

# Electrical Power System Restructuring and New EU Energy Policy

Seminar within the EU TEMPUS Project Cost Effective And Environmentally Friendly Energy Systems - CEFES

July 11, 2007, Tuzla, Bosnia and Herzegovina

## Overview of Power Market Development in Bosnia and Herzegovina

Edin ZAMETICA  
State Electricity Regulatory Commission  
Bosnia and Herzegovina

# Agenda

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- ◆ Introduction (primary legislation, reform process)
- ◆ Power sector structure
- ◆ Market players
- ◆ Basic power indicators
- ◆ Market opening
- ◆ Demand and price trends
- ◆ Regional perspective (Energy Community)
- ◆ Ongoing activities

# Primary Legislation

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## Supra-national level

- ◆ Energy Charter Treaty; Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects; Trade Amendment to the Treaty, 2000
- ◆ Treaty Establishing the Energy Community, 2006

## National level

- ◆ Act on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina (“Act on Transmission”), 2002, amended 2003
- ◆ Law Establishing the Company for the Transmission of Electric Power in Bosnia and Herzegovina (“Transco Law”), 2004
- ◆ Law Establishing an Independent System Operator for the Transmission System of Bosnia and Herzegovina (“ISO Law”), 2004

## Entity level

- ◆ Law on Electricity of the Federation of Bosnia and Herzegovina (“Federation Electricity Law”), 2002, amended 2005
- ◆ Law on Electricity of the Republika Srpska (“RS Electricity Law”), 2002, amended 2003, 2004 and 2007

# Some of the Reform Milestones

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- ◆ Statements of the entity governments on the electricity policy, (2000) and Amendments (2001)
- ◆ The Study “Bosnia and Herzegovina Power Sector Restructuring and Privatization” (December 2001)
- ◆ Harmonised Entities’ Action Plans for the Power Sector Restructuring (agreed 2003, updated 2005)
  - RS Action Plan: 5 GENCOs + 5 DISCOs majority owned by a joint holding company ERS.
  - Federation: EP BIH will create 3 GENCOs, EP HZHB will create 3 GENCOs as well; EP BIH will be the sole owner of 2 DISCOs, EP HZHB of 1, while 2 DISCOs will be in joint ownership of the Federation EPs.
  - All DISCOs to deal with distribution and supply of electricity!!!
- ◆ Electricity sector reform priorities are highlighted in the Poverty Reduction Strategy Paper (2004) , as well as in European Partnership documents
- ◆ Study on the Energy Sector in BIH (to be finished in December 2007)

# Key Subjects in Restructuring Process

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## National level

- ◆ Ministry of Foreign Trade and Economic Relations of BIH, Sarajevo
- ◆ State Electricity Regulatory Commission, Tuzla
- ◆ Independent System Operator in Bosnia and Herzegovina, Sarajevo
- ◆ Company for Transmission of Electric Power in BIH (Elektroprenos Bosne i Hercegovine), Banja Luka

## Entity level

- ◆ Ministry of Energy, Mining and Industry of the Federation BIH, Mostar
- ◆ Ministry of Economy, Energy and Development of the Republika Srpska, Banja Luka
- ◆ Regulatory Commission for Electricity in the Federation of BIH, Mostar
- ◆ Regulatory Commission for Electricity of the Republika Srpska, Trebinje
- ◆ Power utilities (3EPs)

# State Electricity Regulatory Commission

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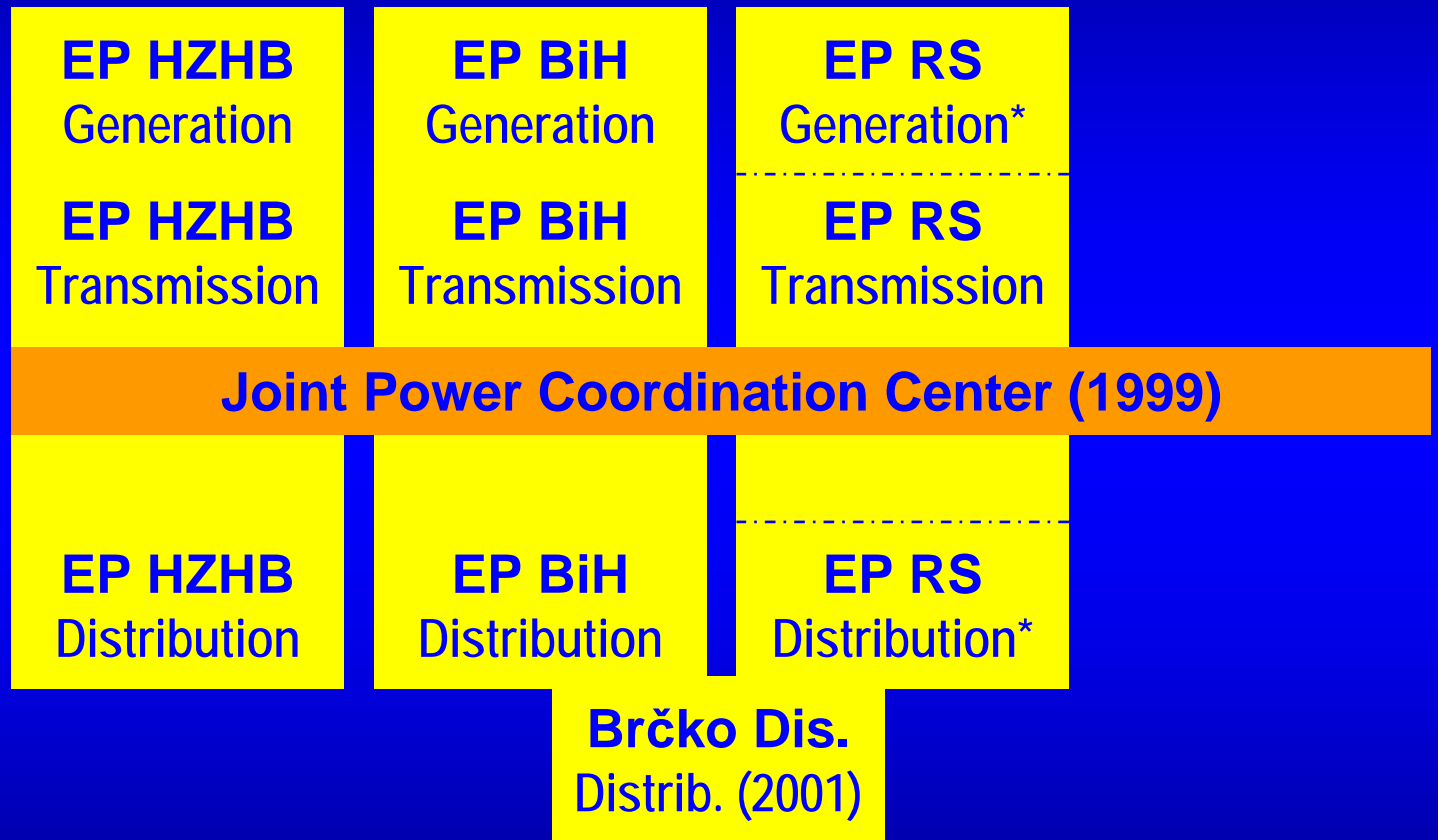
- ◆ Independent and non-profitable institution of Bosnia and Herzegovina, which acts in accordance with the principles of objectivity, transparency and equality
- ◆ Jurisdictions and responsibilities for transmission of electricity, transmission system operation and international trade
- ◆ Established by the Parliament of BIH by
  - adopting the Act on Transmission of Electric Power, Regulator and System Operator (2002), and
  - appointing Members of the Commission (2003)

