

# Generation Investment Case: Stakeholders, Key Issues, Obstacles and Objectives

**UNECE-e8-EBRD-WEC Clean Electricity Production Forum**

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# Agenda

**The Hungarian energy industry in a nutshell**

The privatisation of the Hungarian energy sector

Regulation – history, recent interventions and potential future

The banking environment

RWE in Hungary and its power plant developments so far

Next challenges for a cleaner power generation

# Hungary in a Nutshell

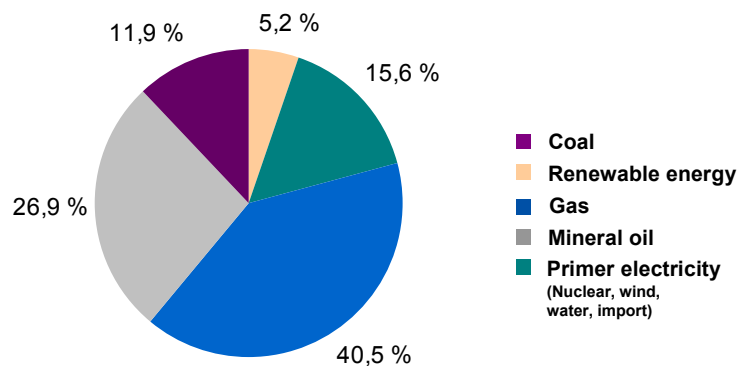
## Main data of Hungary (2009)

		Hungary
<b>Area</b>	<i>Tsd. km<sup>2</sup></i>	<b>93</b>
<b>Population</b>	<i>Mio.</i>	<b>10</b>
<b>GDP (2009 est.)</b>	<i>Billion EUR</i>	<b>92 942</b>
<b>GDP per capita</b>	<i>EUR</i>	<b>9 260</b>
<b>Monthly average salary (gross)</b>	<i>EUR/month</i>	<b>736</b>



# Dependency on gas is among the Top 3 in Europe; energy efficiency is still to improve

## Total primary energy consumption 1125 PJ (312,6 TWh)



Source: MEH 2008

## Energy-economic data in comparison to Germany

	Hungary	Germany
<b>Specific Energy consumption</b> kWh/capita	33 218	62 150
<b>Energy intensity</b> kWh/1000 EUR GDP	3 109	1 626
<b>Ø HH electricity price</b> EUR c/kW incl. taxes	16	22

Source : EUROSTAT 2007

## Electricity

<b>Total consumption</b>	38 TWh
<b>Peak demand</b>	6 439 MW
<b>Total production</b>	9 086 MW
<b>Import – Export Saldo</b>	5,5 TWh

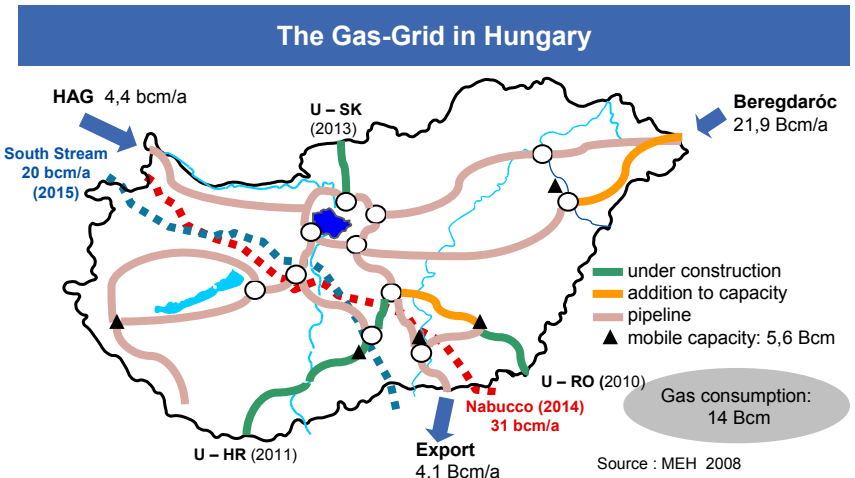
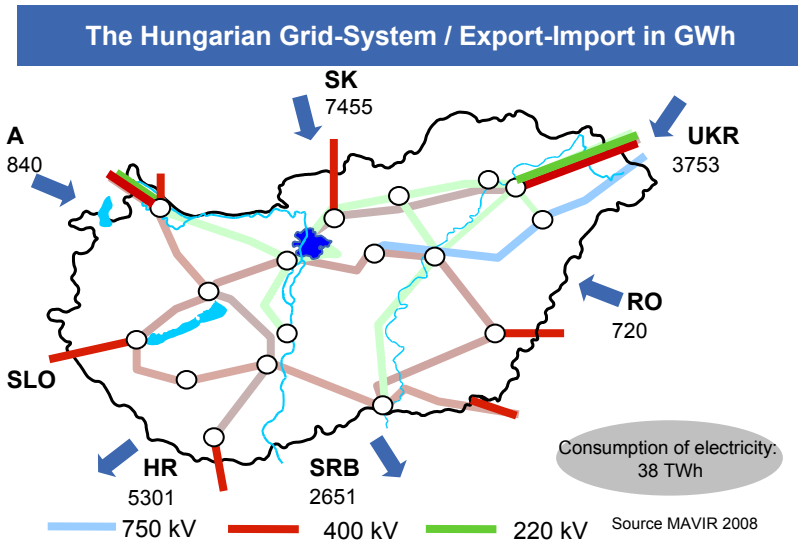
Source : MEH 2008

## Gas

<b>Total consumption</b>	14 Bcm/a
<b>Gas production</b>	3 Bcm/a
<b>Gas peak</b>	91,7 M m <sup>3</sup> / day
<b>Import</b>	11 Bcm/a

