



Potential Benefits of Regional Integration: Markets and Institutions

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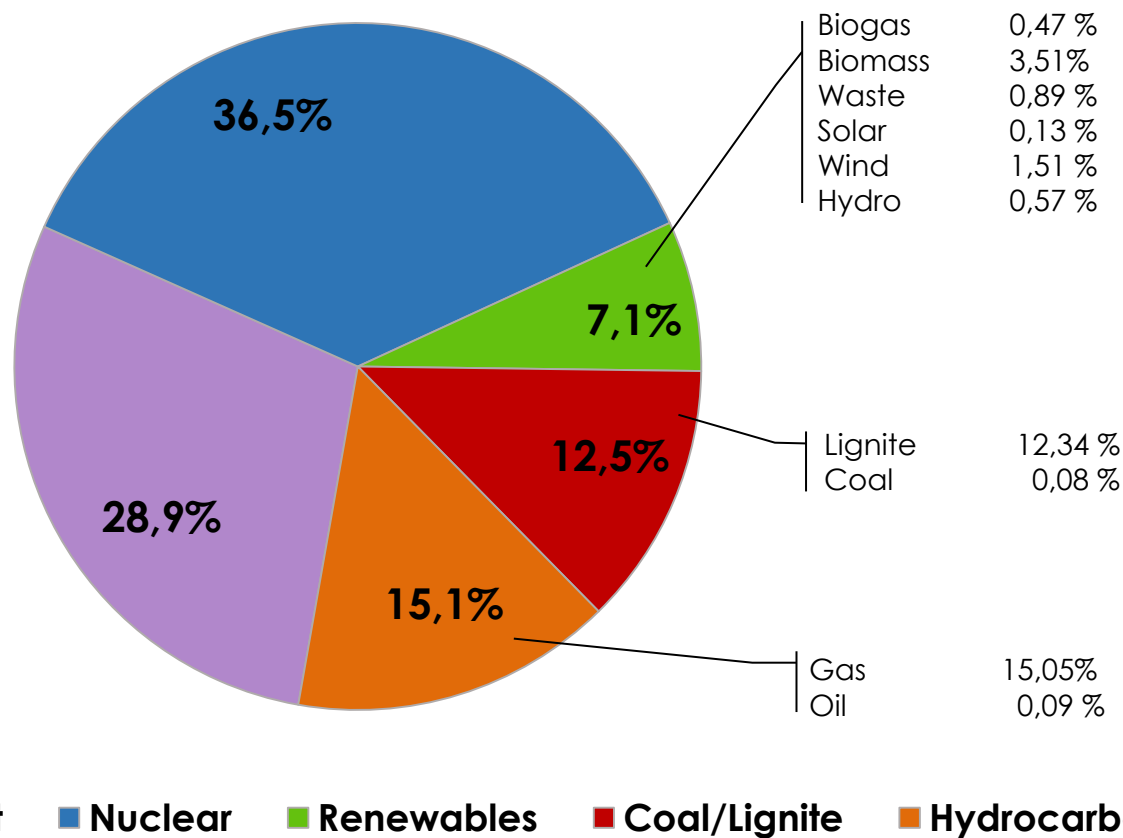
Electricity Market Integration 2.0 in Central and South East Europe