# Power Sector Structure until 1992

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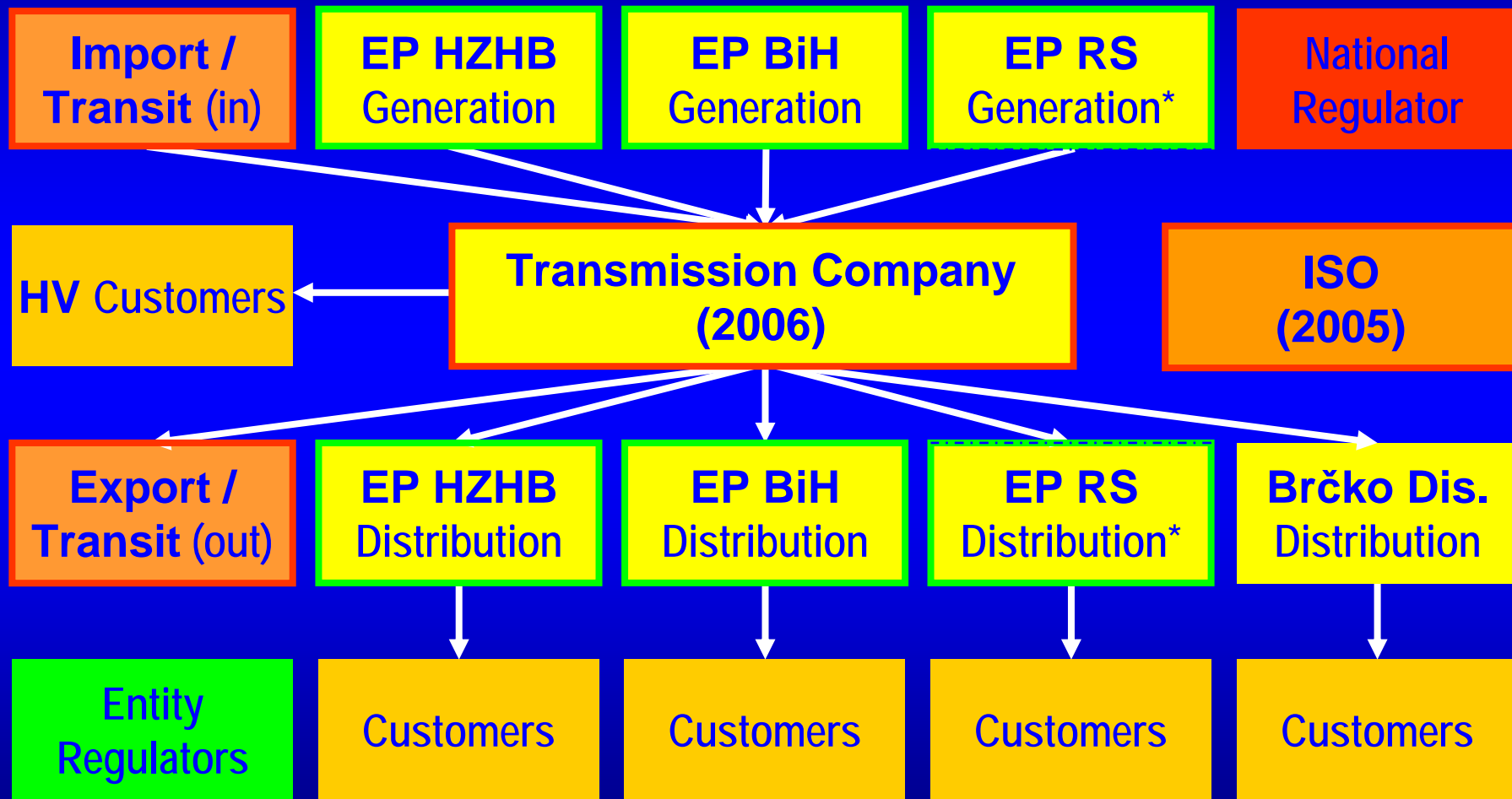


