CEFES
COST-EFFECTIVE & ENVIRONMENTALLY FRIENDLY ENERGY SYSTEMS

Electrical Power Sector of Bosnia & Herzegovina – Transition to (De)regulated Market

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What is an efficient and robust electricity market?

- Legal framework
- Market institutions
- Market rules and actors
- Efficient trade of electricity

BH legal framework

- Law on electricity
- Law on TransCo
- Law on ISO

Market institutions

- TransCo
- ISO
- State regulator (SERC-DERK)
- Entity regulators

Market rules

SERC* approved

- **Market rules** and
- **Grid Code**

in its session held on June 8, 2006.

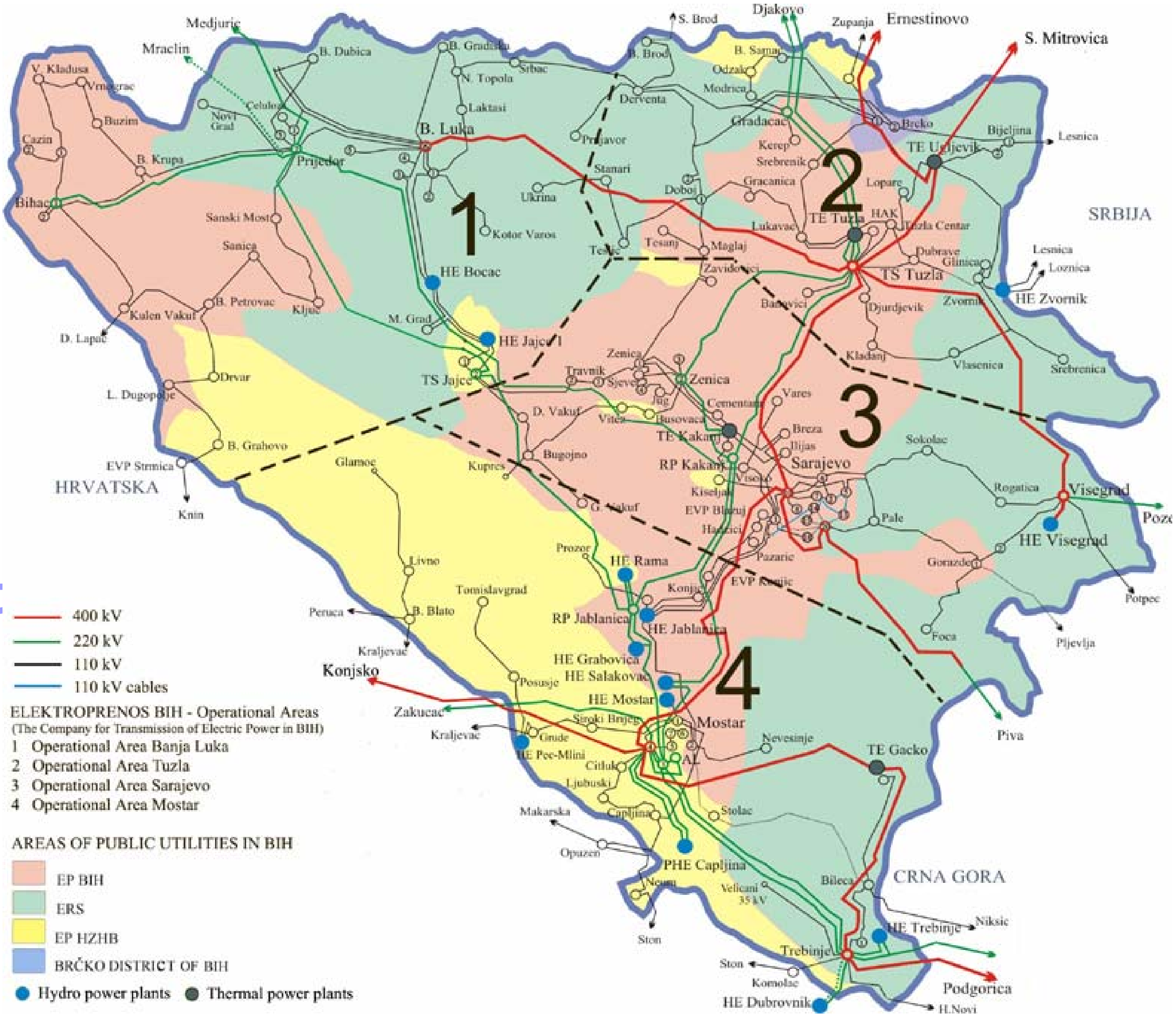
* **S**tate **E**lectricity **R**egulatory **C**ommission

