

# **Power Sector Developments in South Eastern Europe – Towards a Regional Electricity Market**

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# Overview

- **Regional Characteristics**
- **National Market Designs**
- **Regional Electricity Market**
- **Summary**

# Regional Characteristics/ Primary Energy

- Limited resources in coal (lignite with low calorific value), which cover about 20 % of the needs in primary energy resources
- Insignificant extraction of domestic oil and natural gas (strong dependence on Russian gas)
- High share of imported primary energy resources - about 35%
- Relatively high electricity intensity of produced GDP market

# Regional Characteristics/ Supply and Demand

Parameter	Peak Demand MW	Energy Demand TWh	Installed Capacity MW	Production Mix (% of annual energy production)
Albania	1200 MW	5,5 TWh gross production	1670 MW	TPP - 4 %, HPP - 96 %
Bosnia & Herzegovina	1600 MW	10,5 TWh gross production	4000 MW	TPP - 49 %, HPP - 51 %
Bulgaria	6700 MW	41,5 TWh gross production; 26,2 TWh end-user consumption	10100 MW	NPP - 40 %, TPP - 52%, HPP - 8 %
Romania	7500 MW	52,6 TWh gross production	18500 MW (available 13000 MW)	NPP - 10 %, TPP - 45 %, HPP - 31 %, Other (AP & CHP) - 14 %
Croatia	2673 MW	15,5 TWh gross production	4012 MW	NPP - 52 %, TPP - 40 %, HPP - 8 %
Greece	9 500 MW	52,2 TWh gross production	12 138 MW	TPP - 90 %, HPP - 10 %
Macedonia	1177 MW	6,3 TWh gross production	1444 MW	TPP - 83 %, HPP - 17 %
Serbia	6564 MW	33,4 TWh gross production	8800 MW	TPP - 73 %, HPP - 27 %
		11,5 TWh 13 TWh gross		NPP - 43 % TPP - 30 % HPP -

# National Market Design / Main Features

- National markets based on bilateral trade, balancing mechanisms and voluntary exchanges (Bulgaria, Slovenia, Romania)
- TSO established or under establishment (Bosnia & Herzegovina, Serbia)
- Privatisation (Romania, Bulgaria)
- Regulators established in most of the countries and in charge of licensing, price regulation, quality of supply regulation and market functioning (Serbia currently under establishment)
- Reasonable degree of regulatory independence ensured through primary legislation

# ional Market Design / Country Review (1)

Slovenia – legislative framework established, restructuring completed, advanced regulation, power exchange

Croatia – legislative framework established, restructuring ongoing, unbundling ongoing, regulation under development