# Power Sector Structure 1992 - 2004

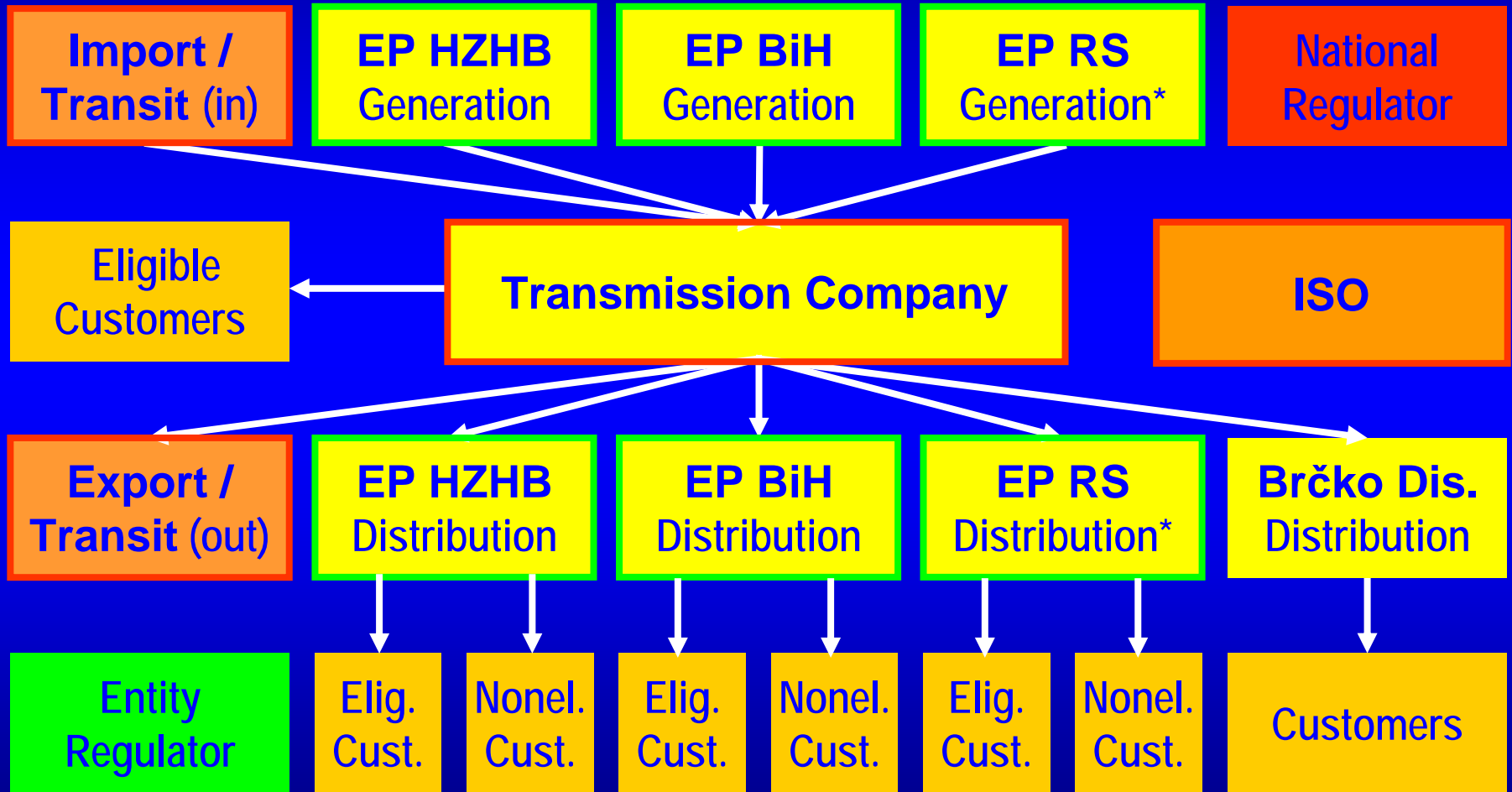




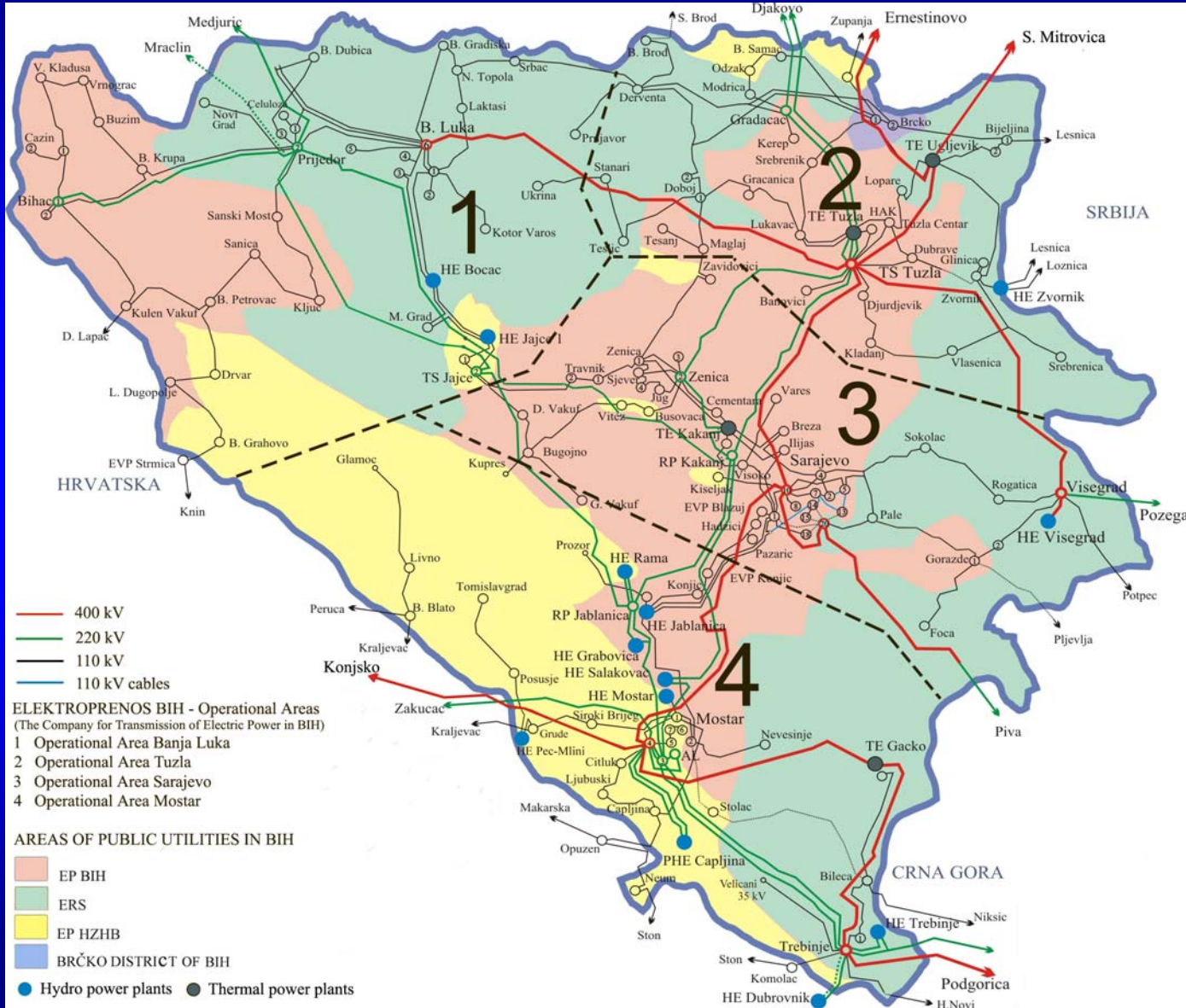
# Power Sector Structure 2005 - 2006



# Power Sector Structure – Since Jan. 2007



# Map of the Power System of BIH



# Sector Structure - Upstream



- ◆ Generation
  - Elektroprivreda Bosne i Hercegovine JSC Sarajevo
  - Elektroprivreda Hrvatske zajednice Herceg Bosne JSC Mostar
  - Holding Elektroprivreda Republike Srpske JSC Trebinje is majority owner of 5 GENCOs (HPP on Drina River JSC Višegrad, HPP on Vrbas River JSC Mrkonjić Grad, HPP on Trebišnjica River JSC Trebinje, Coal Mine and TPP Ugljevik JSC Ugljevik, Coal Mine and TPP Gacko JSC Gacko)
  - Distributed generation (3 licensed firms in RS+5 in Federation BiH)
- ◆ International trade
  - Elektroprivreda Bosne i Hercegovine JSC Sarajevo
  - Elektroprivreda Hrvatske zajednice Herceg Bosne JSC Mostar
  - Elektroprivreda Republike Srpske JSC Trebinje
  - Energy Financing Team (EFT), Ltd. Trebinje,
  - EZPADA Ltd. Čapljina
- ◆ International trade - HV customer, import of electricity for its own needs
  - Aluminij JSC Mostar

# Sector Structure - Networks

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- ◆ In July 2005 the Independent System Operator in Bosnia and Herzegovina, Sarajevo started its operation as a result of divestiture from the three integrated utilities and the former Joint Power Co-ordination Centre - ZEKC.
- ◆ A single company for transmission of electricity in BIH (Elektroprenos Bosne i Hercegovine, Banja Luka) started its operations in February 2006.
- ◆ EP BIH and EP HZHB are holders of a single distribution license each, while distribution subsidiaries of ERS are licensed separately (5 DISCOs).
- ◆ Distribution in Brčko District of BIH is done by a separate entity, attached to the local government (to become a part of public utility to be created in Sep. 2007).

# Sector Structure - Downstream



- ◆ Licensees for supply to tariff buyers (first tier suppliers)
  - EP BIH and EP HZHB in Federation of BIH
  - 5 subsidiaries of ERS (Elektro Doboje, Elektro-Bijeljina, Elektrodistribucija Pale, Elektro-Hercegovina Trebinje and Elektrokrajina Banja Luka) in Republika Srpska
- ◆ Licensees for supply of eligible (non tariff customers) - second tier suppliers of electricity on the territory of BIH
  - EP BIH
  - EPHZHB
  - ERS
  - Energy Financing Team (EFT) Ltd. Trebinje,
  - EZPADA Ltd. Čapljina
  - Alumina Factory Birač JSC Zvornik
- ◆ Supply in Brčko District of BIH is done by the same separate entity dealing with distribution.