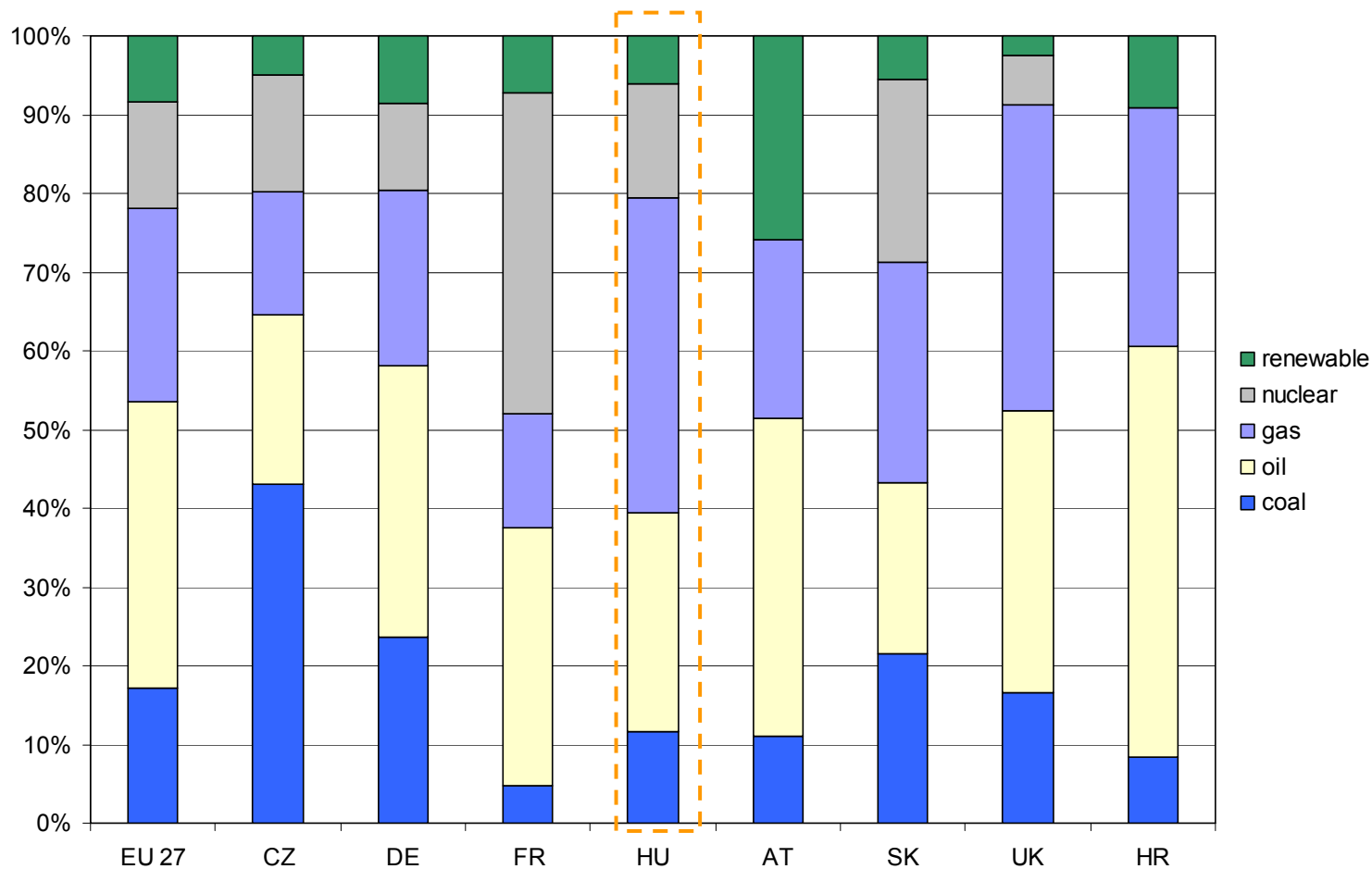
Source : MEH 2008

# Hungary has a strategic geographical position in the Central European energy supply networks



- > Hungary is a net importer of electricity with strong interconnections
- > Hungary has two major gas interconnections, the NETS project of MOL will enable further regional co-operation
- > Both Nabucco and South Stream plans to cross the country
- > Gas storage facilities improve security of supply and are extendable