Market actors

Actors

Public Utilities

- EP BiH
- ERS
- EP HZHB
- Brčko district of BiH



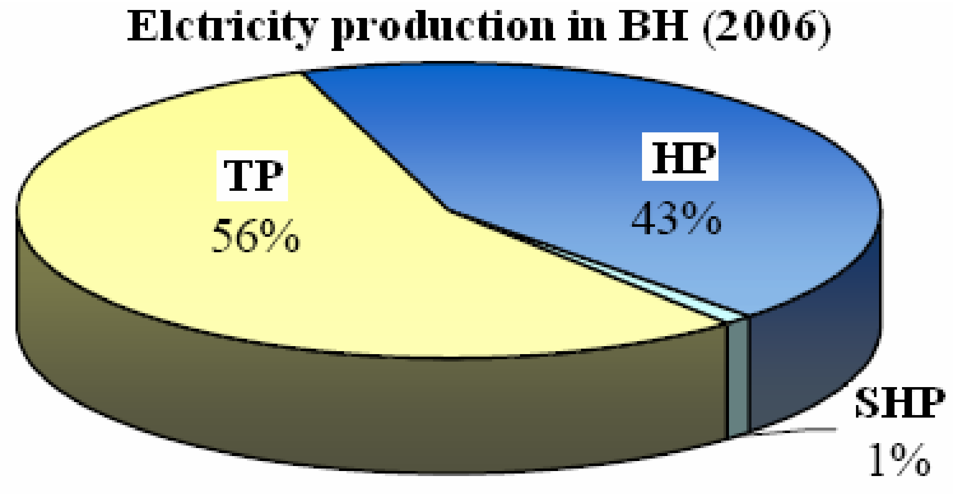
Basic data of BH power system

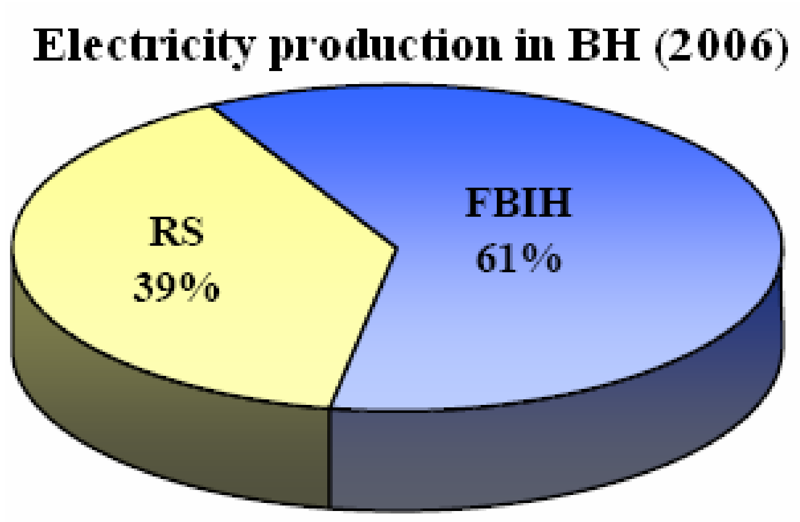
Major power plants*

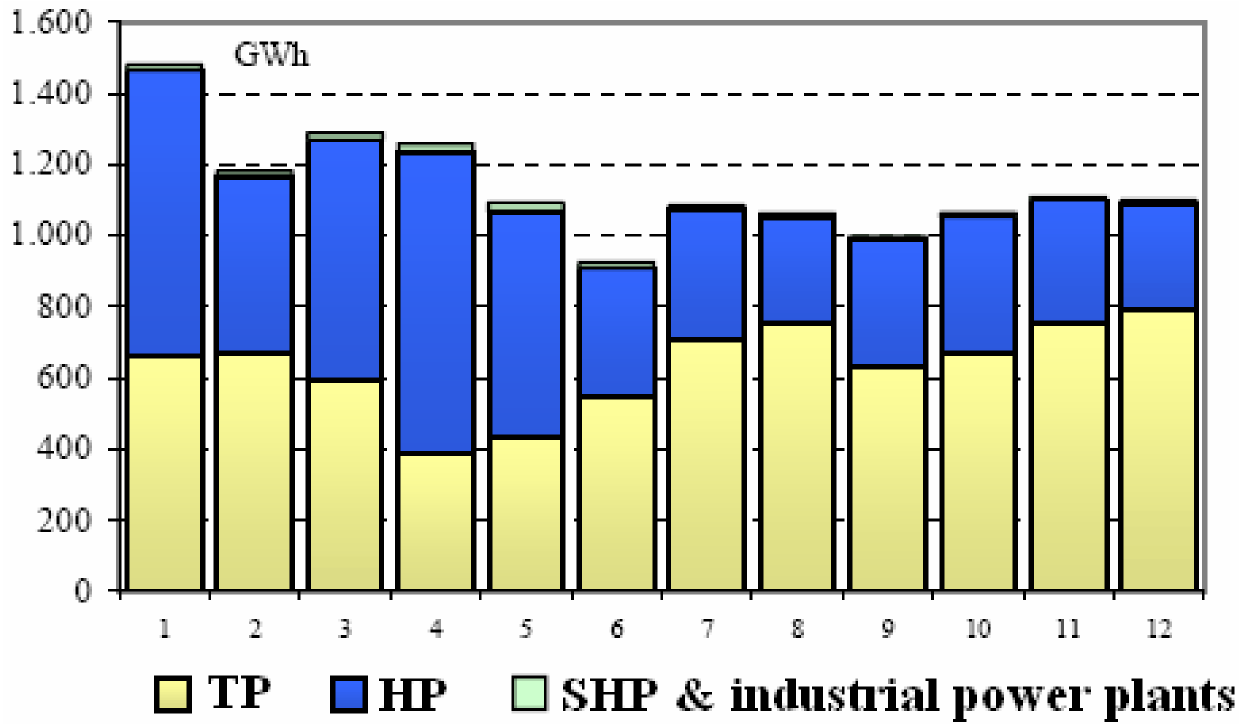
Hydro power plants	Capacity of power unit (MW)	Total installed capacity (MW)
Trebinje I	3×60	180
Trebinje II	8	8
Dubrovnik (BIH+Hr.)	2×105	210
Čapljina	2×210	420
Rama	2×80	160
Jablanica	2×25+4×30	170
Grabovica	2×58,5	117
Salakovac	3×70	210
Mostar	3×25	75
Jajce I	2×30	60
Jajce II	3×10	30
Bočac	2×55	110
Višegrad	3×105	315
Peć-Mlini	2×15	30

Thermal power plants	Installed capacity (MW)	Available capacity (MW)
TUZLA	779	709
G1	32	29
G2	32	29
G3	100	91
G4	200	182
G5	200	180
G6	215	198
KAKANJ	578	514
G1, G2, G3 i G4	4×32	4×29
G5	110	100
G6	110	90
G7	230	208
GACKO	300	276
UGLJEVIK	300	279