# Basic Power Indicators



(GWh)

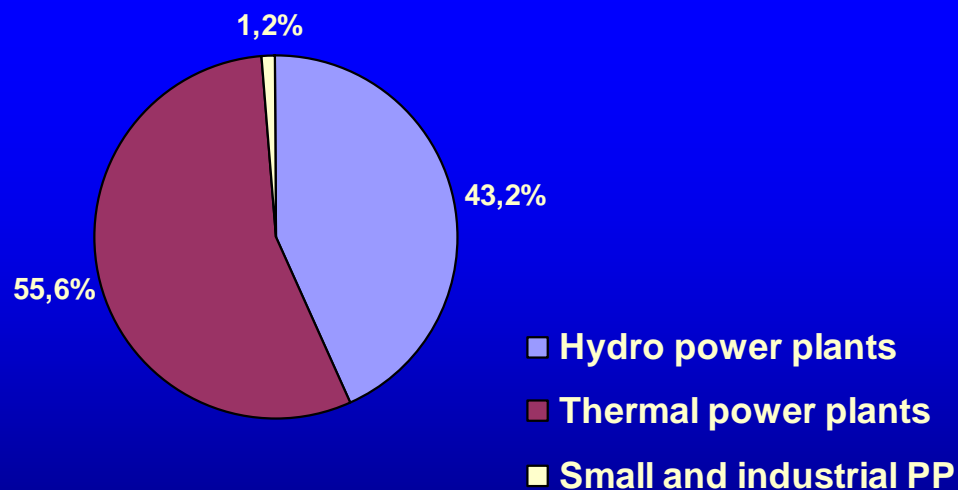
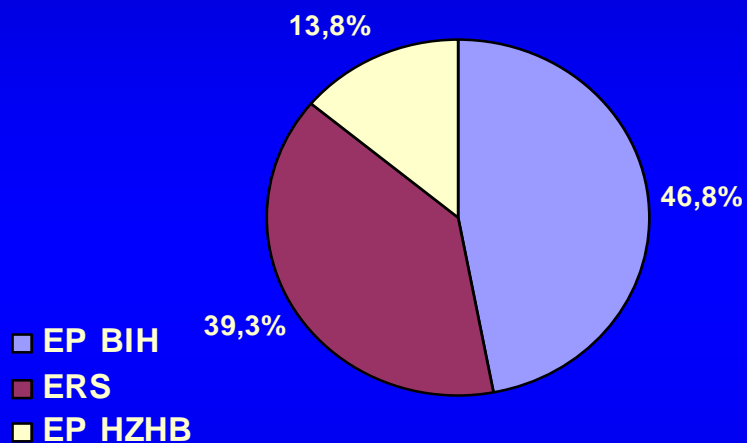
2006	EP BIH	ERS	EP HZHB	Brčko DC	BIH
<b>Generation</b>	<b>6,383.5</b>	<b>5,359.5</b>	<b>1,884.0</b>		<b>13,627.0</b>
Hydro power plants	1,488.0	2,521.0	1,884.0		5,893.0
Thermal power plants	4,811.5	2,764.5			7,576.0
Small and industrial PP	84.0	74.0			158.0
<b>Gross consumption (without transmission losses)</b>	<b>4,265.0</b>	<b>3,261.0</b>	<b>3,356.0</b>	<b>253.0</b>	<b>11,135.0</b>
<b>Net consumption</b>	<b>3,861.0</b>	<b>2,622.0</b>	<b>3,075.0</b>	<b>187.0</b>	<b>9,745.0</b>
Distribution gross consumption	3,722.0	3,261.0	1,281.0	253.0	8,517.0
Large consumers	543.0		2,053.0		2,596.0
Pumping mode of PHP Čapljina			22.0		22.0
Transmission network losses				1.9%	311.1
Distribution network losses	10.9%	19.6%	21.9%	26.1%	
<b>Cross-border trade</b>				<b>net export</b>	<b>2,165.3</b>
Import	42.8	178.7	1,005.8		1,227.3
Export	1,176.4	1,922.8	293.3		3,392.5

Source: ISO BIH, SERC

# Generation



Total generation in 2006 was **13 627 GWh**.

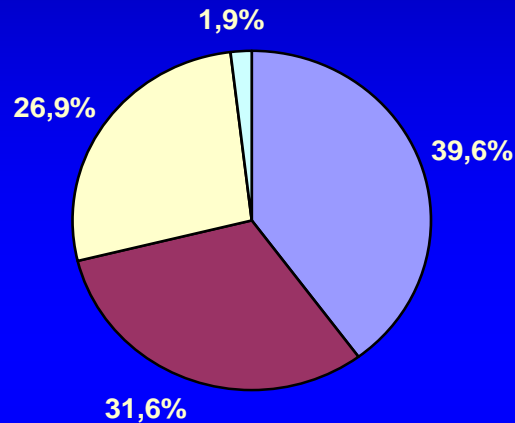




# Consumption

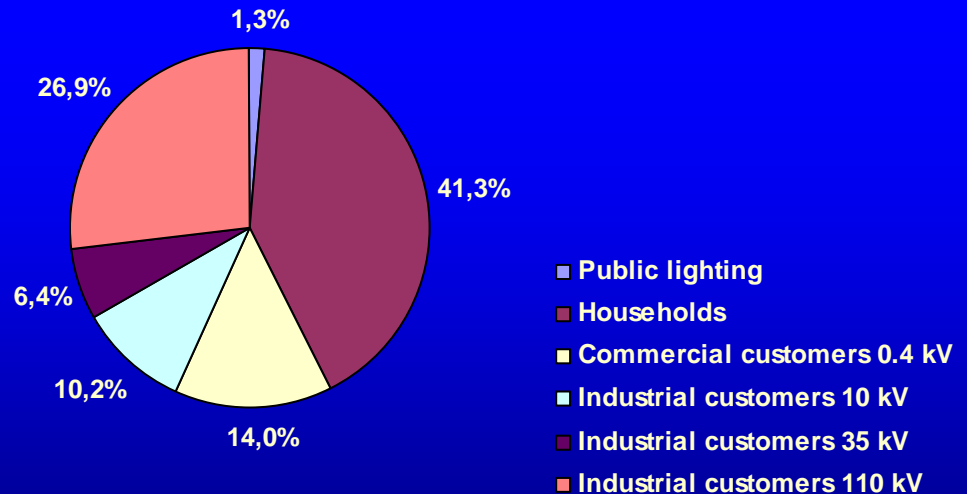


Total net consumption in 2006 was **9 745 GWh**.



Average price in € per 100 kWh

Public lighting	7.52
Households	5.77
Commercial customers 0.4 kV	9.41
Industrial customers 10 kV	5.72
Industrial customers 35 kV	4.36
Industrial customers 110 kV	3.64



# Market Opening

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End-customers may acquire the eligible customer status in accordance with the following time schedule:

- ◆ 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 58,7%),
- ◆ all customers as of January 1, 2015.

*Dominant customer - “Aluminij” Mostar, whose consumption comprises around 20% of total net consumption in BIH.*

- ◆ Network related activities (transmission and distribution) – natural monopoly
- ◆ Supply activities (+generation) – market activities, to be deregulated

# Market Opening in the Region



	Electricity (threshold, market opening %)
Albania	100 GWh/year
Austria	100%
Bosnia and Herzegovina	33% (>10 GWh/a Jan 2007, all non hh Jan 2008, all households Jan 2015)
Bulgaria	>20 GWh/a [till June 2006] /9 GWh/a (till Dec 2006) (all non till June 2007; all households July 2007)
Croatia	>9 GWh/a (all non households July 2007, all households July 2008)
FYROM	>20 GWh/a
Greece	70% (all non hh July 2007)
Hungary	all non households [67%] (all hh July 2007)
Italy	80% [non households] (all households July 2007)
UNMIK Kosovo	customer at 110 kV (four)
Montenegro	gradual opening without dynamics specified
Romania	all non households (all July 2007)
Serbia	>3 GWh (21%, January 2007)
Slovenia	partially open (all households July 2007)
Turkey	6 GWh/a (all households 2011)