# High gas and low renewable share represents the primary energy mix of Hungary

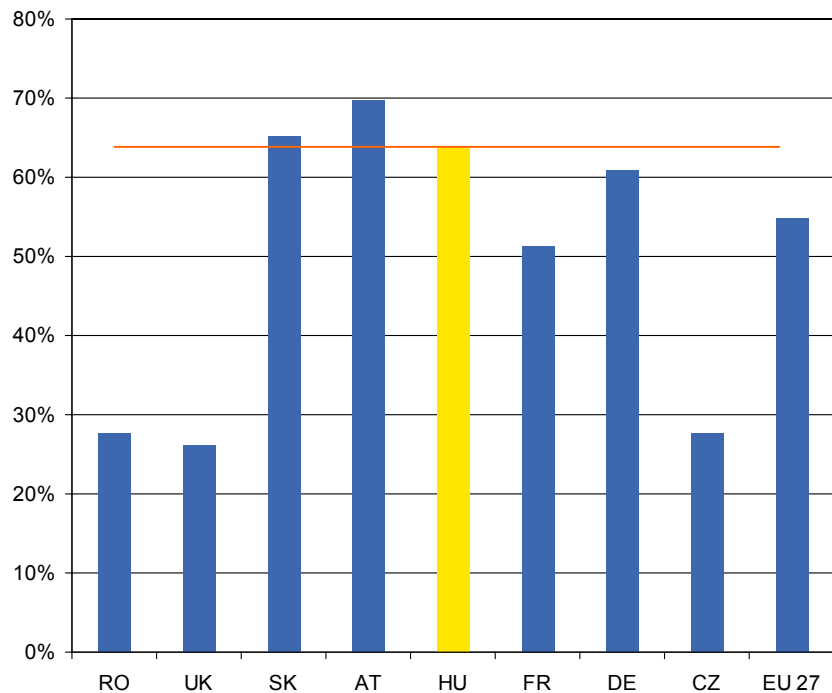


Source: Eurostat

# Hungary's energy and gas dependency is high, but not without example in Europe

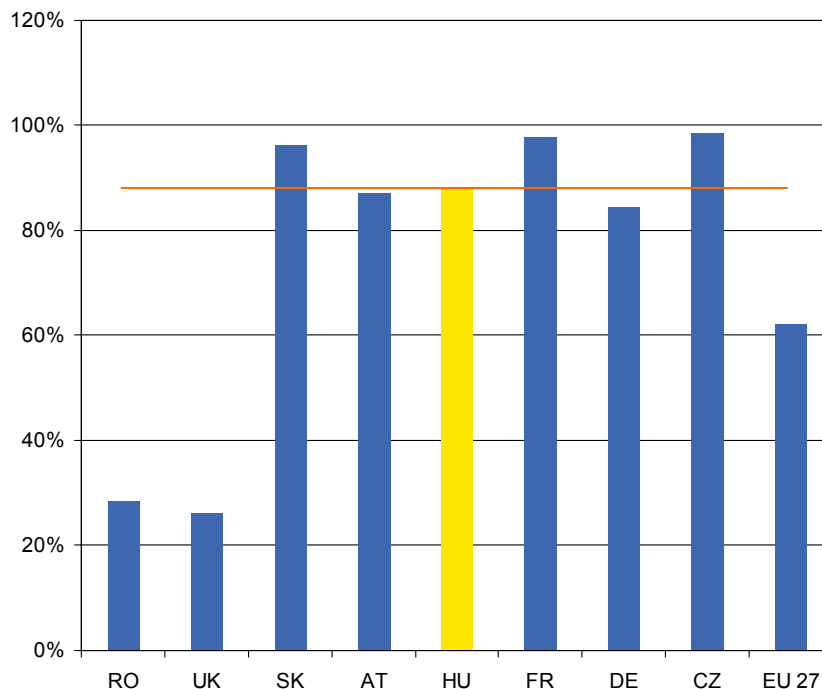
## Total energy dependency

% of net imports in gross inland consumption



## Natural gas dependency

% of net imports in gross inland consumption

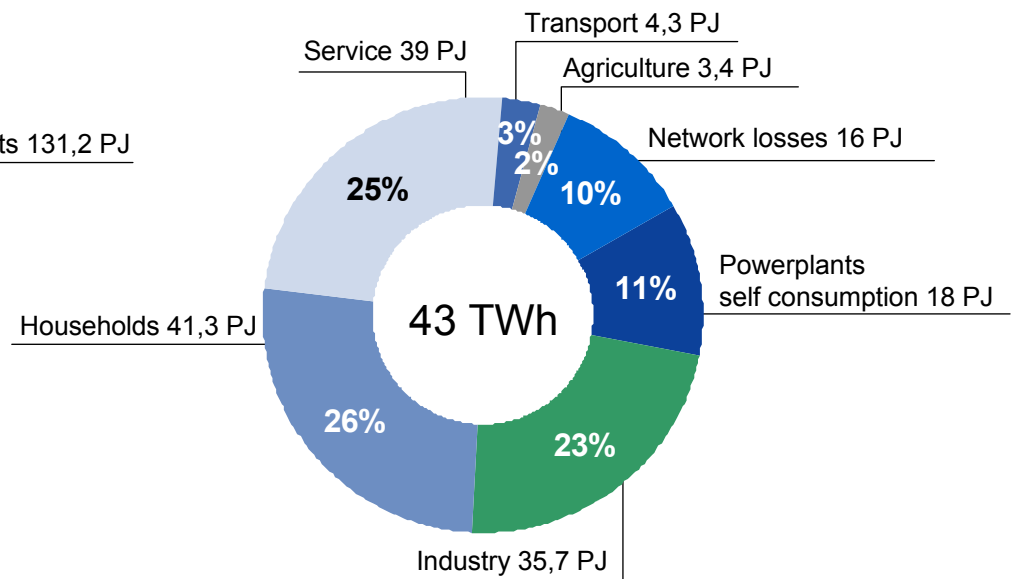
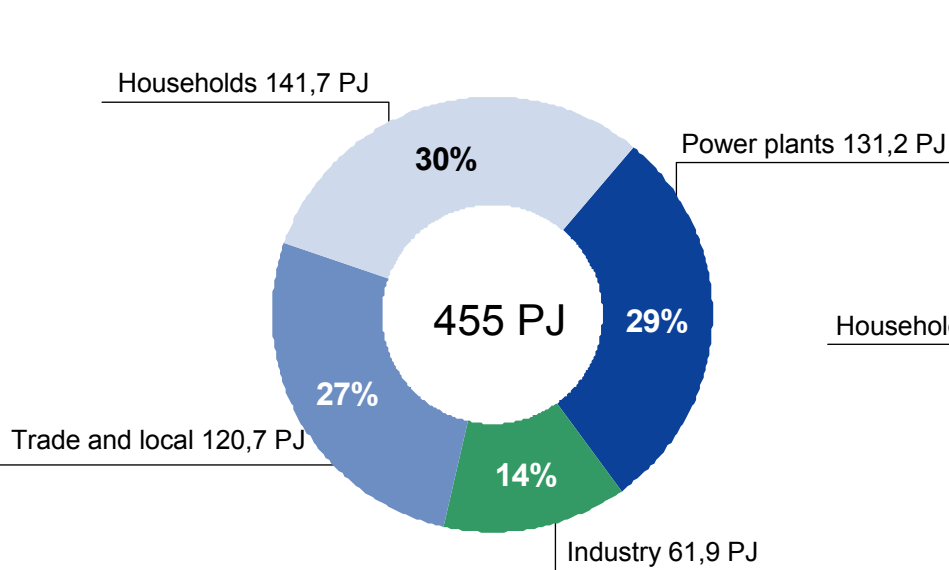


Source: Eurostat

# Gas demand is driven by power plants and households, power demand by services

Gross gas consumption by sectors

Electricity consumption by sectors



Source: Hungarian Energy Office, 2008

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**The privatisation of the Hungarian energy sector**

Regulation – history, recent interventions and potential future

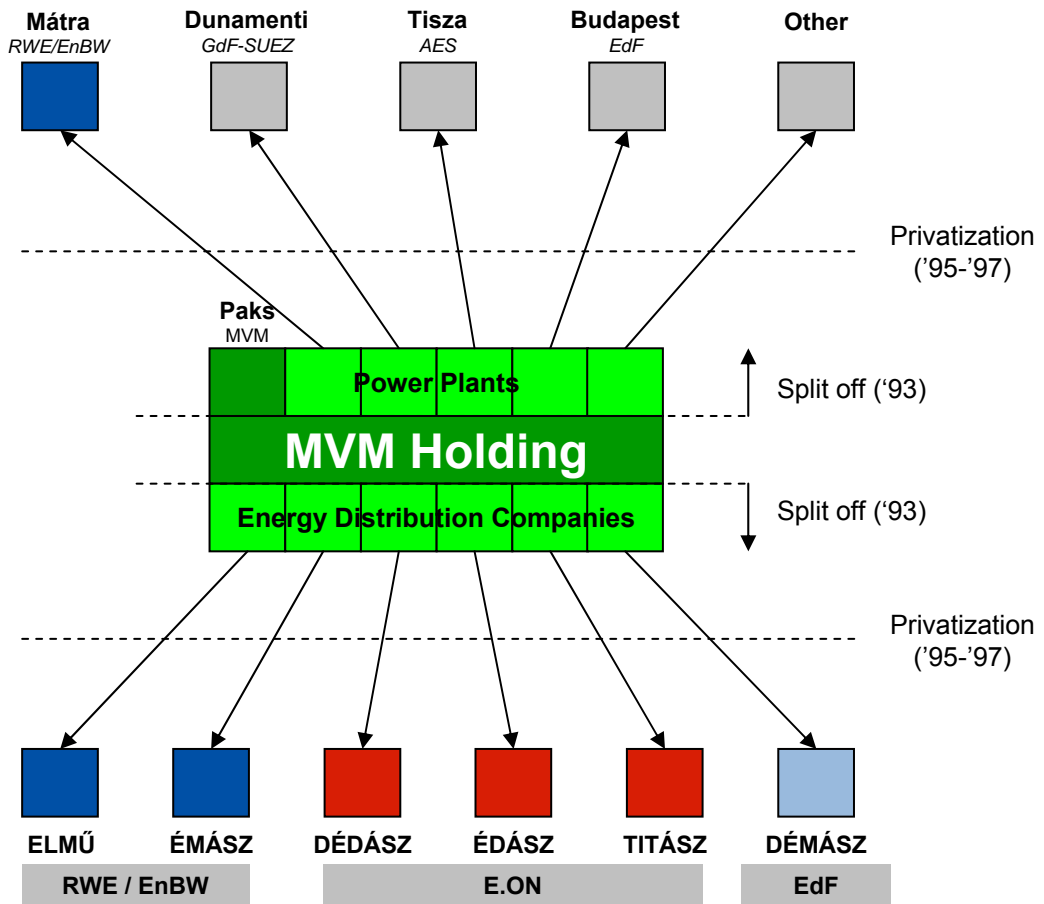
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Next challenges for a cleaner power generation

