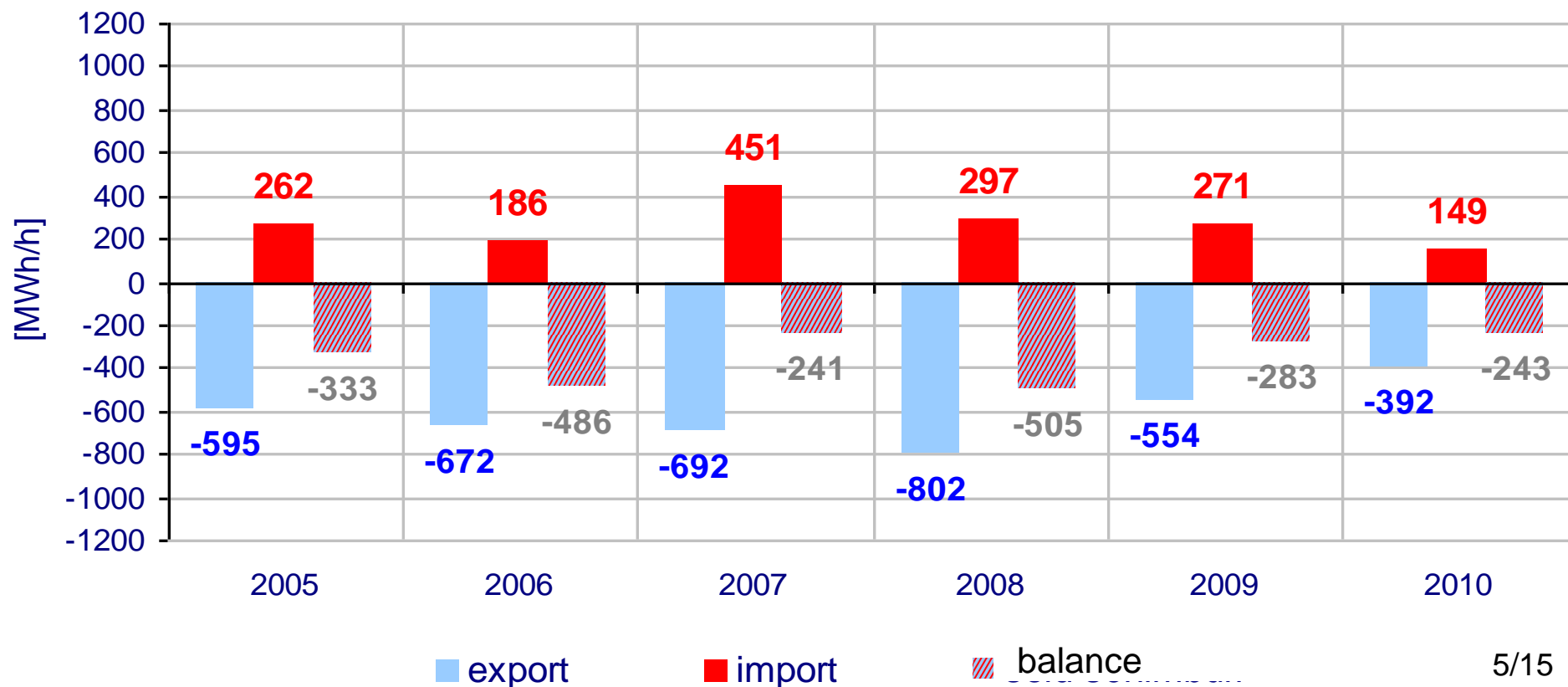
* - Not including the units out of operation on long term and internal consumption of the power plants