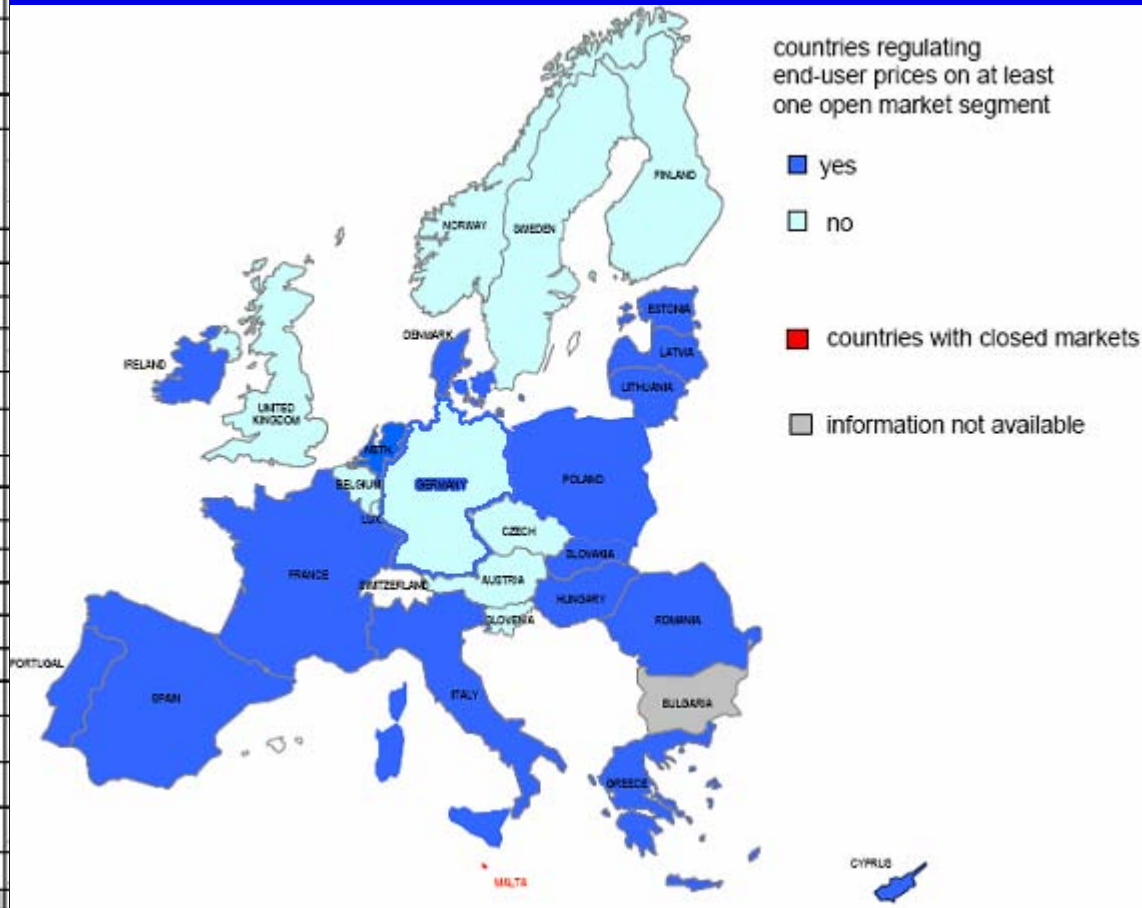
Source: Data from National Regulators, Energy Community Secretariat

# EU Market Opening and Regulation of Prices



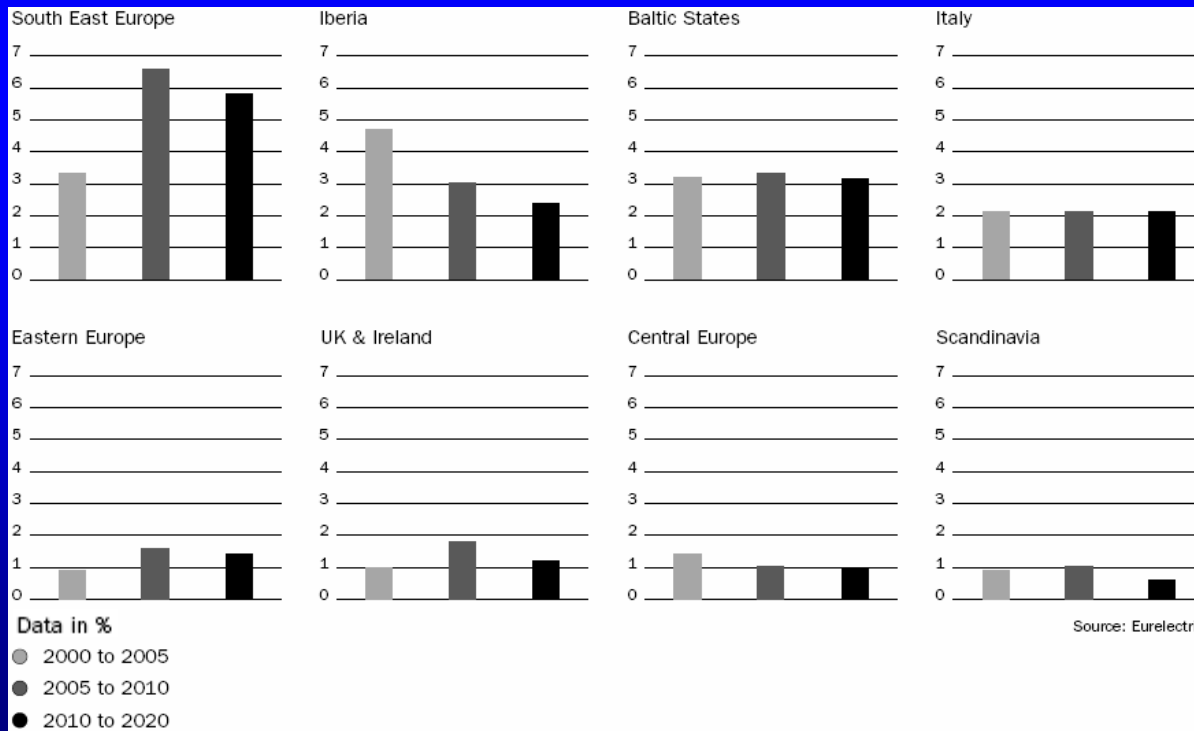
## Electricity

28 countries	Opening	Final opening date	End-user regulated prices in open market	Who can be supplied at end-user regulated prices
United Kingdom	Complete	1990	NO	
Norway	Complete	1995	NO	
Sweden	Complete	1996	NO	
Finland	Complete	1997	NO	
Germany	Complete	1998	NO	
Austria	Complete	2001	NO	
Denmark	Complete	2003	YES	Households and small businesses
Spain	Complete	2003	YES	All customers
Netherlands	Complete	2004	YES	Households and small businesses
Ireland	Complete	2005	YES	All customers
Czech Republic	Complete	2006	NO	
Portugal	Complete	2006	YES	All customers
Belgium	Except households	January 2007	NO	
France	Except households	July 2007	YES	All customers
Greece	Except households	July 2007	YES	All customers
Hungary	Except households	July 2007	YES	All customers
Italy	Except households	July 2007	YES	All customers
Latvia	Except households	July 2007	YES	All customers
Lithuania	Except households	July 2007	YES	All customers
Luxembourg	Except households	July 2007	NO	
Poland	Except households	July 2007	YES	All customers
Romania	Except households	July 2007	YES	All customers
Slovakia	Except households	July 2007	YES	All customers
Slovenia	Except households	July 2007	NO	
Estonia	Only for intensive and small businesses	2009	YES	All customers
Cyprus	Except households and small businesses	2014	YES	All customers
Malta	Closed			
Bulgaria	NA	NA	NA	NA