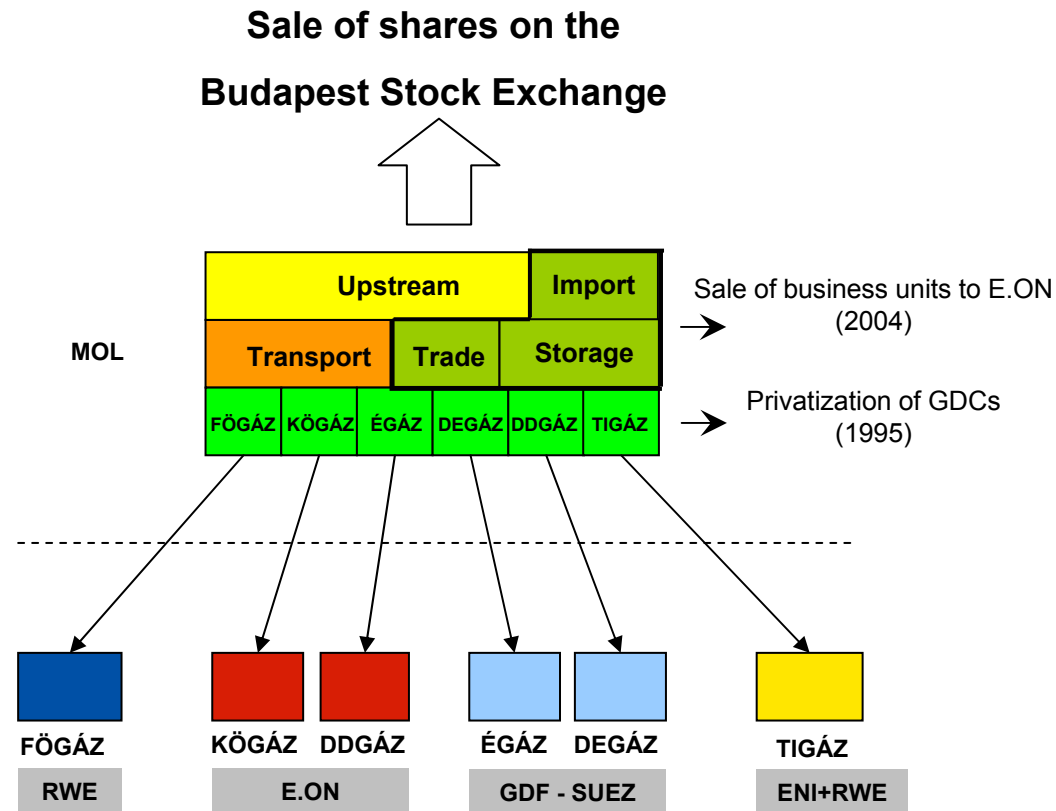
# Hungary privatised its power industry in 1995; Major European players dominate the sector

- > The Hungarian Electricity Works Trust (MVM) – including all Hungarian power plants and power supply companies – was founded in 1963
- > After the political changes in 1993 6 regional energy distribution companies and all power plants were hived off in separate joint stock companies and the MVM continued its operation in a Holding structure as MVM Rt.
- > During the privatizations from 1995-97 the major power plants – except the nuclear power plant Paks – and the six power supply companies were sold to foreign investors
- > In order to being able to sell the power plants, parallel to the privatization contracts long-term PPAs were concluded with the power plants
- > After privatization MVM remained the Hungarian system operator and the owner of the transmission network, a nuclear and some smaller back-up power plants



# The privatisation of the gas sector took place in several steps between 1995 - 2005

- > GDCs were split off the former oil and gas trust OKGT and were privatised parallel to the power sector in 1995 to major European industry players
- > MOL remained the owner of all transport network assets and storage facilities, as well as the import and wholesale contracts and was privatised in several steps over the Budapest Stock Exchange
- > MOL's gas trading and storage business units, as well as its 50% stake in importer Panrusgas were sold to E.ON Ruhrgas in 2004
- > Gas transport and indigenous E&P has remained with MOL who built up sales and re-entered the storage business
- > E.ON and GdF-SUEZ consolidated their gas sales activities after the unbundling of the GDCs



# The international investors faced several challenges after the privatisation

- > Good technical knowledge and equipment was not accompanied by state of the art commercial and financial skills
- > Low electricity and gas tariffs did not cover costs, therefore companies were unprofitable
- > The network business was represented by a high level of technical and commercial losses
- > A strategic asset management for the networks had to be developed
- > Organisations were hierarchic, complicated and overstaffed with low productivity in comparison to Western Europe
- > Due to high level of in-house services no „make or buy” opportunities were there to optimise costs
- > A customer orientated and entrepreneurial company culture was missing

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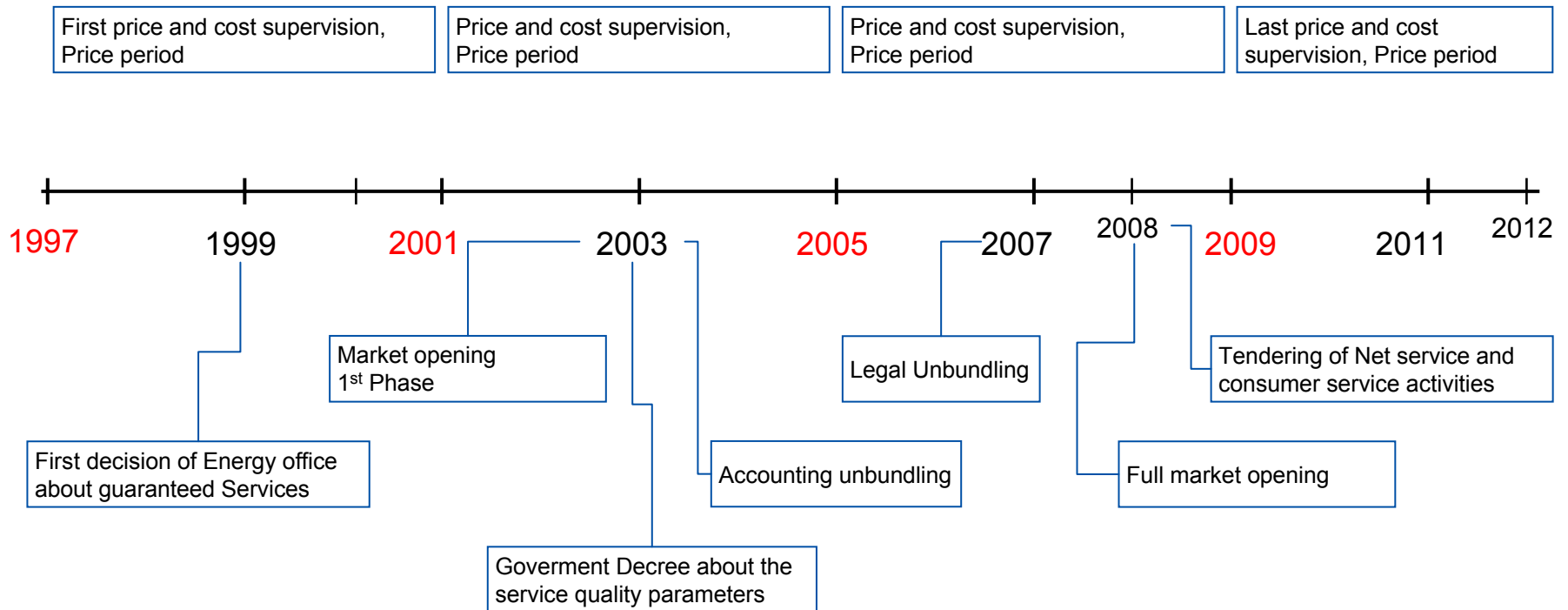
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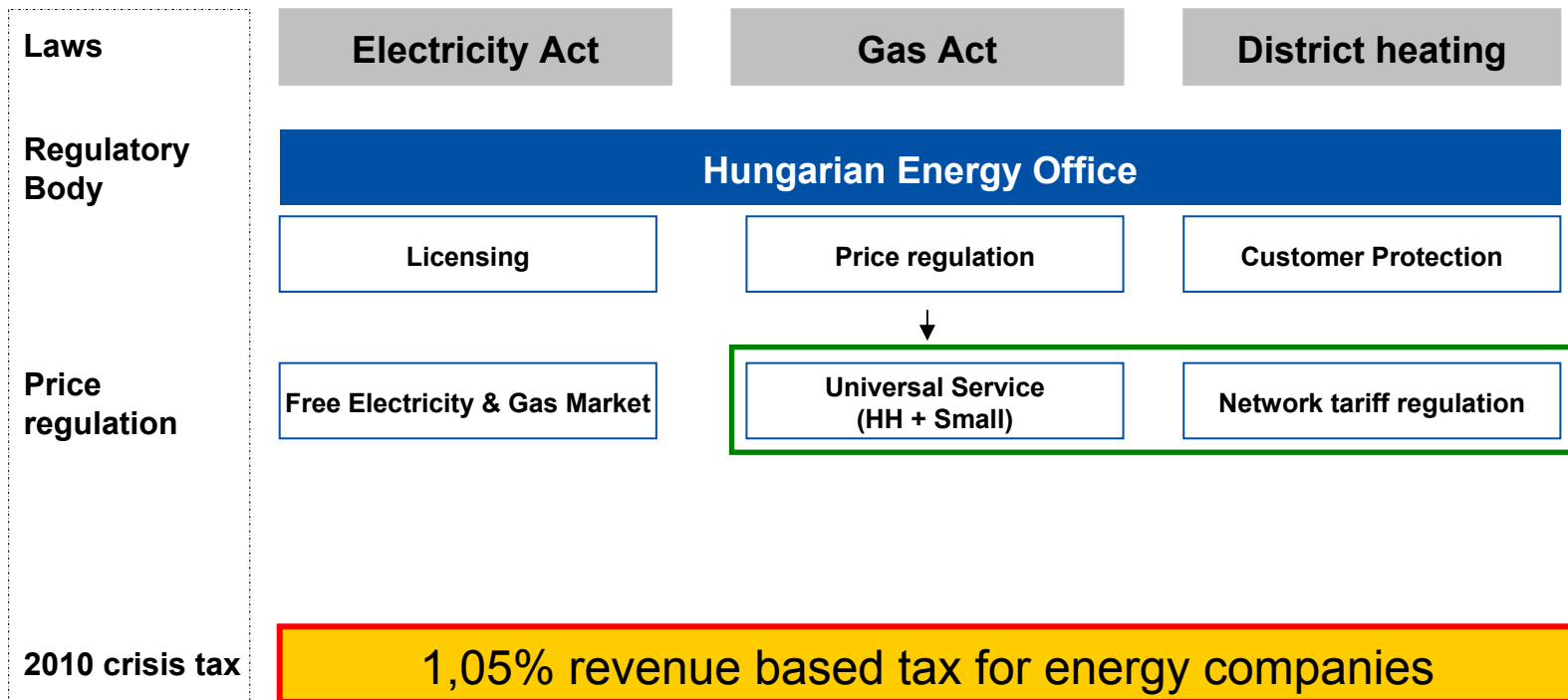
# Energy regulation in Hungary has had a history and experience of over 13 years