*report on activities 2006 SERC







*ISO - Report about el. energy flow in BH in 2006

Basic data of BH power system

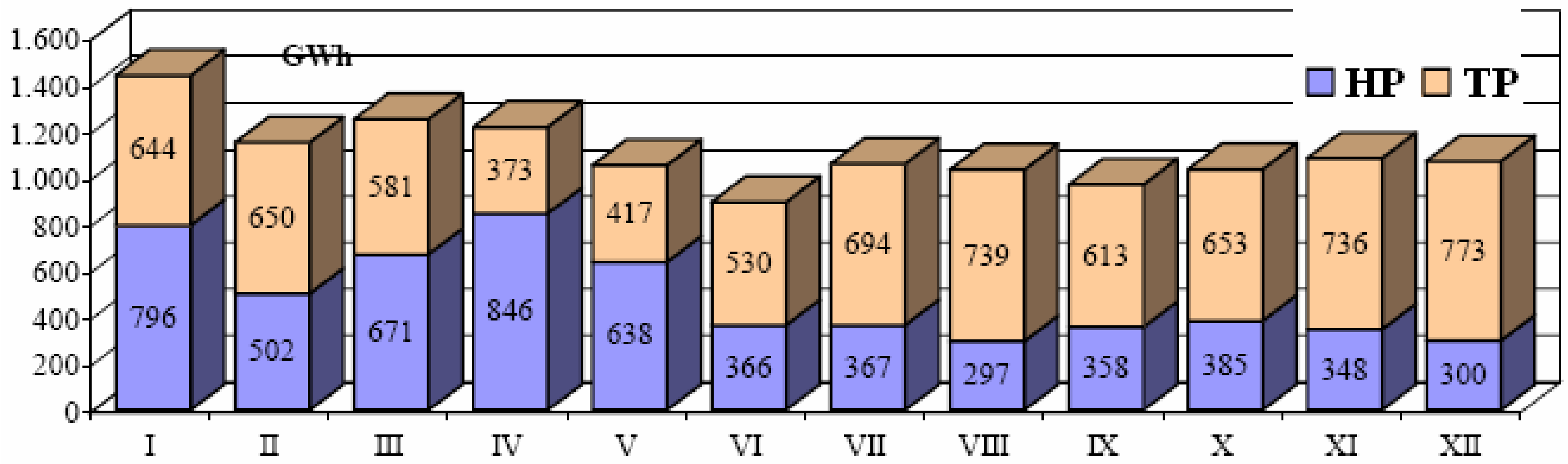
Transmission system*

No	Nominal voltage of transmission lines	Length (km)
1	400 kV	992
2	220 kV	1691
3	110 kV	3649
4	110 kV – cable line	31

No	Nominal voltage of transmission lines	No. of inter-connections
1	400 kV	4
2	220 kV	8
3	110 kV	17
	Total	29

*report on activities 2006 SERC

Electricity production in BH at transmission level**



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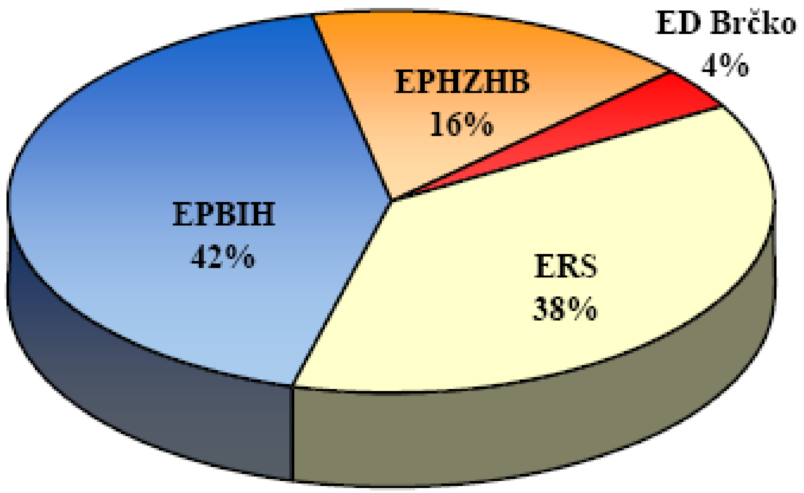
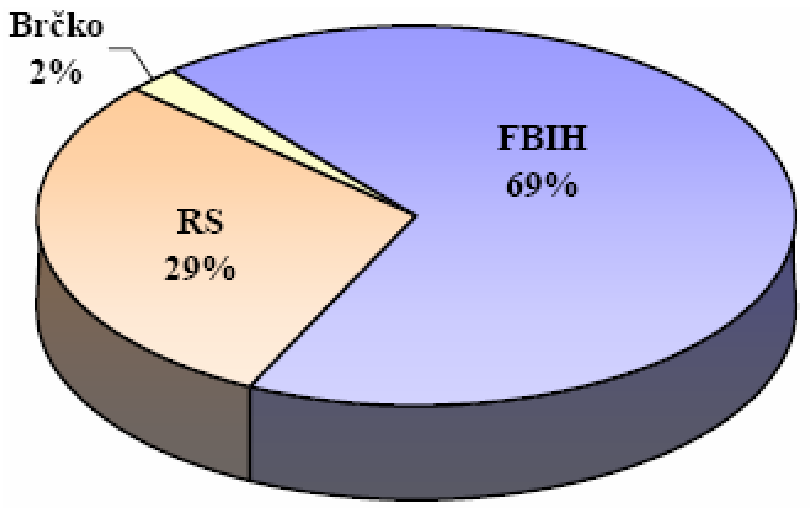
Basic data of BH power system