Budapest, 30.05.2017

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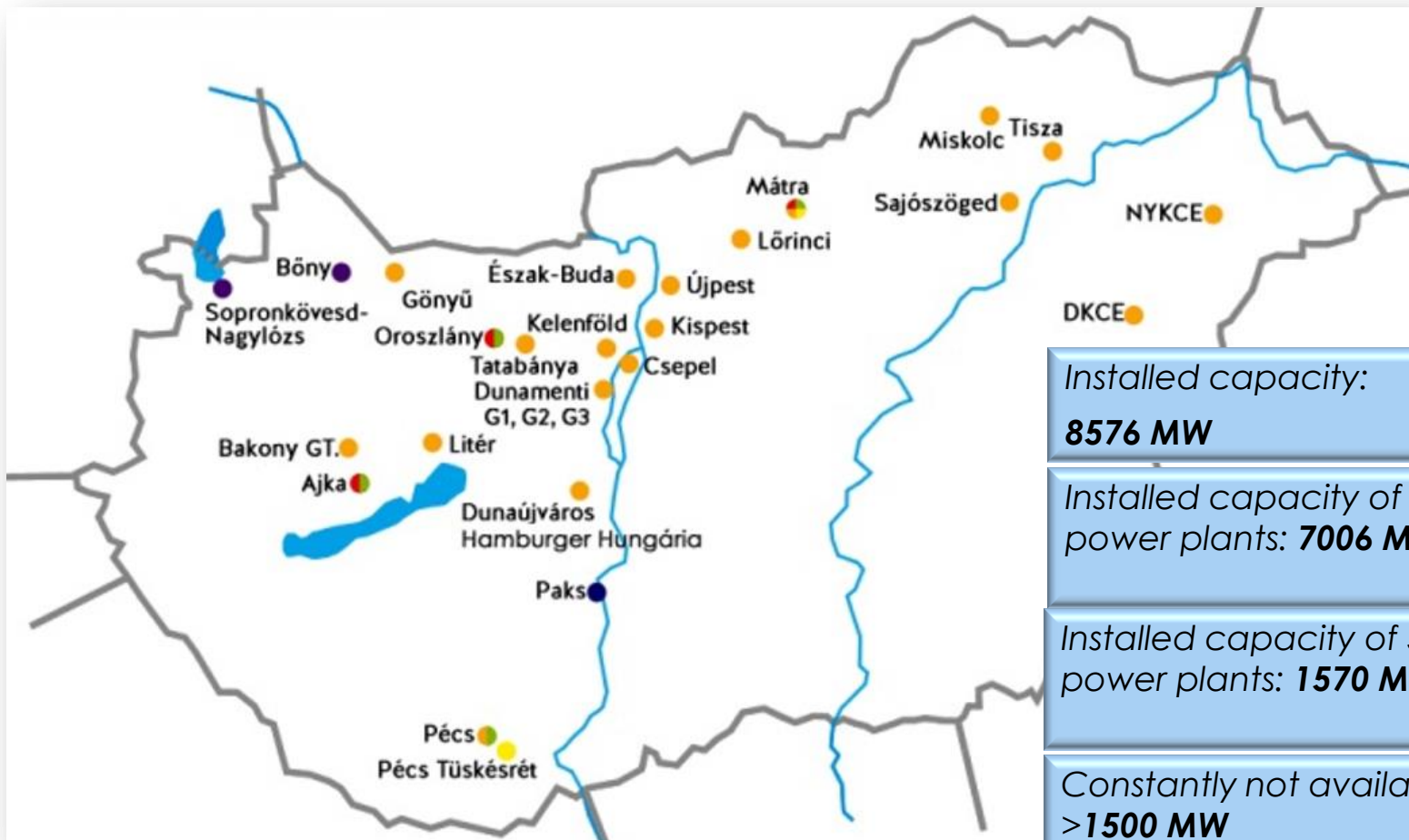
- The Hungarian Electric Power System – Motivation for Cooperation
- Examples of participation in regional cooperations
- Europe: The Patchwork of Regions – Goals and Conditions

Sources to cover total gross electricity consumption with import energy - 2016



	[GWh]
Total gross electricity consumption:	44 036
Domestic energy production:	31 311
Total imported energy:	12 725

Installed capacity of the Hungarian system – Q1 2017



Installed capacity:

8576 MW

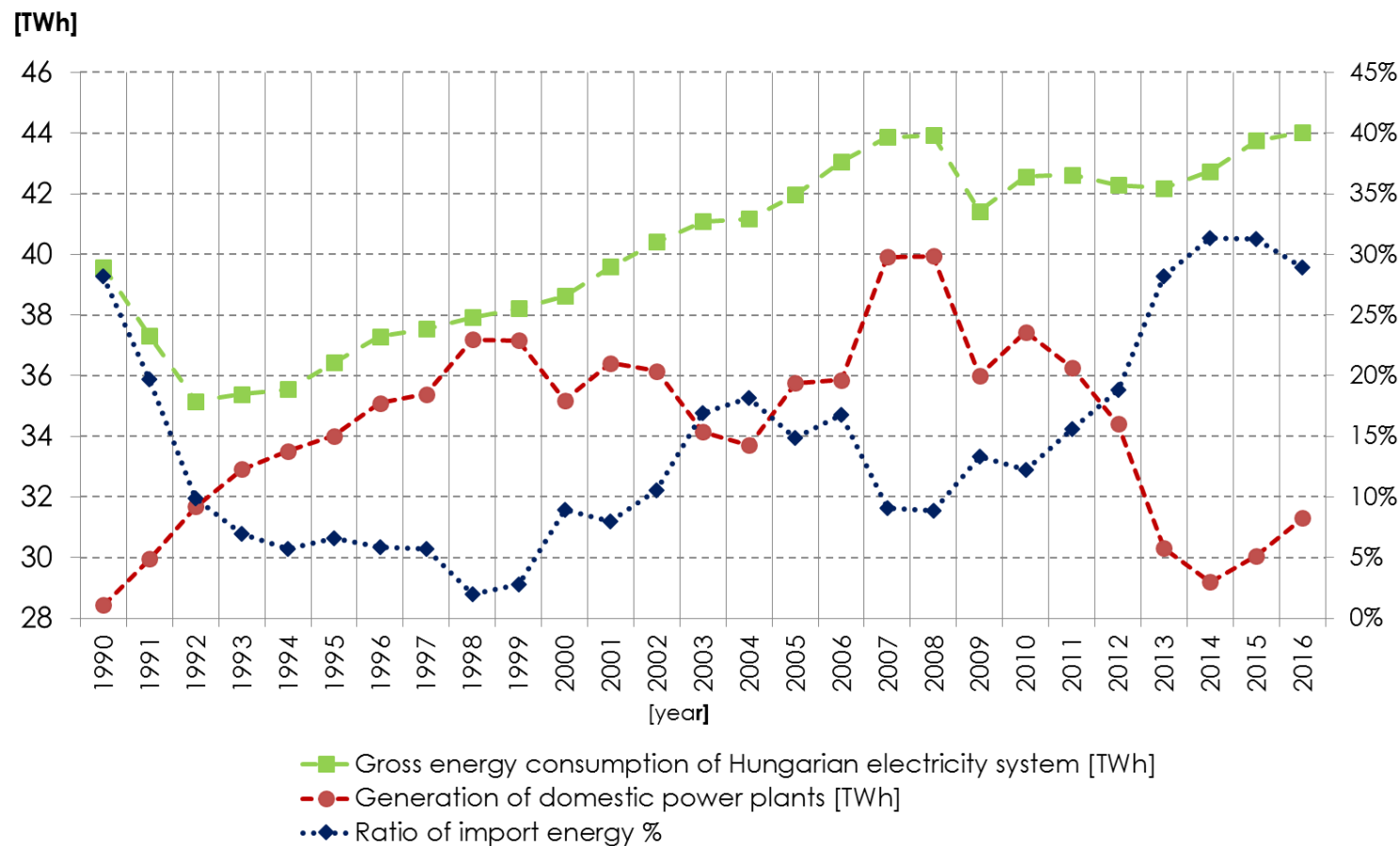
Installed capacity of Large power plants: **7006 MW**