Average, Min and Max Consumption, 2008 - 2010

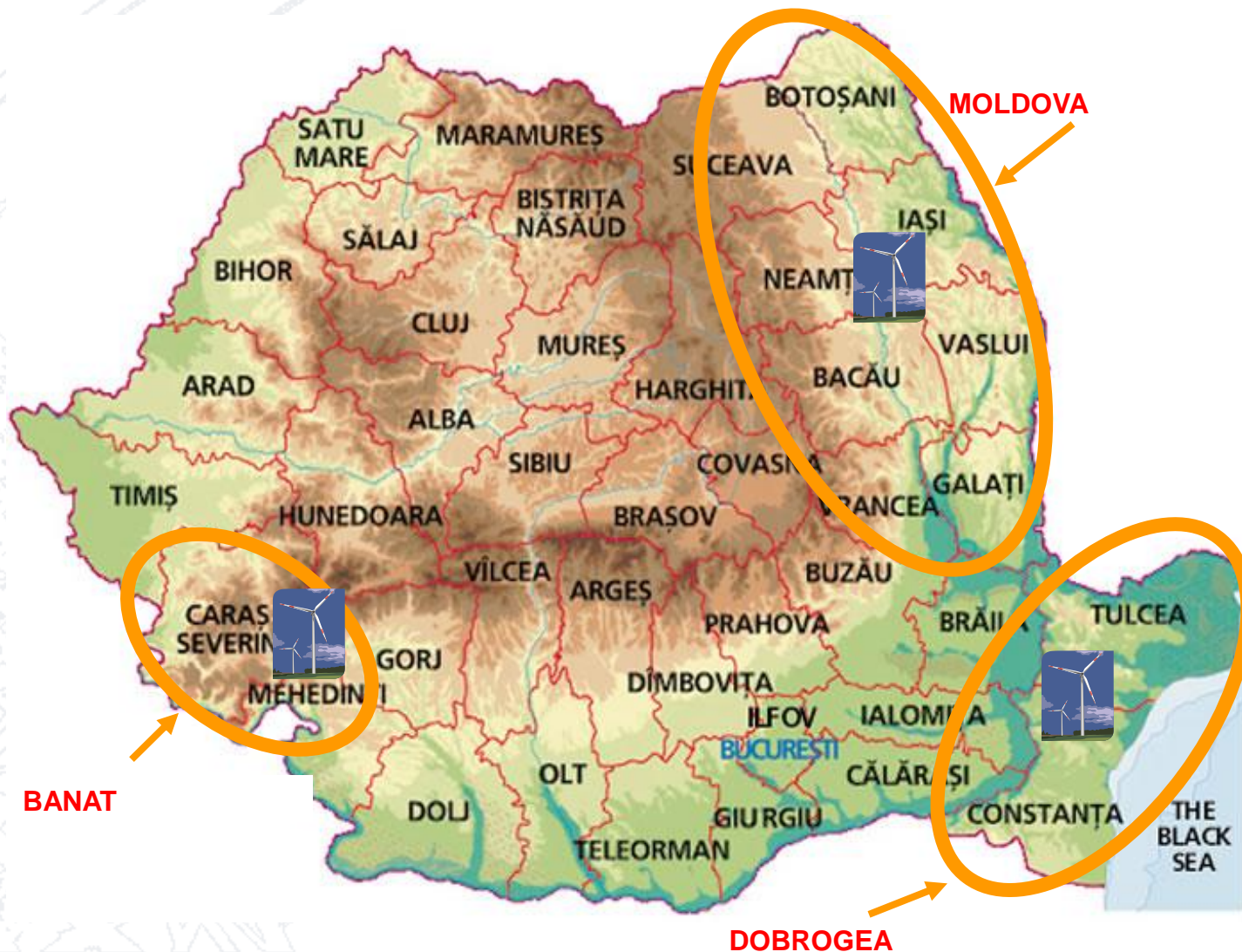




Export / Import Balance for Romanian Power System (yearly average values)



Areas with highest wind potential



Legal and commercial framework (I)

- Financial support scheme based on Green Certificates (GC).
- Wind generation receives 2 GC / MWh till 2017 and 1 GC / MWh beginning with 2018.
- Photovoltaic generation receives 6 GC / MWh.
- Generation from renewable has in principle priority but has to comply with the electricity market rules.
- The market rules for renewable generation are limiting the commercial potential of the Romanian PS to the mandatory quotas.

Legal and commercial framework (II)

- The export is not yet allowed but this is expected to change in the near future.
- Creation of intra-day market it is expected to increase the income for the producers from renewable and also to improve the operation of the Power System.
- The development of a regional market for renewable and/or reserves would increase the capacity for integration of this type of generation in the PS from the region.
- A new business opportunity arise: storage of electricity (pump storage, batteries etc.)