The Hungarian Energy Office was established by law in 1993

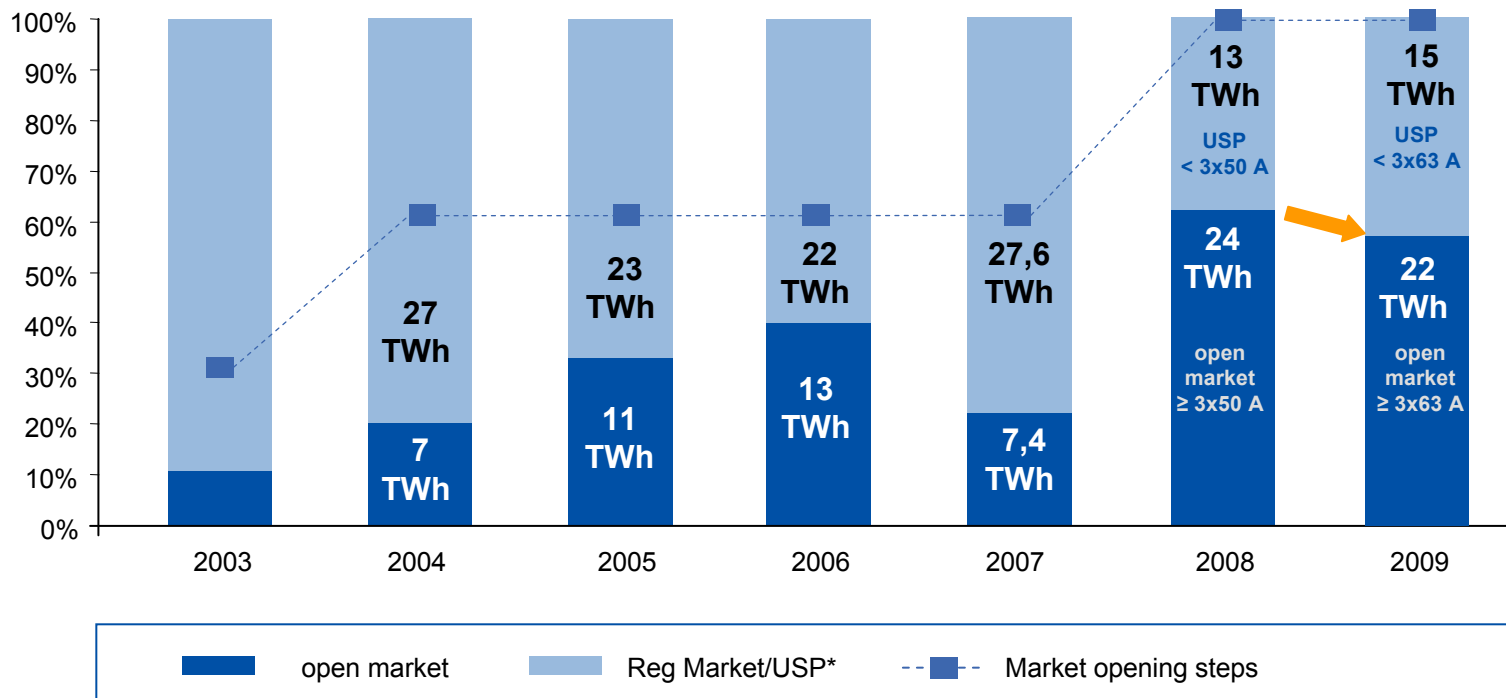
1. Permanent development in its methods and expert team
2. Stronger control than in Germany and in most Central and Eastern European countries
3. Strong international co-operation of regulators in the region and world-wide



Although both gas and power markets are fully liberalised, households and small entities have an access to regulated prices