- ◆ Rising demand for electricity
  - Improving living standards
  - Economy in Europe is expected to grow
  - Weather conditions





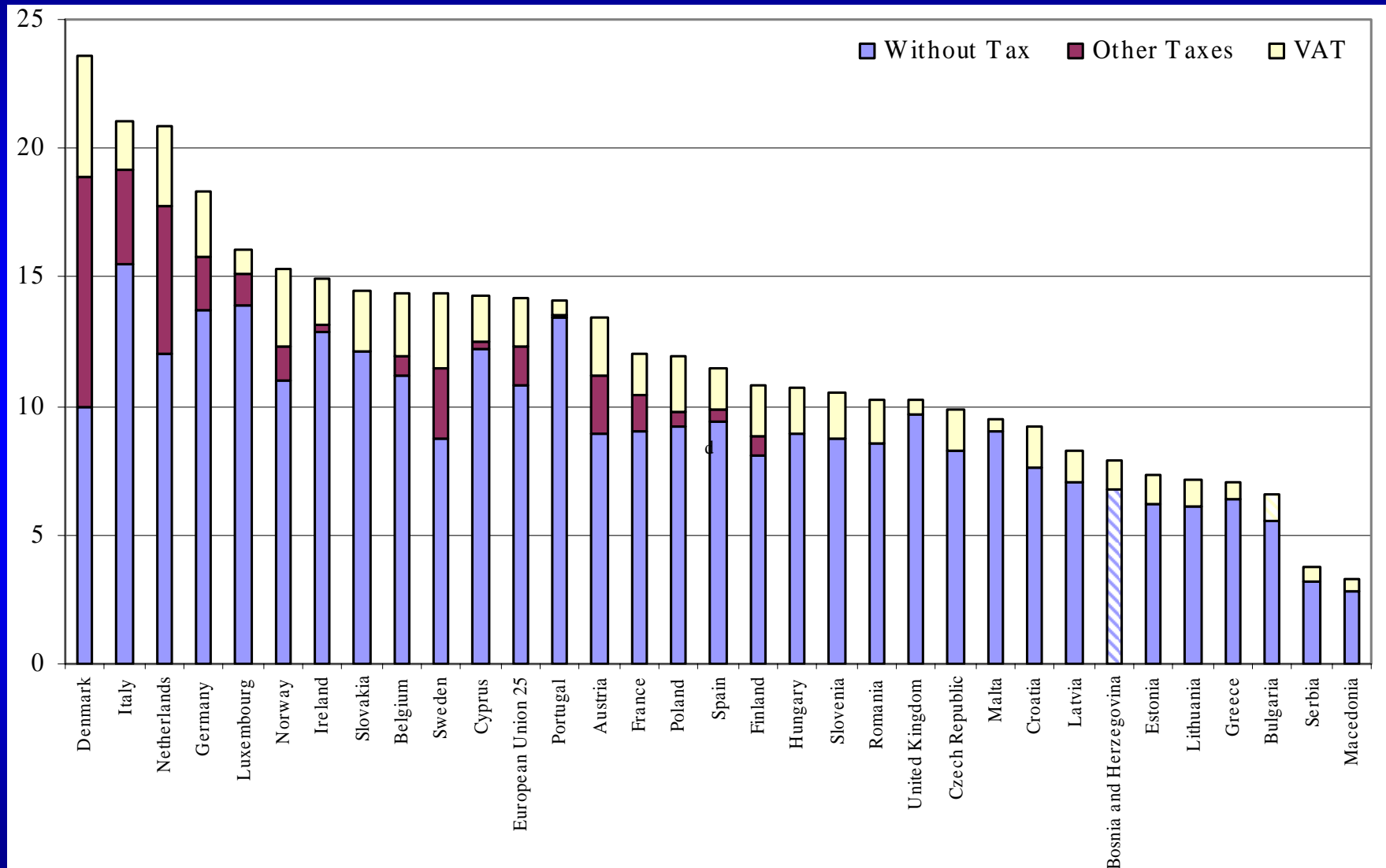
- ◆ *Eurostat 11/2006* : EU-25 electricity prices expressed in euro per kWh increased by 5% for households\* and by 16% for industrial consumers\* between January 2005 and January 2006.
- ◆ *Eurostat 18/2006*: EU-25 electricity prices expressed in euro per kWh increased by 7% for households\* and by 15% for industrial consumers\* between July 2005 and July 2006.



Price for yearly base load for 2008 from the start of trading this product till now.  
EEX – European Energy Exchange, Leipzig

# Electricity Prices for Households

1/2



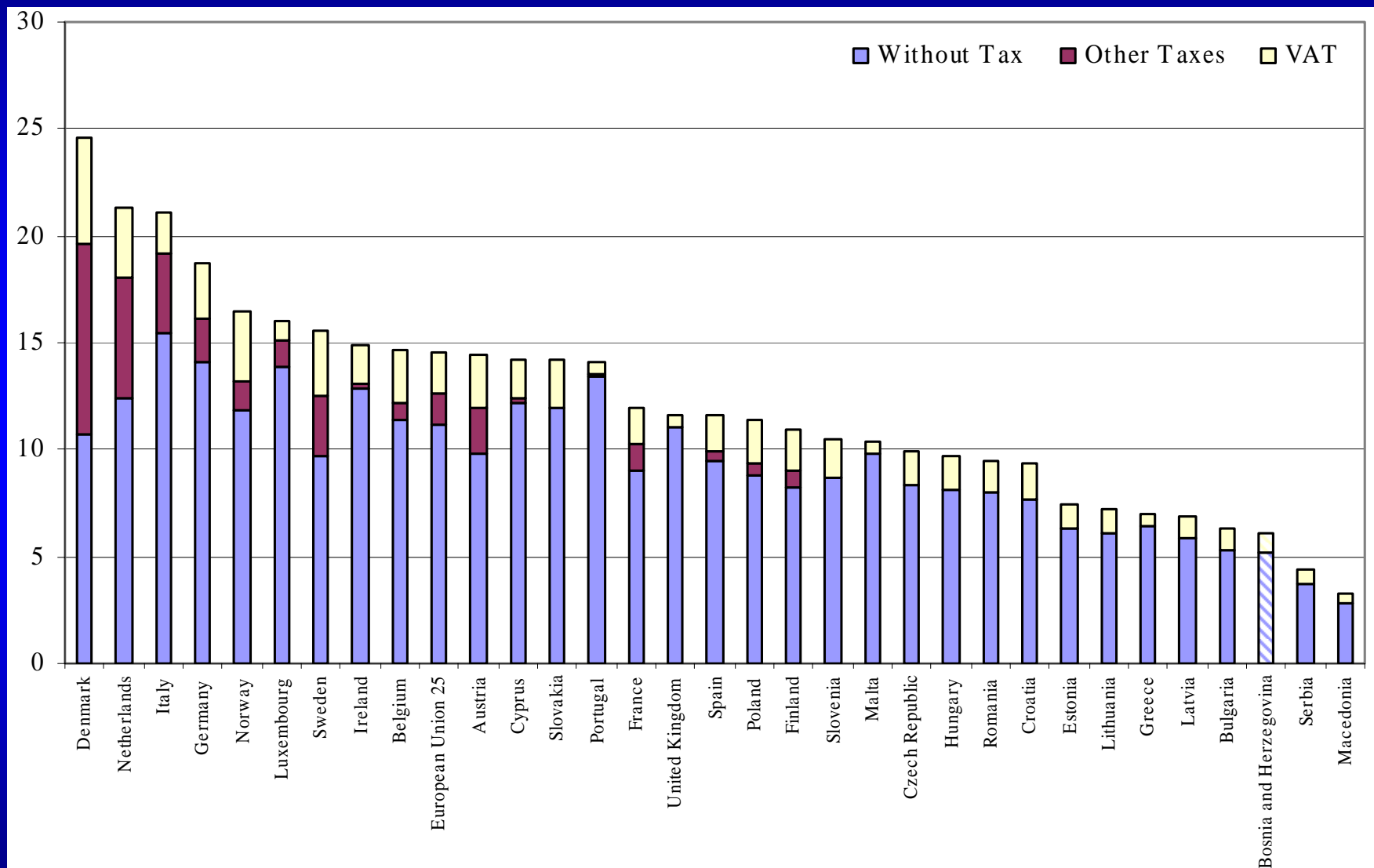
Composition of electricity price for household Dc in € per 100 kWh, on January 1, 2006