Consumption

ED consumption



Electricity consumption in BH



***ISO - Report about el. energy flow in BH in 2006*

Basic data of BH power system

GWh

Realization in 2005	EP BIH	ERS	EP HZHB	Brčko District	BIH
Generation	5778.53	5200.64	1768.69		**12747.86**
Gen. in hydro power plants	1477.69	2747.10	1768.69		5993.47
Gen. in thermal power plants	4218.88	2384.44			6603.32
Gen. in small and industrial PPs	81.97	69.10			151.07
Consumption	4190.57	3458.33	3469.83	252.47	**11371.20**
Distribution consumption	3641.86	3254.65	1232.47	252.47	8128.98
Transmission losses	163.78	136.47	83.72		383.97
Large consumers	384.93	20.77	2133.31		2539.01
Pumping and mines consumption		46.43	20.33		66.76

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Regional electricity market?

Bilateral market

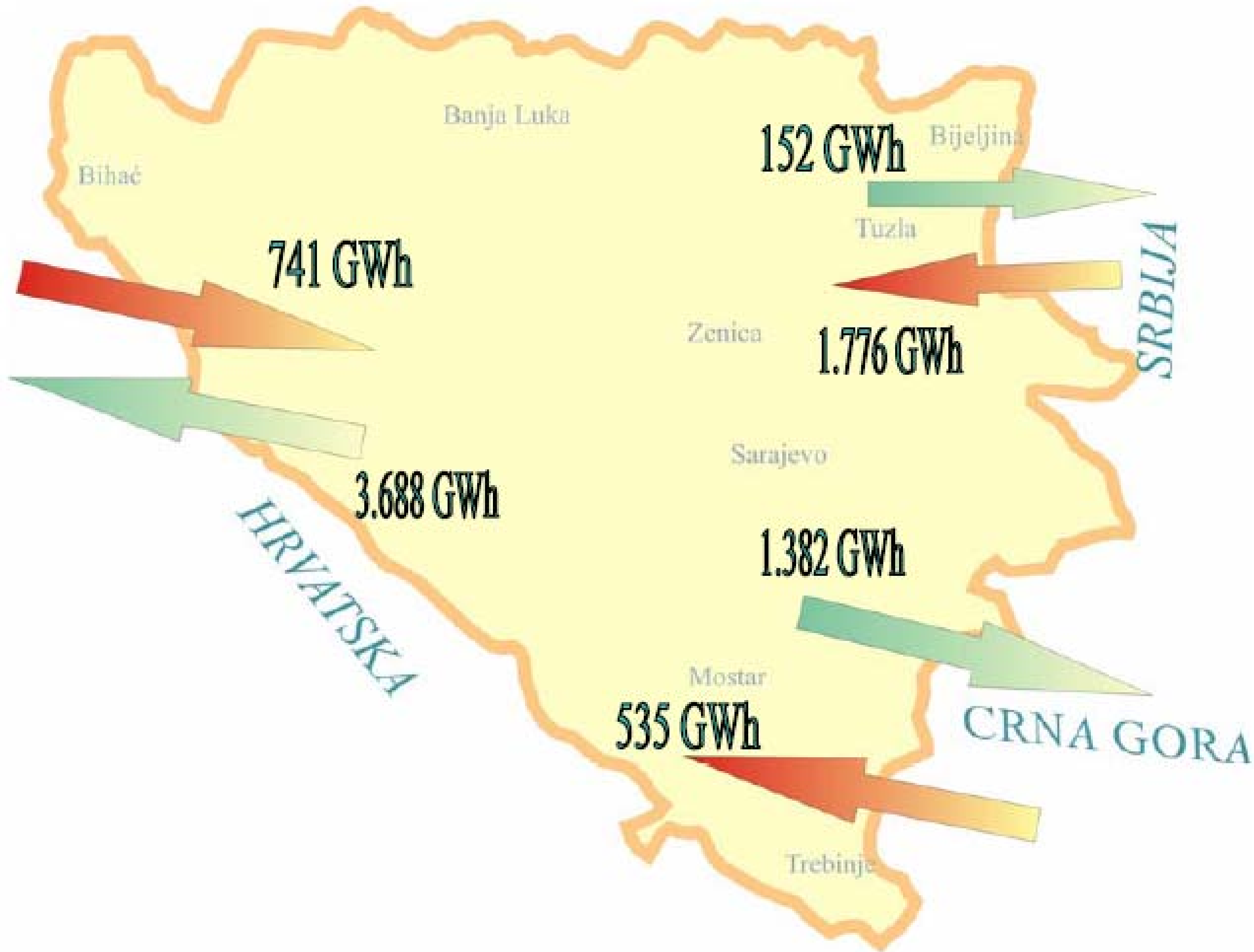
Day-ahead market?