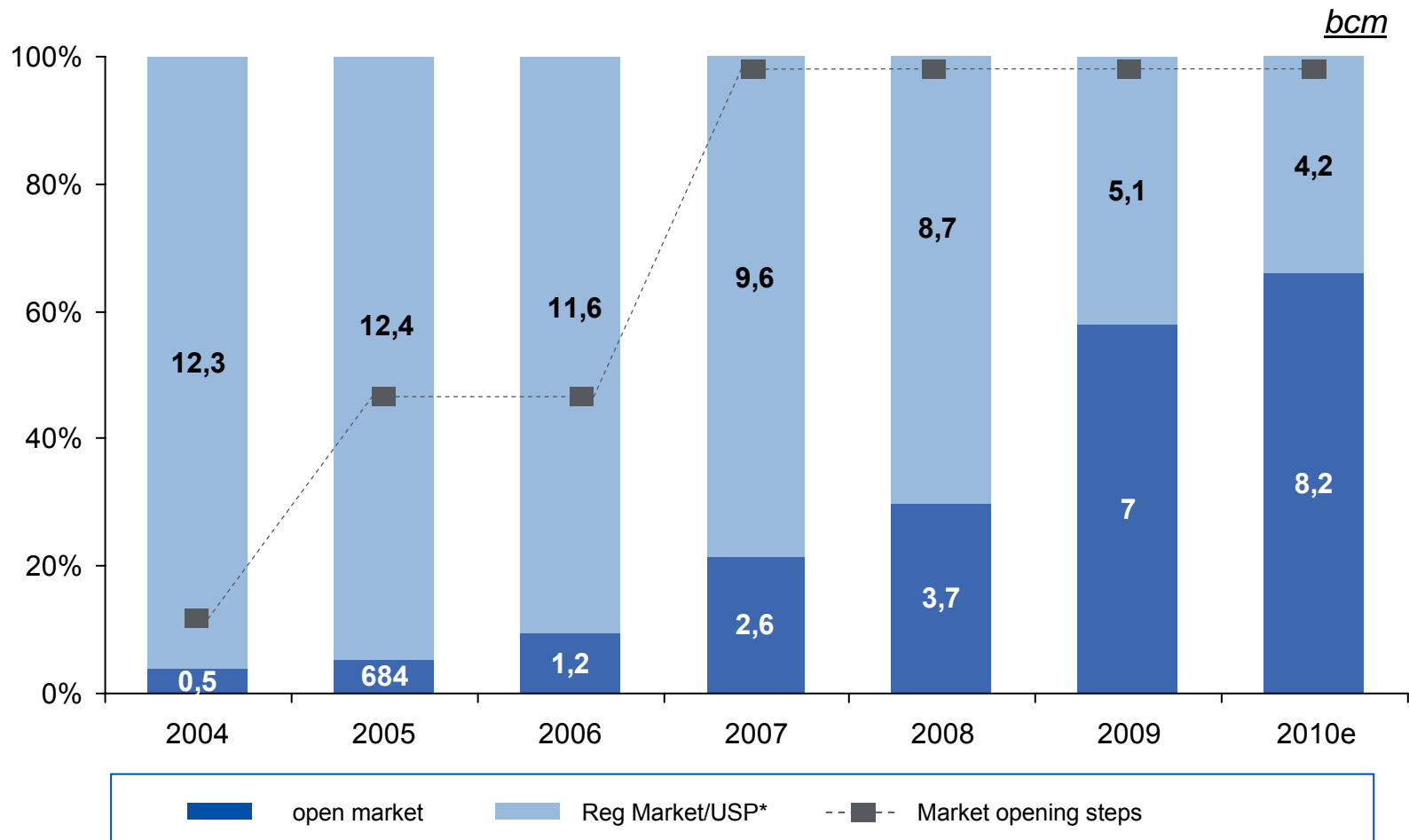
# Hungary preserved the duality of regulated and liberalised power markets



- > Duality of open and regulated market with the right of eligible customers to choose the more favorable
  - heavy fluctuation of open market volumes depending on price level (see 2007)
- > As of 1.1.2008 new market model:
  - Universal Service Providers (USP) established for households and small businesses (>3\*50A)
  - Obligatory open market supply for non-USP-eligible customers
- > From 1.1.2009: USP access granted for public institutions and small businesses up to 3\*63A (← →original plan)

Sales margin increased over time

# Gas market opening took place similarly to power: households and SME still regulated



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# OTP and the subsidiaries of international banks share the Hungarian financial market



Market share: 29.4%  
Balance sheet total: 9,755



Market share: 10.5%  
Balance sheet total: 3,065



Market share: 10.0%  
Balance sheet total: 3,107



Market share: 9.8%  
Balance sheet total: 2,903



Market share: 9.4%  
Balance sheet total: 2,757



Market share: 8.5%  
Balance sheet total: 2,461



Market share: 6.5%  
Balance sheet total: 1,737



Market share: 3.1%  
Balance sheet total: 901



Market share: 2.8%  
Balance sheet total: 642



Market share: 2.6%  
Balance sheet total: 801

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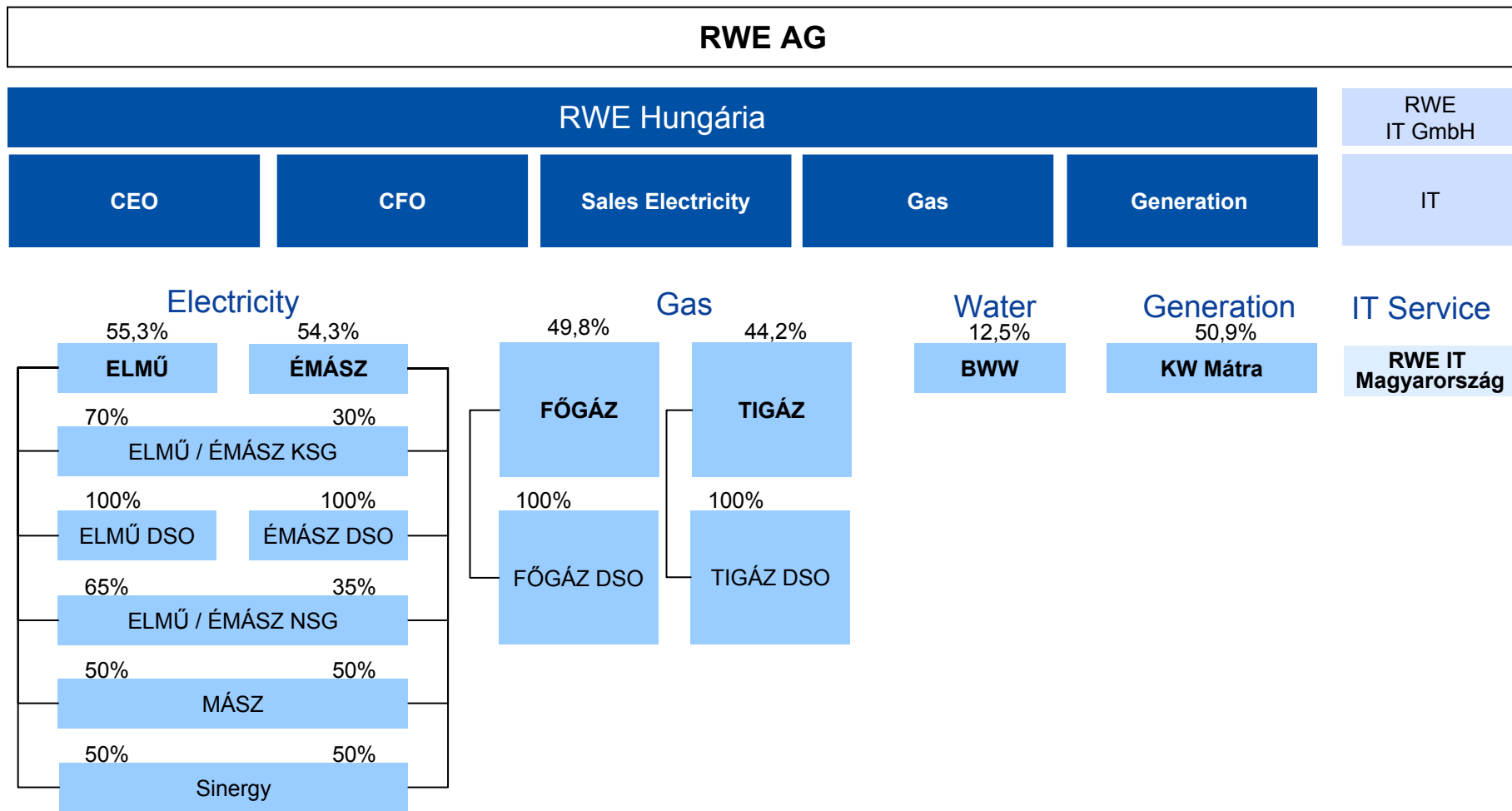
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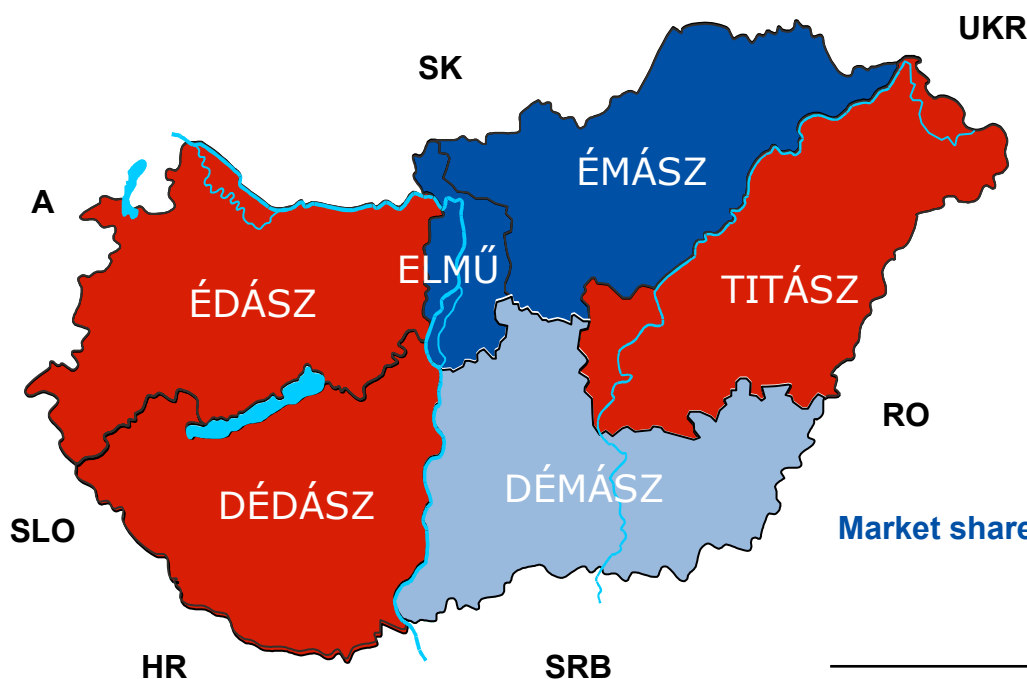
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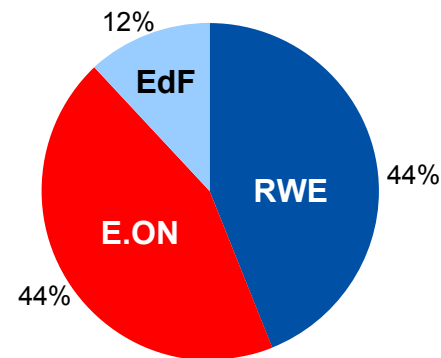
# RWE Hungária is active both in upstream and downstream in the Hungarian energy sector