Source: Eurostat 11/2006

Household category Dc - annual consumption of 3500 kWh, of which 1300 kWh during night hours

# Electricity Prices for Households

2/2



Composition of electricity price for household Dc in € per 100 kWh, on July 1, 2006

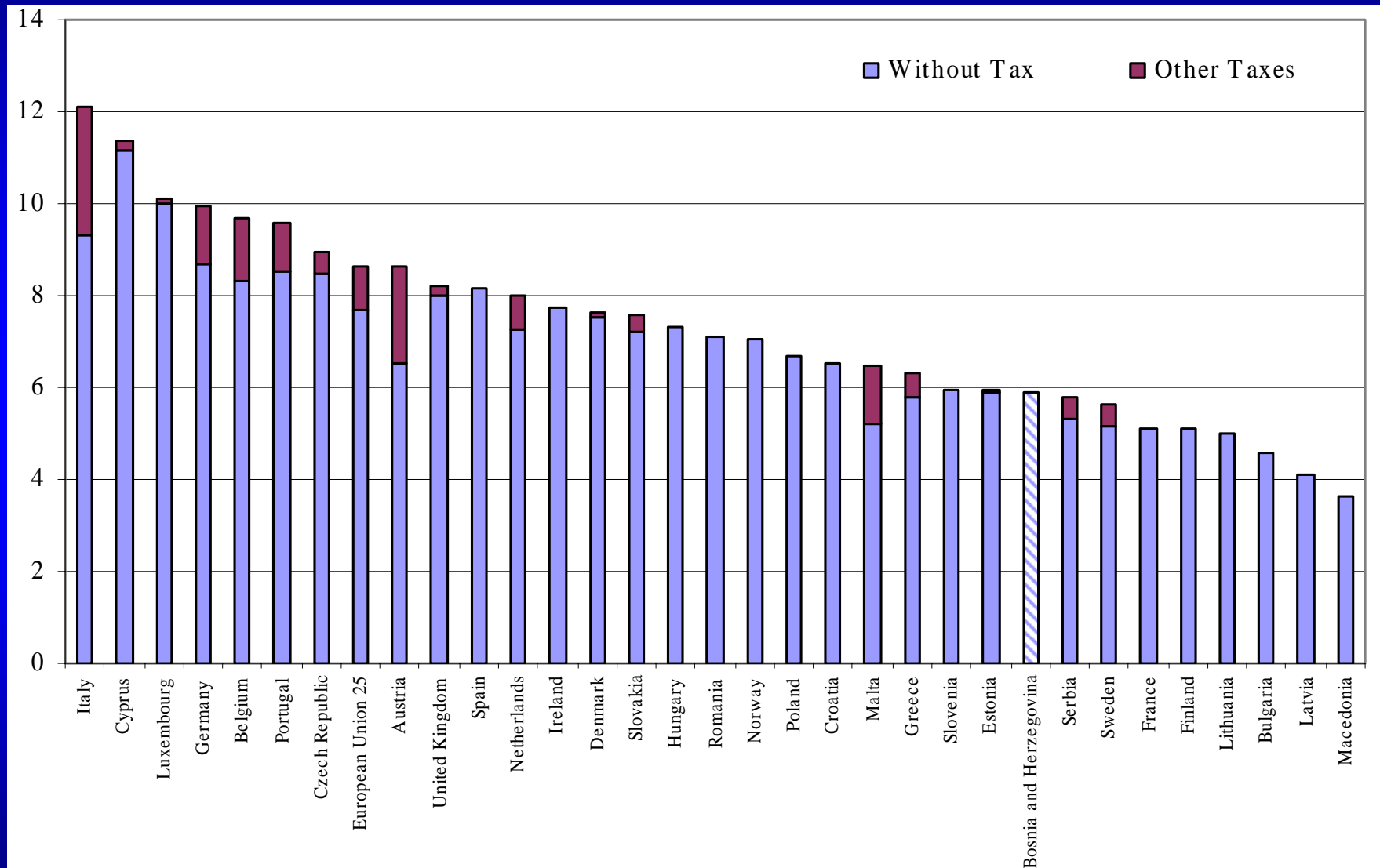
Source: Eurostat 18/2006

Household category Dc – annual consumption of 3500 kWh, of which 1300 kWh during night hours