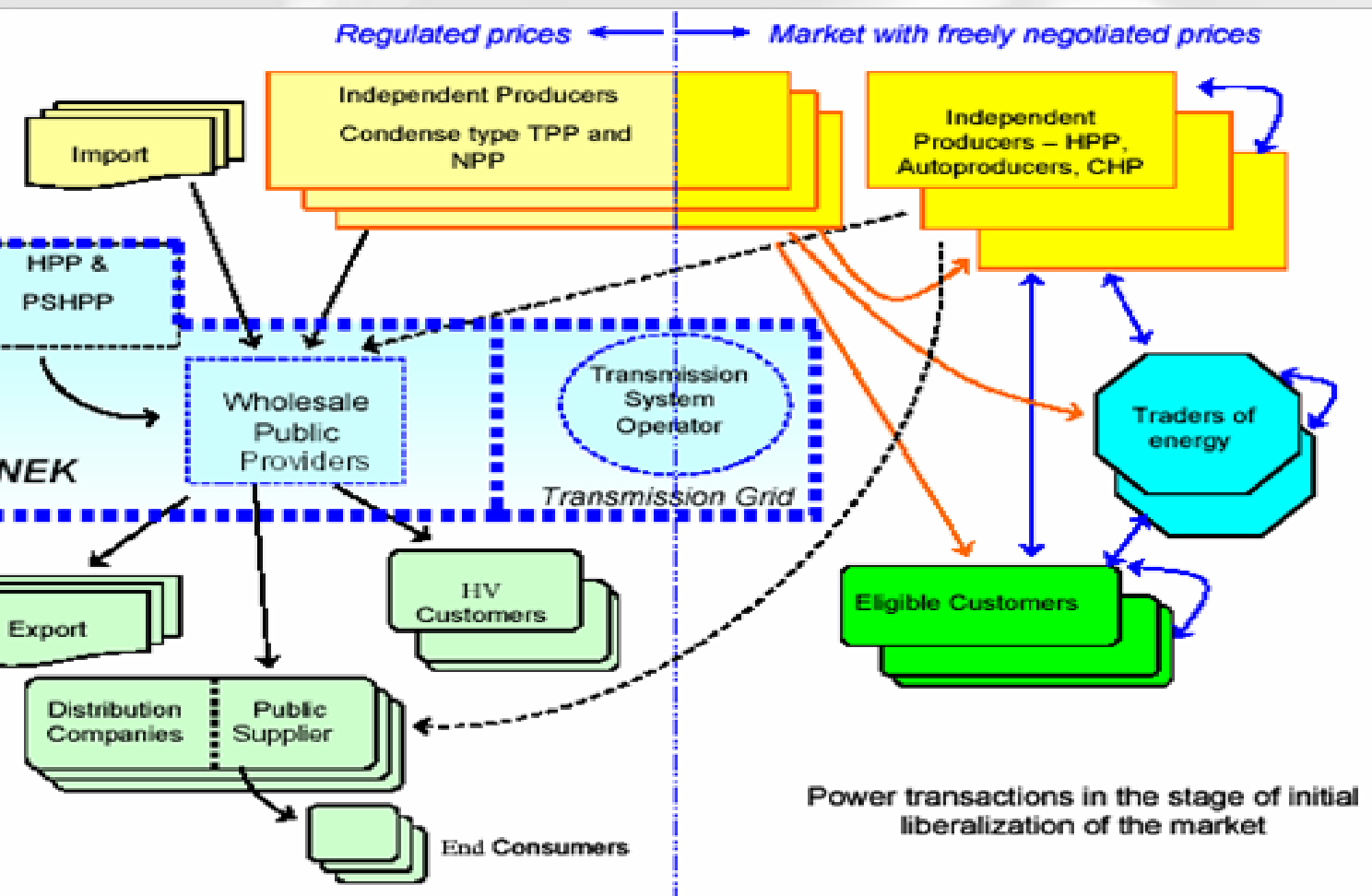
Bulgaria – legislative framework established, restructuring completed, regulation well-developed, balancing market currently implemented, privatisation of distribution companies completed

Romania – legislative framework established, restructuring still ongoing, regulation well-developed, power exchange and balancing market currently implemented, first stage of privatisation of distribution companies completed (2 companies privatised)