Financial instruments market?

Transmission capacities market?

Basic data of BH energy exchange

- **Export/import**



Export: 5222GWh

Import: 3053 GWh

***ISO - Report about el. energy flow in BH in 2006*

Internal BH electricity market?

Bilateral contracts

Balanced market

Market of services?

Market “demand” actors - buyers

Time schedule of Electricity Market Opening in BH

- Customers with annual consumption of electricity higher than 10 GWh as of January 1, 2007, creating the level of market opening of **33%**
- All customers, except households, as of January 1, 2008 (market opening of **57,5%**)
- All customers as of January 1, 2015

Market “demand” actors - buyers

A relatively high percentage of market opening in BH of 33% in the first year is a result of the existence of dominant customer ‘’Aluminij’’ SC Mostar, whose consumption comprises around 20 % of total consumption in BH

Market “demand” actors - buyers

Customers on	Number of Custumer	VT	MT	DT	TOTAL VT+MT+DT	TOTAL %	Obračunska snaga	OS u %
	N	GWh	GWh	GWh	GWh		MW	
HV -110 kV	6	223,41	329,93	0,00	553,35		1267,52	
MV - 35 kV	43	134,14	177,20	0,00	311,34		727,65	
MV - 10 (20) kV	485	255,96	261,13	0,00	517,08		1432,94	
LV - 0,4 kV Household I-g	314424	0,00	0,00	800,25	800,25		1203,77	
LV - 0,4 kV Household II- g	247948	372,27	450,33	0,00	822,61		868,15	
LV - 0,4 kV Other cust. I- g	954	79,78	69,28	0,00	149,05		541,53	
LV - 0,4 kV Other cust. II- g	42317	277,64	174,16	0,00	451,80		159,64	
LV - 0,4 kV Public lighting	3531	56,91	0,20	0,00	57,11		0,39	
LV Total	609174	786,60	693,96	800,25	2280,81	62	2773,50	45
MV Total	528	390,09	438,33	0,00	828,42	23	2160,59	35
HV Total	6	223,41	329,93	0,00	553,35	15	1267,52	20
TOTAL	609708	1400,11	1462,2	800,25	3.662,58		6201,61	

Conclusions

Future market activity?

Key factors for switching (experince of USA and EU)

Unbundling of EPC

Price structure

Regional/national market structure

Table 8

Status of Electricity Market Reform in IEA-EU Countries

	Declared market opening (% of total)	*Large industrial users switching since market opening (% of total)*	*Medium industrial and commercial switching since market opening (% of total)*	*Electricity transmission*	*Electricity distribution Legal unbundling implemented?*
Austria	100	29	3	legal	No
Belgium	90	c.20	19	legal	Yes
Czech Republic	100	5	3.3	ownership	Yes
Denmark	100	>50	c.15	ownership	Yes
Finland	100	>50	82	ownership	Yes
France	70	15 (including medium)		legal	No
Germany	100	41	7	legal	No
Greece	62	2	0	legal	No
Hungary	67	32 (including medium)		ownership	See note
Ireland	100	56	15	legal	No
Italy	79	60 (including medium)		ownership	See note
Luxembourg	57	25	3	legal	No
Netherlands	100	–	–	ownership	Yes
Portugal	100	16	16	legal	See note
Spain	100	25	22	ownership	See note
Sweden	100	>50	-	ownership	Yes
United Kingdom	100	>50	>50	ownership	Yes

Note: In Hungary, Italy, Portugal and Spain, the distribution company is also the default supplier. However, suppliers to non-regulated customers must be legally unbundled.

Source: EU Commission, Report on progress in creating the internal gas and electricity market, Brussels, 2005.