# Electricity Prices for Industry

1/2

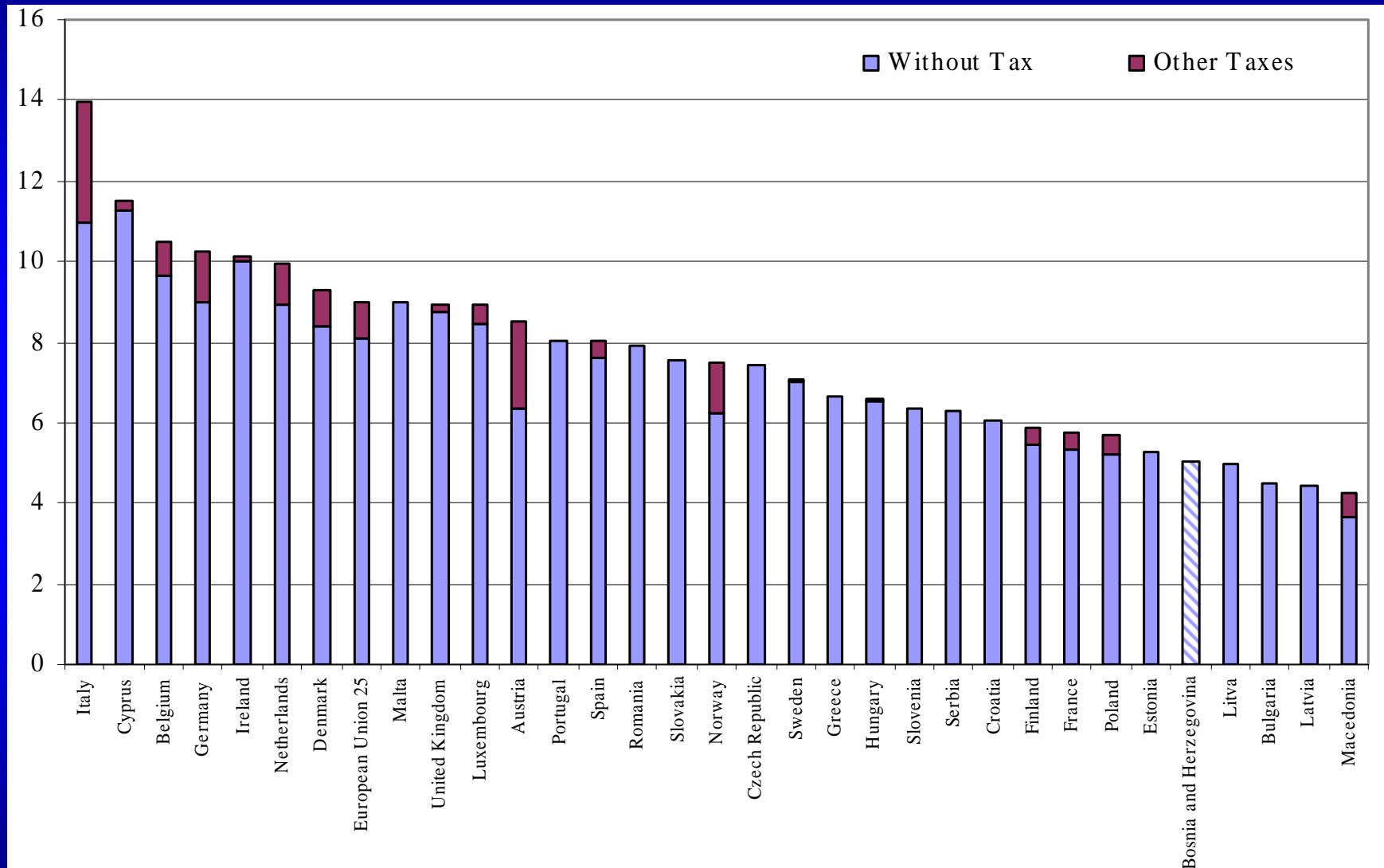


Composition of electricity price for industrial customer le in € per 100 kWh, on January 1, 2006  
 Industrial customer le – annual consumption of 2 GWh and maximum capacity of 500 kW

Source: Eurostat11/2006

# Electricity Prices for Industry

2/2



Composition of electricity price for industrial customer le in € per 100 kWh, on July 1, 2006  
Industrial customer le – annual consumption of 2 GWh and maximum capacity of 500 kW

Source: Eurostat 18/2006

# Regional Perspective (Energy Community)



Energy Community = 27 members of the EU (including Romania and Bulgaria) and Albania, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia and UNMIK Kosovo.

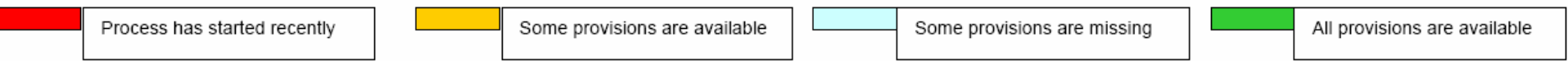
Participants from EU: Austria, Bulgaria, Czech Republic, Cyprus, Germany, Greece, Hungary, Italy, the Netherlands, Romania, Slovakia, Slovenia and the United Kingdom

Observers: Moldova, Norway, Turkey and Ukraine

# Energy Community Characteristics



	Public Service Obligation and Customer Protection	Monitoring of Security of Supply	Technical Rules	Generation	Unbundling Provisions and Access to Accounts	Third Party Access	Market Opening	Cross Border Trade Mechanism
Albania	Some provisions are missing	All provisions are available	All provisions are available	Some provisions are missing	Some provisions are available	All provisions are available	Process has started recently	Some provisions are available
Bosnia and Herzegovina	Some provisions are available	All provisions are available	All provisions are available	Some provisions are missing	Some provisions are missing	All provisions are available	All provisions are available	Some provisions are available
Bulgaria	Some provisions are missing	All provisions are available	All provisions are available	All provisions are available	Some provisions are missing	All provisions are available	All provisions are available	Some provisions are available
Croatia	Some provisions are missing	All provisions are available	All provisions are available	All provisions are available	All provisions are available	All provisions are available	All provisions are available	Some provisions are available
The former Yugoslav Republic of Macedonia	Some provisions are available	All provisions are available	Some provisions are available	All provisions are available	All provisions are available	All provisions are available	Process has started recently	Some provisions are available
Montenegro	Some provisions are available	All provisions are available	Some provisions are available	All provisions are available	Some provisions are missing	All provisions are available	Process has started recently	Some provisions are available
Romania	Some provisions are missing	All provisions are available	All provisions are available	Some provisions are missing	Some provisions are missing	All provisions are available	All provisions are available	Some provisions are missing
Serbia	Some provisions are missing	Some provisions are missing	Some provisions are available	All provisions are available	Some provisions are missing	Some provisions are missing	Process has started recently	Some provisions are available
UN Interim Admin. Mission in Kosovo	Some provisions are missing	All provisions are available	Some provisions are available	All provisions are available	All provisions are available	All provisions are available	Process has started recently	Some provisions are available
<i>Regional perspective</i>	Some provisions are missing	All provisions are available	Some provisions are available	Some provisions are missing	Some provisions are missing	All provisions are available	Some provisions are available	Some provisions are available



Source: Energy Community Secretariat  
 REPORT ON THE IMPLEMENTATION OF THE TREATY ESTABLISHING THE ENERGY COMMUNITY  
 May 30, 2007



*Acquis* related work in progress on the *Road Maps* and the *Action Plans* of the Contracting Parties

Main work in progress issues	Albania	Bosnia and Herzegovina	Bulgaria	Croatia	The former Yugoslav Republic of Macedonia	Montenegro	Romania	Serbia	UNMIK
Customer protection	X	X			X	X			
Authorisation procedures for new generation capacity	X	X				X			
Technical rules					X	X		X	X
TSO unbundling	X		X	X		X			
DSO unbundling (network operation and supply)	X	X	X		X	X		X	X
Development of the Market Operator's functions	X			X		X			
Eligibility status	X				X	X		X	X
Allocation of cross border transmission capacity	X	X	X	X	X	X		X	X
Participation in the ITC mechanism				X					X

Source: Energy Community Secretariat  
 REPORT ON THE IMPLEMENTATION OF THE TREATY ESTABLISHING THE ENERGY COMMUNITY  
 May 30, 2007



Market related work in progress on the *Road Maps* and the *Action Plans* of the Contracting Parties

Main work in progress issues	Albania	Bosnia and Herzegovina	Bulgaria	Croatia	The former Yugoslav Republic of Macedonia	Montenegro	Romania	Serbia	UNMIK
Further structural development of incumbents	X	X	X					X	X
Generation unbundling and privatisation	X		X						
Restructuring and consolidation of the distribution companies before unbundling and privatisation	X								X
Business performance indicators, collection rate, reduction of losses	X				X	X			X
Market monitoring, including imports	X	X	X	X	X	X		X	X
Transparency of information related to market operation (i.e. TSO web pages)	X	X	X	X	X			X	X
Market rules	X				X	X		X	X
Application of technical measures and business procedures for customer switching	X	X	X	X	X	X		X	X
Remote automatic meter reading on a wide scale		X		X					
Balancing market and auxiliary services market	X			X	X	X		X	X
Development of cost-reflective tariff methodologies, including ones for balancing and auxiliary services	X	X			X	X		X	X
Prediction of correct load profiles for different customer groups for further development of tariff methodologies		X		X					

Source: Energy Community Secretariat  
 REPORT ON THE IMPLEMENTATION OF THE TREATY ESTABLISHING THE ENERGY COMMUNITY  
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# THANK YOU FOR YOUR ATTENTION!

Edin Zametica, M.Sc. E.E.

Chief of Staff

State Electricity Regulatory Commission

Bosnia and Herzegovina

[ezametica@derk.ba](mailto:ezametica@derk.ba)

[www.derk.ba](http://www.derk.ba)

Tel: +387 35 302060

Fax: +387 35 302077