Installed capacity of Small power plants: **1570 MW**

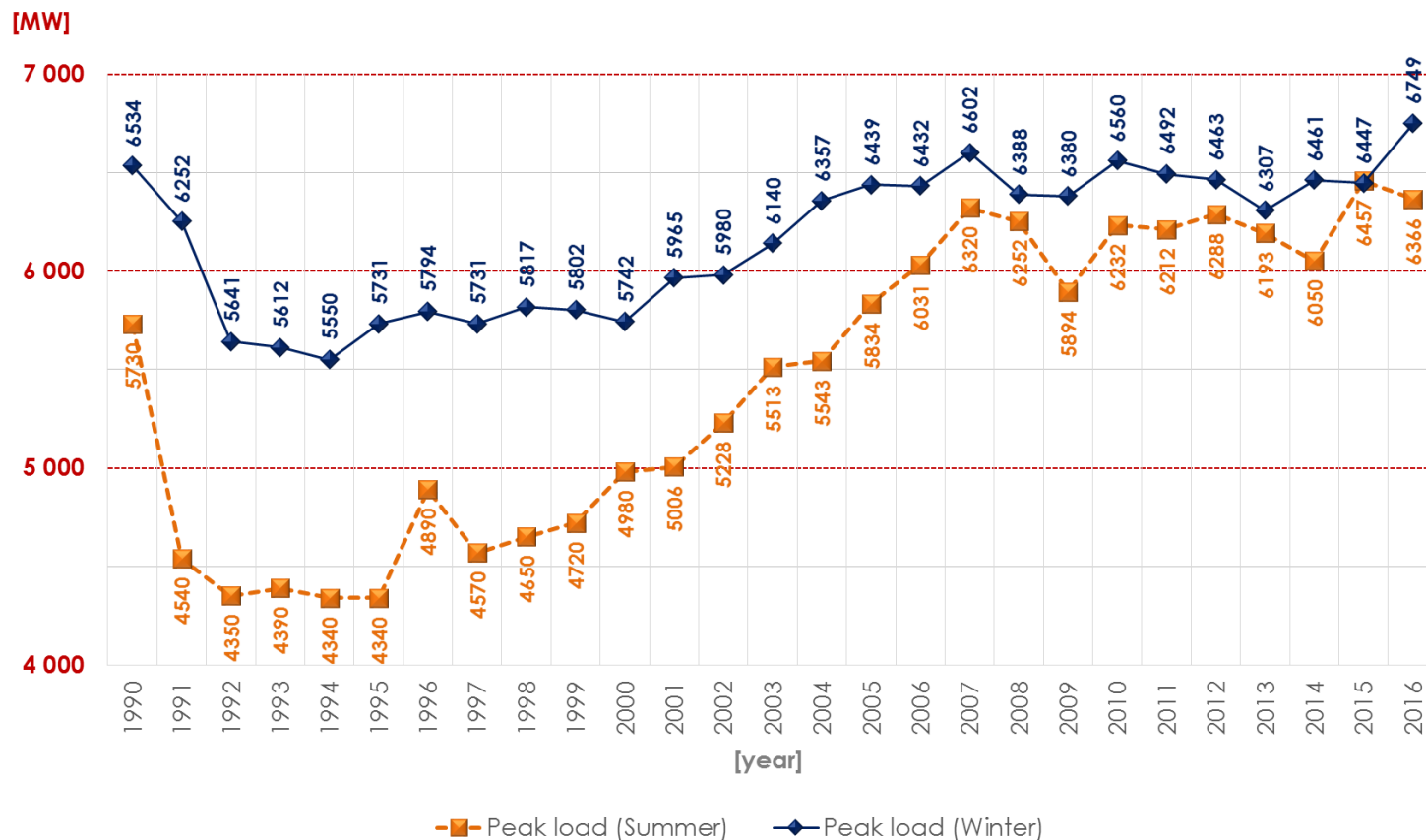
Constantly not available: **>1500 MW**

■ Nuclear ■ Coal and lignite ■ Hydrocarbon ■ Biomass ■ Wind ■ Photovoltaic

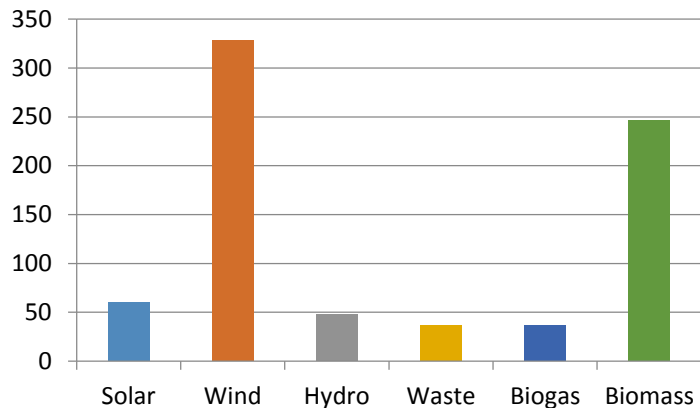
Production and consumption plus import share