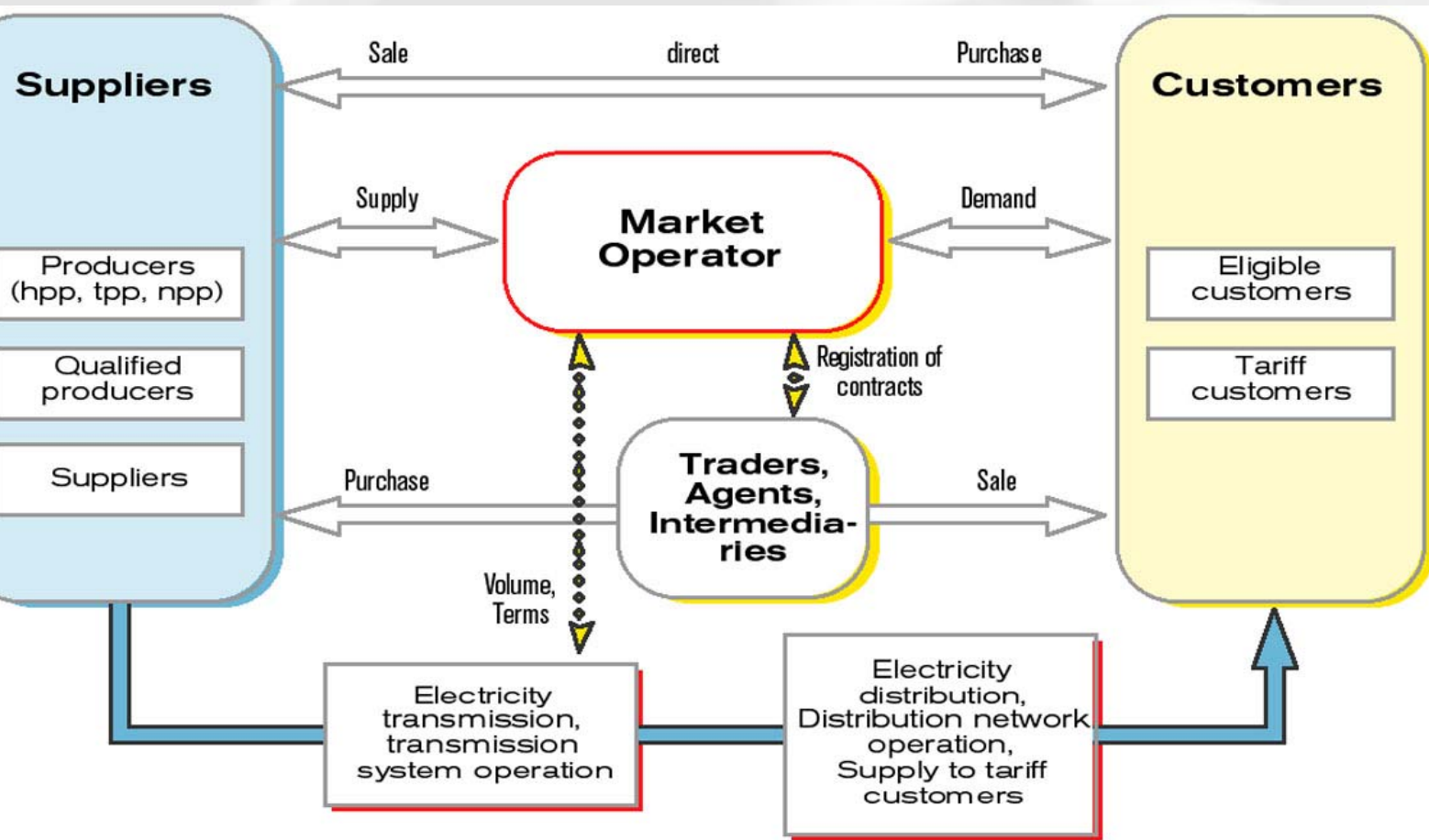
# National Market Design / Country Review (2)

- Serbia – new energy law adopted (significant delay), restructuring just started, regulator not established yet, market/ industry design to be agreed in 2005, codes, rules and regulations to be developed
- Bosnia - restructuring ongoing, regulatory reform ongoing, market / industry design, rules and regulations to be developed
- Greece – legislative framework established, restructuring completed, regulation under development
- Macedonia - restructuring not started yet, regulator not established yet, market / industry design to be agreed, codes, rules and regulations to be developed