# The Hungarian electricity market is dominated by RWE and E.ON, national champion MVM is catching up



DSO market shares

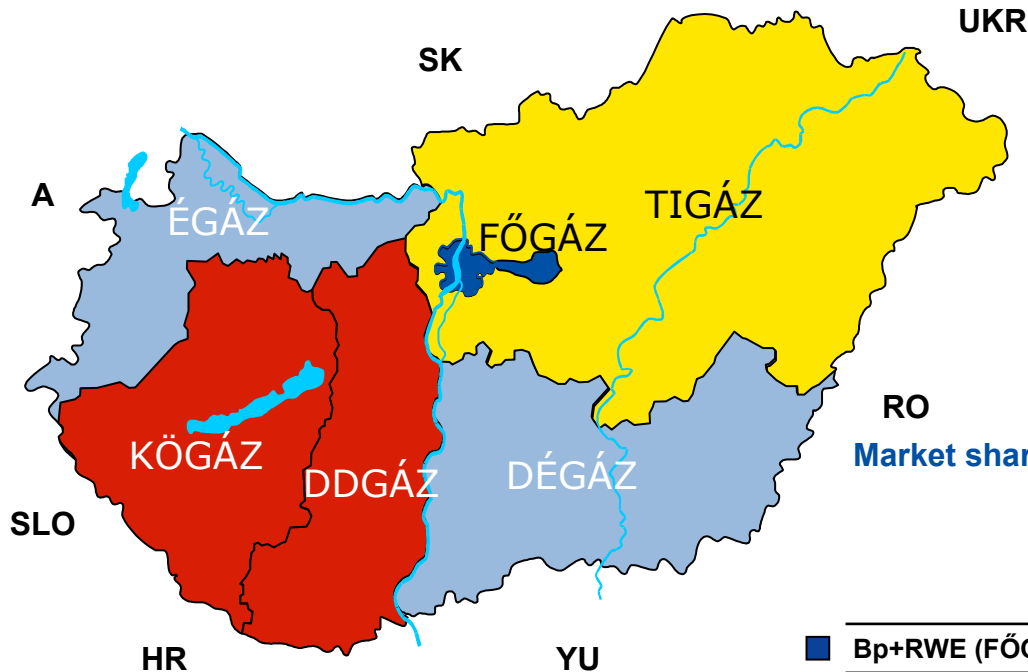


Market shares (Sales) of major investors

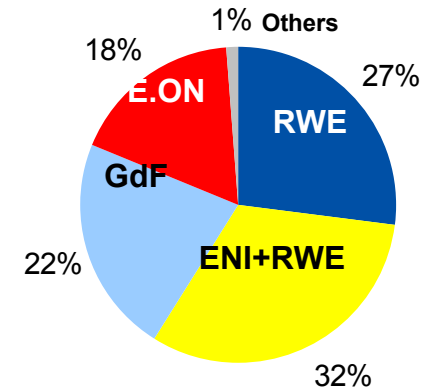
	Electricity sales in TWh (market share in %)*		
	USP-market	Free market	Total
RWE	6,0** (43%)	5,0 (24%)	11,0 (31%)
E.ON	6,1 (44%)	5,8 (27%)	11,9 (34%)
EdF	1,8 (13%)	2,6 (13%)	4,4 (13%)
MVM	-	1,9 (9%)	1,9 (5%)
Others	-	5,8 (27%)	5,8 (17%)
<b>Total</b>	<b>13,9 (100%)</b>	<b>21,1 (100%)</b>	<b>35,0 (100%)</b>

Grid loss is excluded

# The major players of the Hungarian gas market are big European utilities and EMFESZ



Market shares of the distribution companies

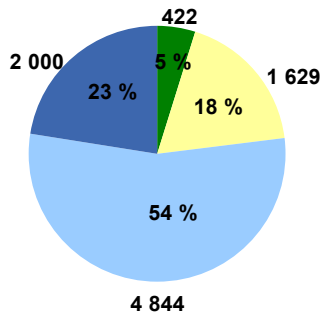


Market shares of investor companies

	Sales, Mm <sup>3</sup> /y (market share %)(*)		
	Regulated market	Free market	Total
■ Bp+RWE (FŐGÁZ)	1 100 (23%)	920 (14%)	2 020 (18%)
■ ENI+RWE (TIGÁZ)	1 770 (36%)	510 (8%)	2 280 (20%)
■ E.ON	870 (18%)	1 470 (22%)	2 340 (20%)
■ GdF	1 100 (23%)	960 (14%)	2 060 (18%)
EMFESZ	(0%)	1 700 (26%)	1 700 (15%)
Others	20 (0%)	1 035 (16%)	1 055 (9%)
<b>TOTAL</b>	<b>4 860 (100%)</b>	<b>6 595 (100%)</b>	<b>11 455 (100%)</b>