Winter and summer peak load 1990-2016

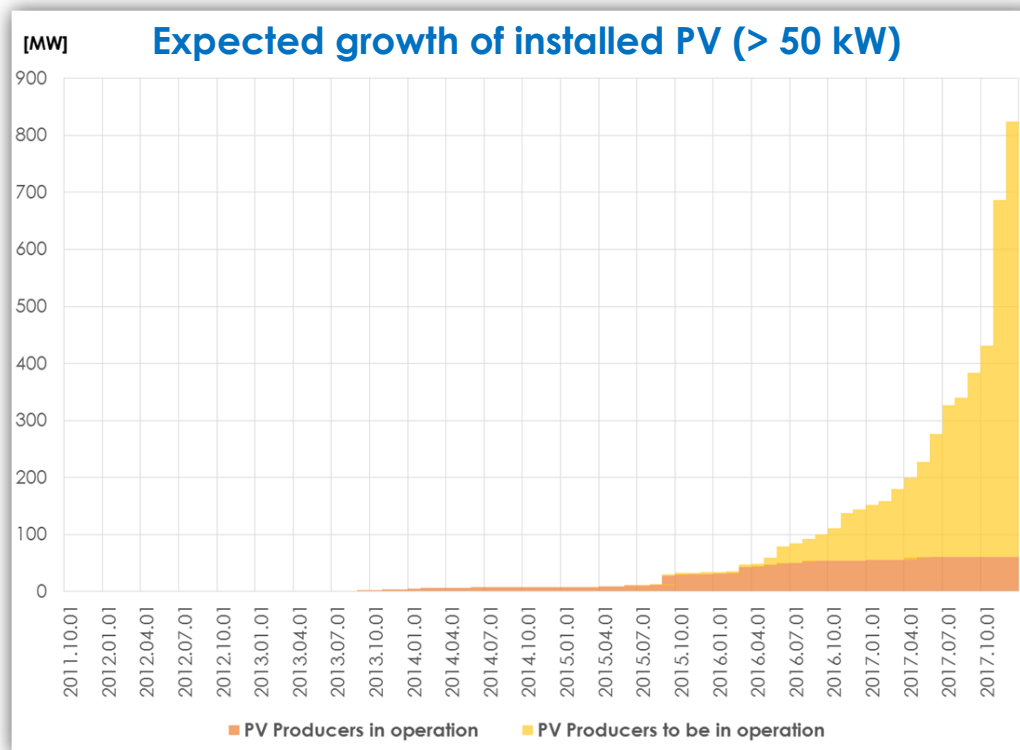


RES installed capacity – Q1 2017 (MW)

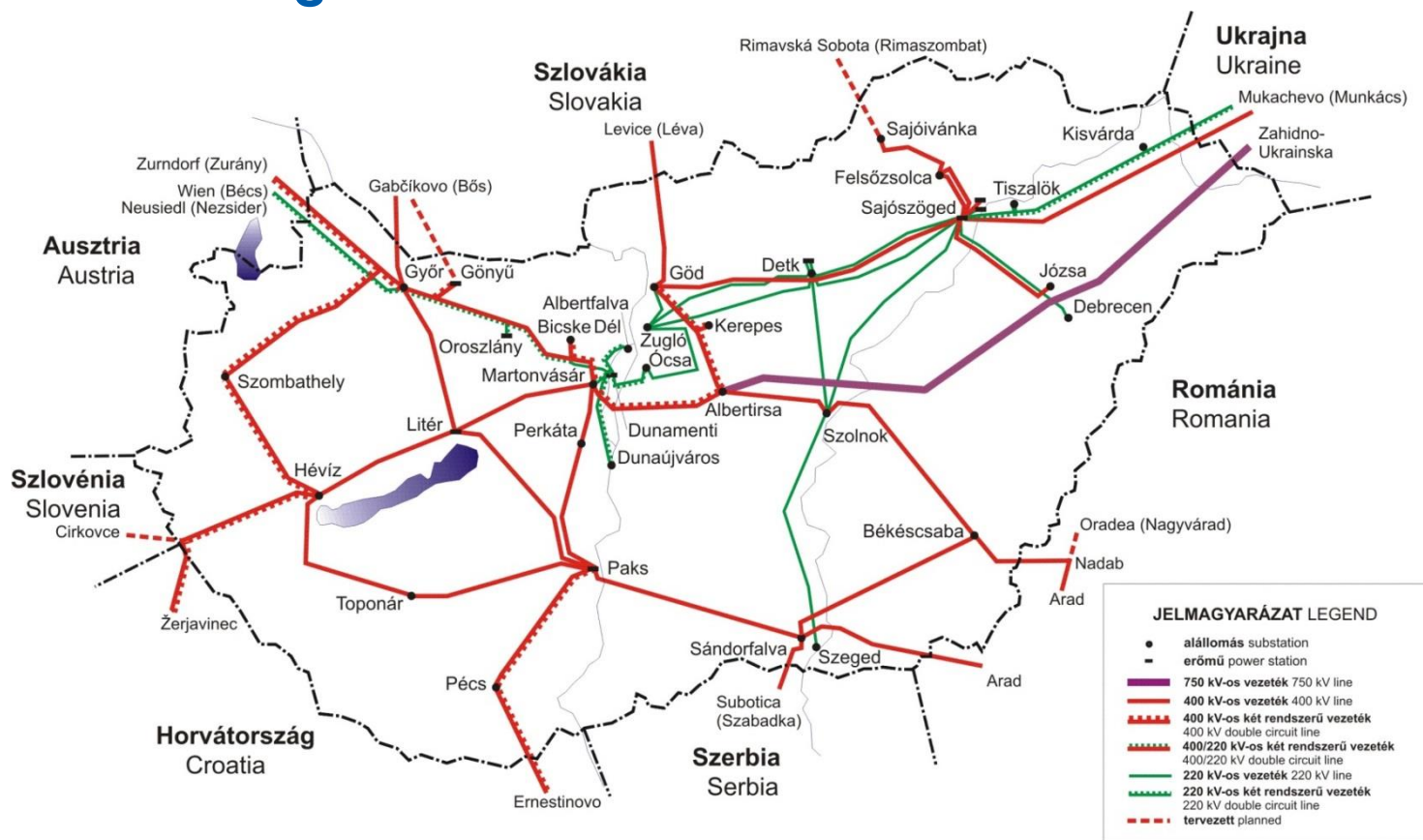


Additional residential PV (under 50 kW): 164 MW

Future growth of additional
residential PV (under 50 kW):
???