Renewable energy needs a financial support scheme

Feed in tariff

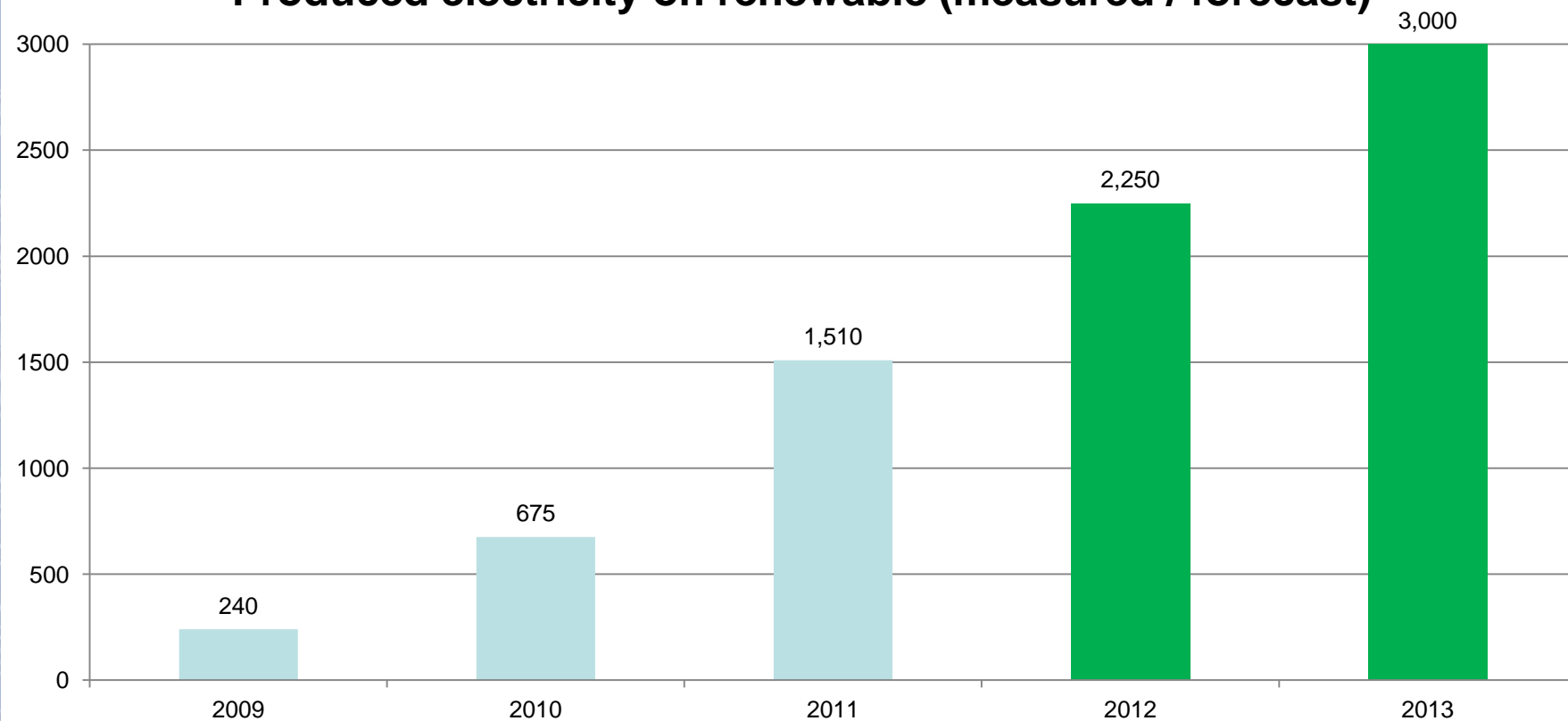
- Fixed value of income.
- Fixed amount of installed power (mainly technical limitations).
- Countries using this system or similar: Germany, Spain, USA and others.

Green Certificates

- Market driven value of income.
- Amount of installed power not fixed (market limitations).
- Countries using this system or similar: UK, Sweden, Belgium, Netherlands, Italy and others.