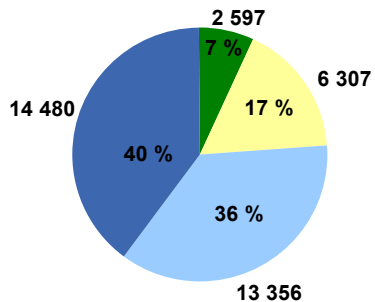
# The ageing of the Hungarian power plants requires new gas, nuclear and renewable developments

Fuel mix in capacity in MW total  
8 895 MW\*

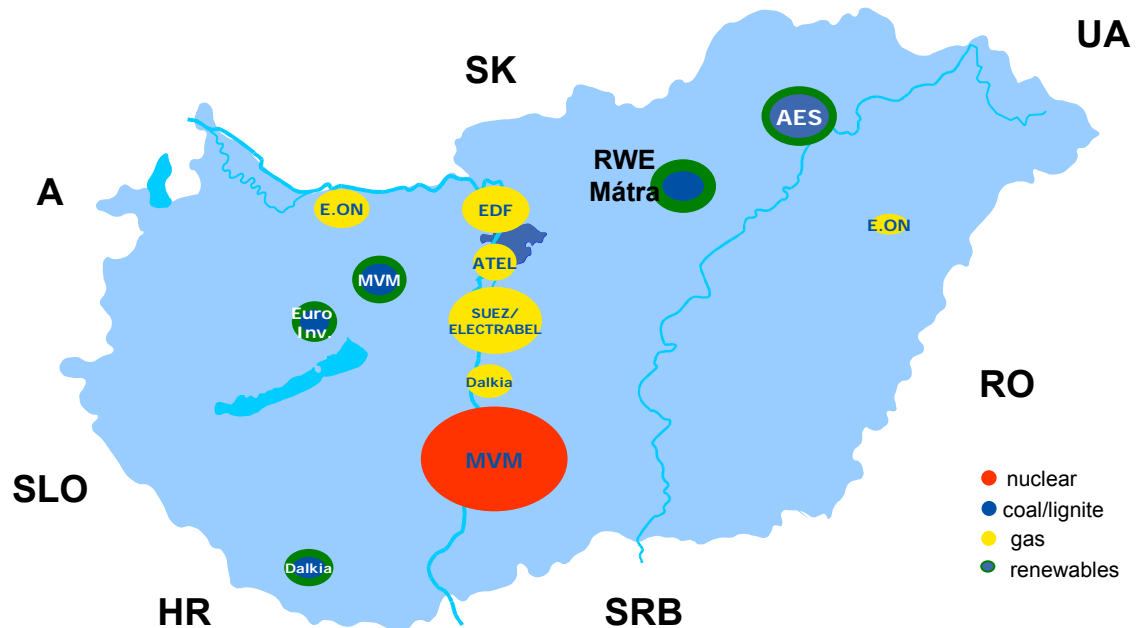
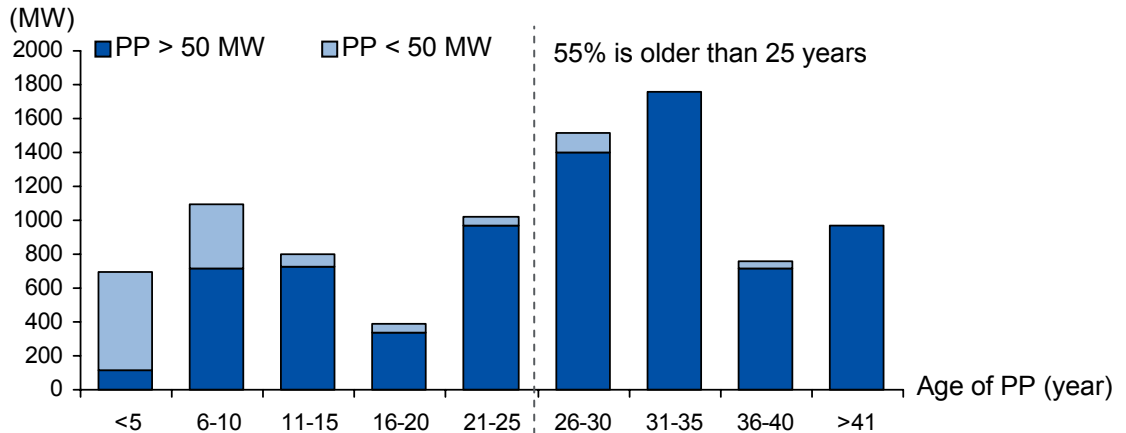


- nuclear
- coal
- gas+oil
- renewables

Fuel mix in generation in %  
total 37,1 TWh\*



\* MAVIR estimates for 2010



Sinergy – the contracting subsidiary of RWE is a market leader in cogeneration plants for industry and district heating plants with a total investment volume of 257 million €

### BC Power Plant, Kazincbarcika



- > **Project:** Development of the BorsodChem industrial power plant project, long-term operation and maintenance of the power plant
- > **Client:** BC-Erőmű Kft
- > **Project cost:** EUR 44 million
- > **Project years:** 2000 –2001
- > **Project location:** Kazincbarcika, BorsodChem Zrt.
- > **Installed capacity:** 50 MW electric

### TVK Power Plant, Tiszaújváros



- > **Project:** Implementation of the TVK industrial power plant project, long-term operation and maintenance of the power plant
- > **Client:** TVK-Erőmű Kft.
- > **Project cost:** EUR 53.4 million
- > **Project years:** 2002 – 2004
- > **Project location:** Tiszaújváros, TVK Nyrt.
- > **Installed capacity:** 35 MW electric

# RWE Hungária has developed the lignite fired Mátra plant in several steps – What's next?



Completed

Potential

- > **Main functions:** lignite, biomass and gas based electricity production
- > **936 MW**, 85% coal; 10% biomass; 5% gas
- > approx. has 15% share of the Hungarian electricity production
- > Coal mining from two own mines (Hungary's largest lignite-occurrence)

- > The flue-gas desulphurization system at the Mátra Power Plant filters **180 thousand tons sulphur** a year
- > Investment: **1,5 bln. HUF**
- > Year of construction: **2001**
- > Utilization of gypsum for the construction industry

- > **Heat recovery topping gas turbine** (2x33 MW)
- > Year of construction: **2007**
- > Investment: **17 bln. HUF**

- > **Biomass preparation equipment for co-firing (103 MW)**
- > 10% of the electricity from biomass from 2008 (40% of the total Hungarian green electricity production)
- > Annual biomass consumption is: 6.826 PJ (2008)

- > Due to environmental concerns and CO2 emissions planned 400 MW **lignite block was stopped**
- > **Operating licenses** of existing blocks run until: 2025
- > Utilization of the Mátra site for **future projects is presently under survey** (gas/ renewable/ etc.)

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# Key challenges of a future cleaner power supply

## Reduction of carbon emissions

- > State of the art technologies and efficiencies
- > Increase of renewable share in power generation
- > Efficiency in energy consumption

## Increasing security of supply

- > New reliable equipment
- > Flexibility of operation
- > Diversified supply routes, reliable sourcing

## Enhanced competitiveness

- > Mature and liquid energy markets
- > Access to networks

## Investments and local employment

- > Stable regulatory environment, risk mitigation
- > Reliable investors with long term view
- > Convincing return on investment