The Hungarian Transmission Grid



A magyar átviteli hálózat (2016)

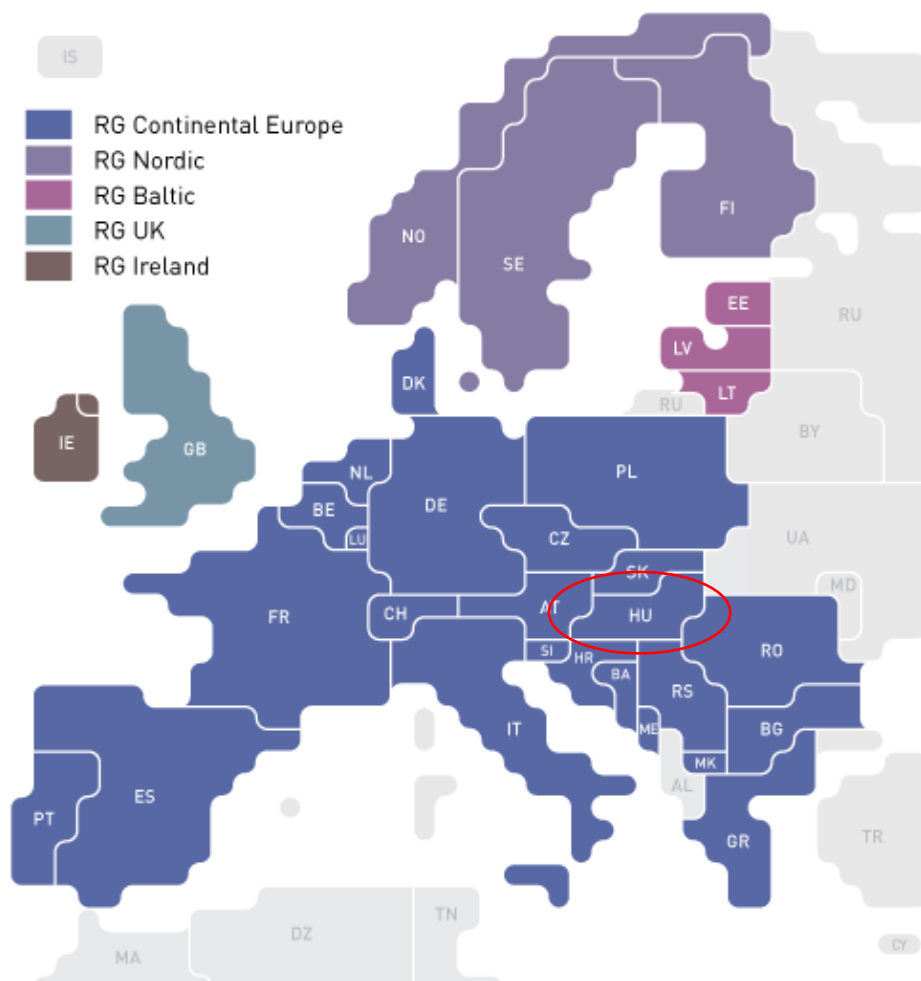
The Hungarian transmission network (2016)

HUNG2016ah_közös_plan.CDR 2016.07.25. F.Z.

TRANSMISSION NETWORK LENGTH (km)

	ROUTE		CIRCUIT	
OVERHEAD LINE	750 kV	268,10	268,10	
	400 kV	2 284,12	2978,42	
	220 kV	1 099,32	1393,65	
	132 kV	142,04	199,24	
CABLE	132 kV	16,64	16,64	
	TOTAL	3 810,22	4856	

Intersystem cooperation



ENTSO-E mandated by Regulation (EC) 714/2009, is responsible for:

- ensuring the secure and reliable operation of the increasingly complex network;
- facilitating cross-border network development and the integration of RES;
- enhancing the creation of the Internal Electricity Market, IEM.