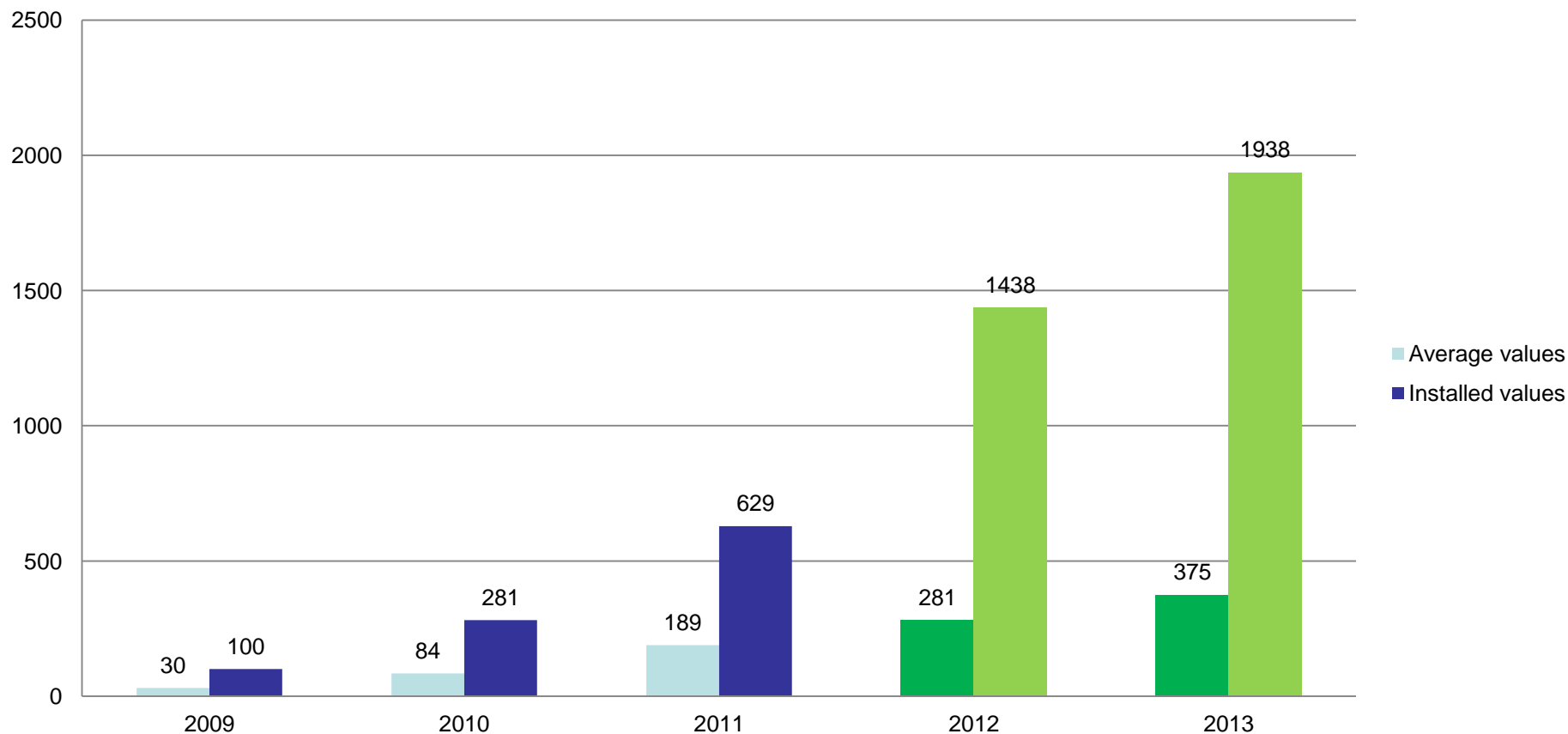
Produced electricity on renewable (measured / forecast)

[GWh]



[year]

Average / Installed power on renewable (measured / forecast)



Technical challenges for the Romanian PS in integrating the renewable

- The market volume covers around 3000 MW installed power (on mid-term) to 5000 MW installed power (long term).
- Considering the large volume of existing projects a tough competition can be expected in the near future.
- Transmission grid needs significant reinforcements and/or smart grid type upgrades.
- The storage capabilities of the Romanian Power System needs significant reinforcements.

Integrating renewable energy – a regional challenge

- In south-east Europe Romania, Bulgaria and Turkey have high potential for renewable energy.
- Western Europe experience showed that power flows generated by renewable might be a major challenge for large geographical areas, involving several neighboring countries.
- Regional cooperation regarding load flows control and reserves capacities might be a helpful.
- A regional market for renewable energy, grouping countries with high and low potential might be also helpful.

Thank you for your attention!