TSC – TSO Security Coordination

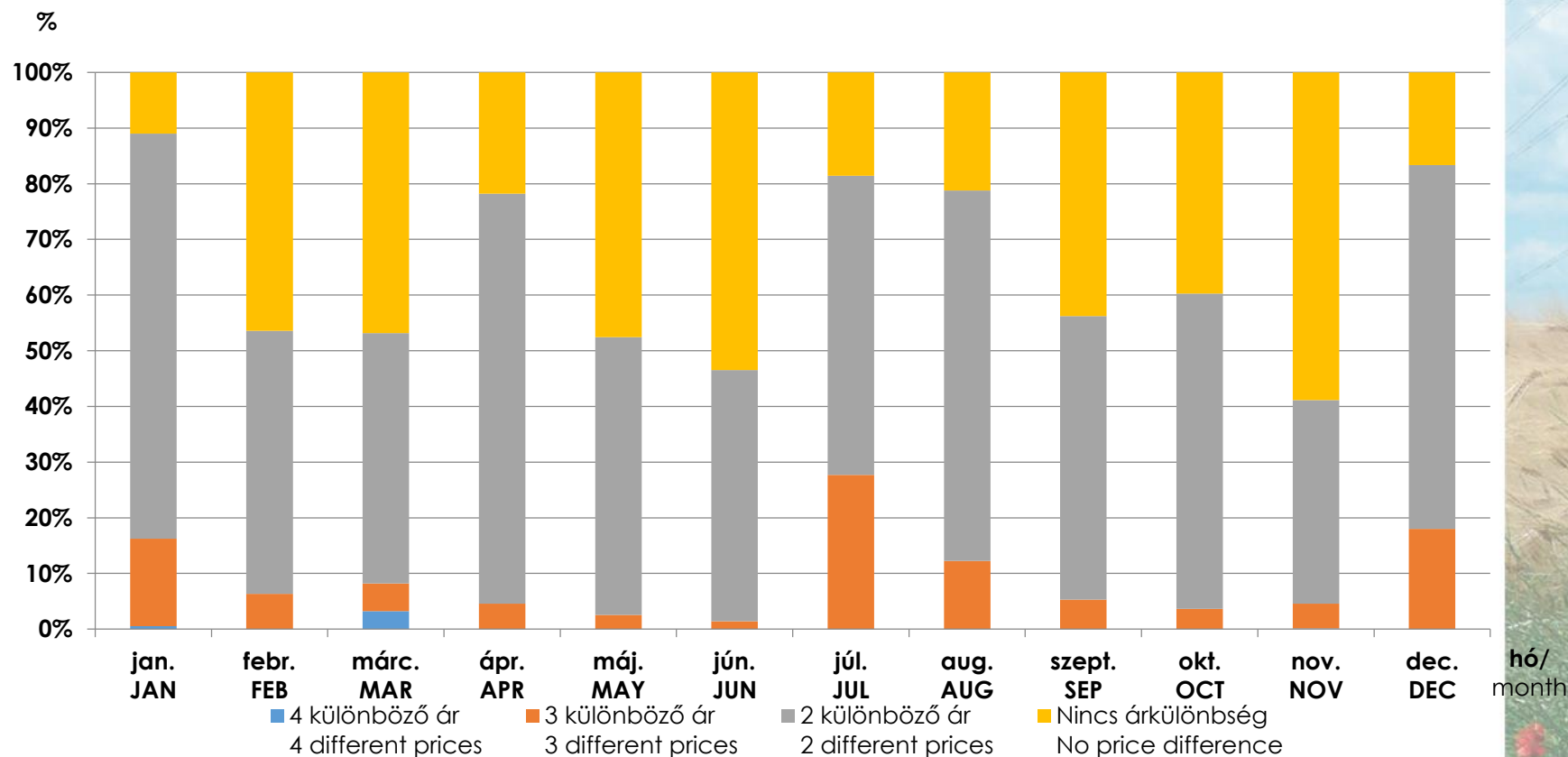


TSC is regional security coordination initiative (RSCI) of 13 TSOs, started in 2008

- Helping to ensure the secure and reliable operation of the increasingly complex network;
- Coordinated capacity calculation and development of methods
- NC/GL implementation: 5 services

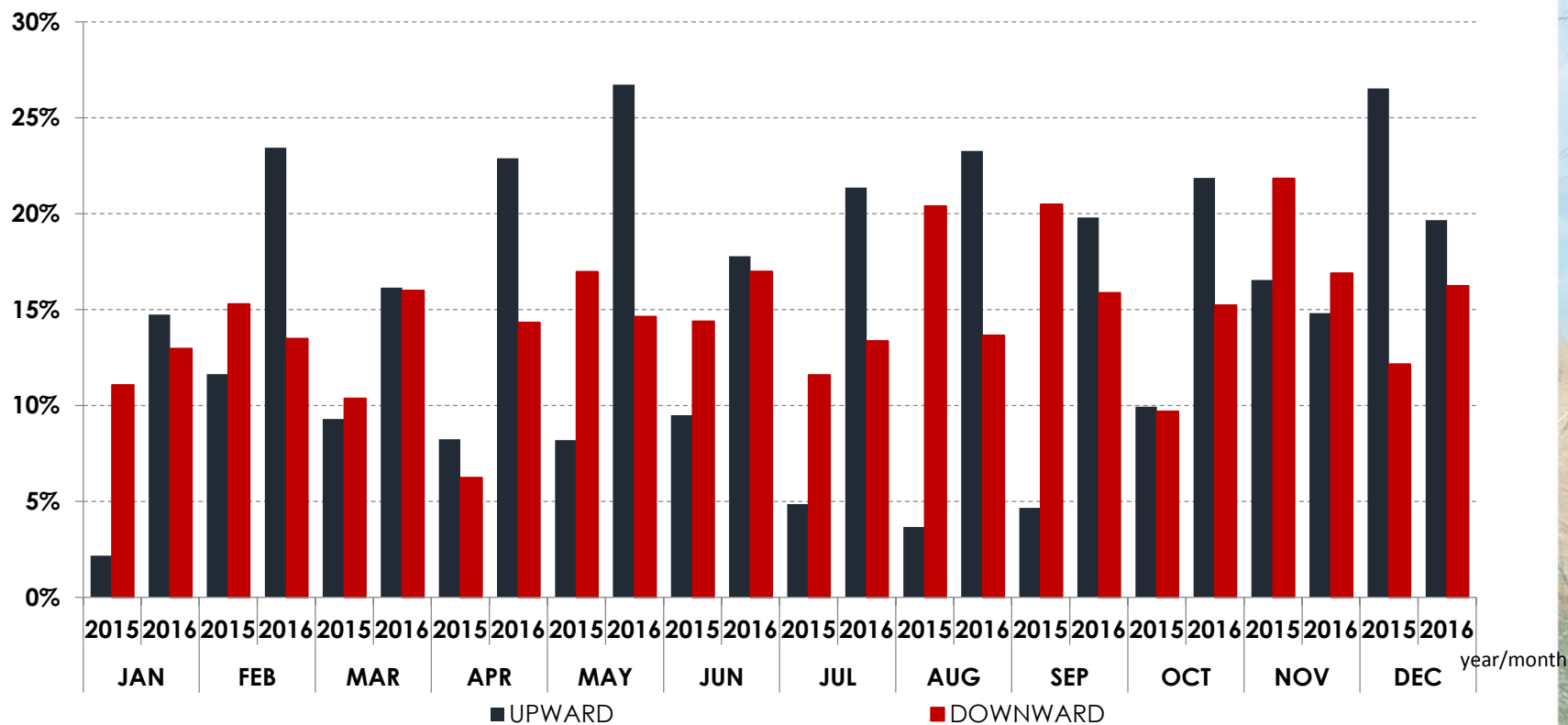
4M Market Coupling – Day Ahead

PRICE CONVERGENCE IN CZ-SK-HU-RO DAY-AHEAD MARKET COUPLING 2016



Generation Control Cooperation (eGCC) – CZ-SK-HU

RATIO OF GCC ENERGY AND TOTAL BALANCING ENERGY 2015-2016



Europe: The Patchwork of Regions – Technical Coordination

- Highly meshed transmission grids – direct interdependence
- Requirements from the grid users
 - Fair access to the grids
 - Security of supply
 - Affordable costs
- Growing challenges
 - Changes in energy policies
 - Development of technologies
 - Physical and cyber security issues
- Individual TSOs alone
 - do not have the necessary tools
 - are not the most efficient to answer the challenges properly.
- Capabilities and responsibilities must be combined in the most efficient, but also in the most reliable way.

Europe: The Patchwork of Regions – Market coupling

- Developing common market places
 - physical wholesale
 - reserve power
 - balancing energy
 - transmission rights
 - financial products
- Standardised products, but tailor-made to cover real needs
 - specificities of the physical infrastructure – e.g. synchronous areas
- Harmonised rules
- Level playing field versus policy goals

Europe: The Patchwork of Regions – Conditions

- Pragmatic development in order to
 - maximise social welfare, but
 - preserve security and high quality of supply,
 - adjust structures and rules to new challenges and possibilities.
- Balance between freedom in the market and responsibilities for guaranteeing security of supply.
- Harmonisation of the legal frameworks
 - within the EU
 - among EU-members and non-EU states
 - not only for energy regulations, but also in related other legislations.
- Clear decisions concerning balance and focus among different energy policy goals – long-term stability.
- Timely actions to ensure fulfilment of preconditions, and to avoid risks out of control.

Thank You For Your Attention!