# National Market Design / Bulgaria

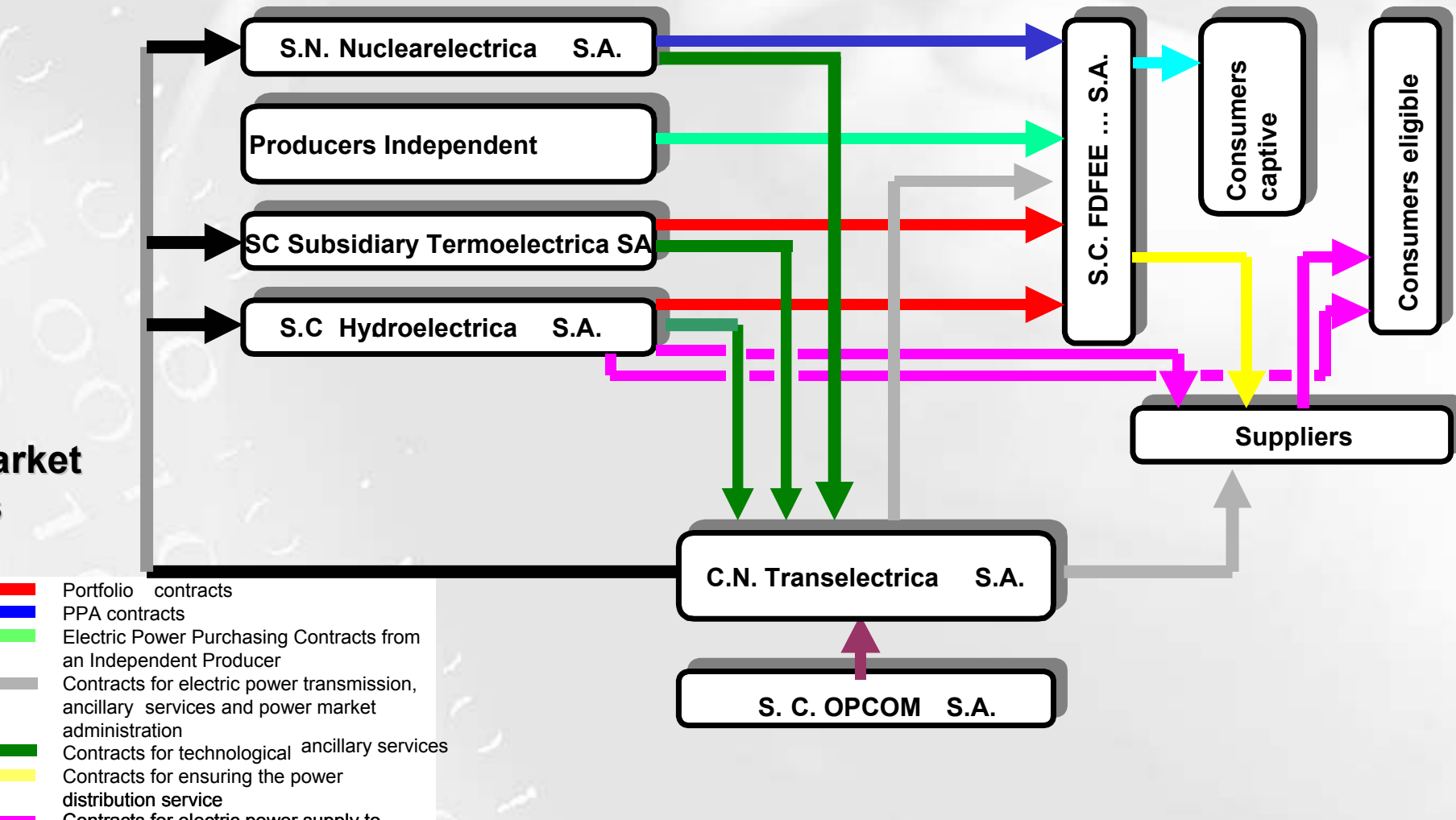


# National Market Design / Slovenia



# National Market Design / Romania (1)

## Commercial Arrangements in 2003



# National Market Design / Romania (2)

Future wholesale market arrangements:

Voluntary day-ahead market participation (power exchange)

Bilateral bidding

Self-scheduling model

Physical notifications submitted to the System Operator

On-the-day balancing market

OPCOM entrusted with settlement obligation

Vesting contracts to replace portfolio contracts

Hydro regulation

Financial markets for derivatives

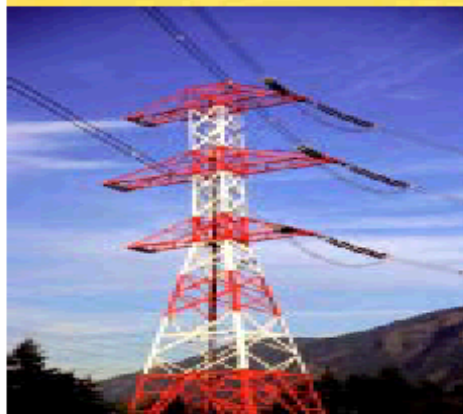
# National Market Design / Challenges

- Industry Organisation - ISO versus TSO (Croatia), ISO establishment in Bosnia
- Industry unbundling (Serbia, Croatia)
- Market design consensus (Serbia)
- Hydro regulation (Romania)
- Eligibility status (Bulgaria)
- Initial contract design (Romania)
- Design of equalisation mechanism for uniform final consumer prices (Romania and Bulgaria)
- Market concentration (Slovenia, Greece)
- Balancing mechanism (all countries)

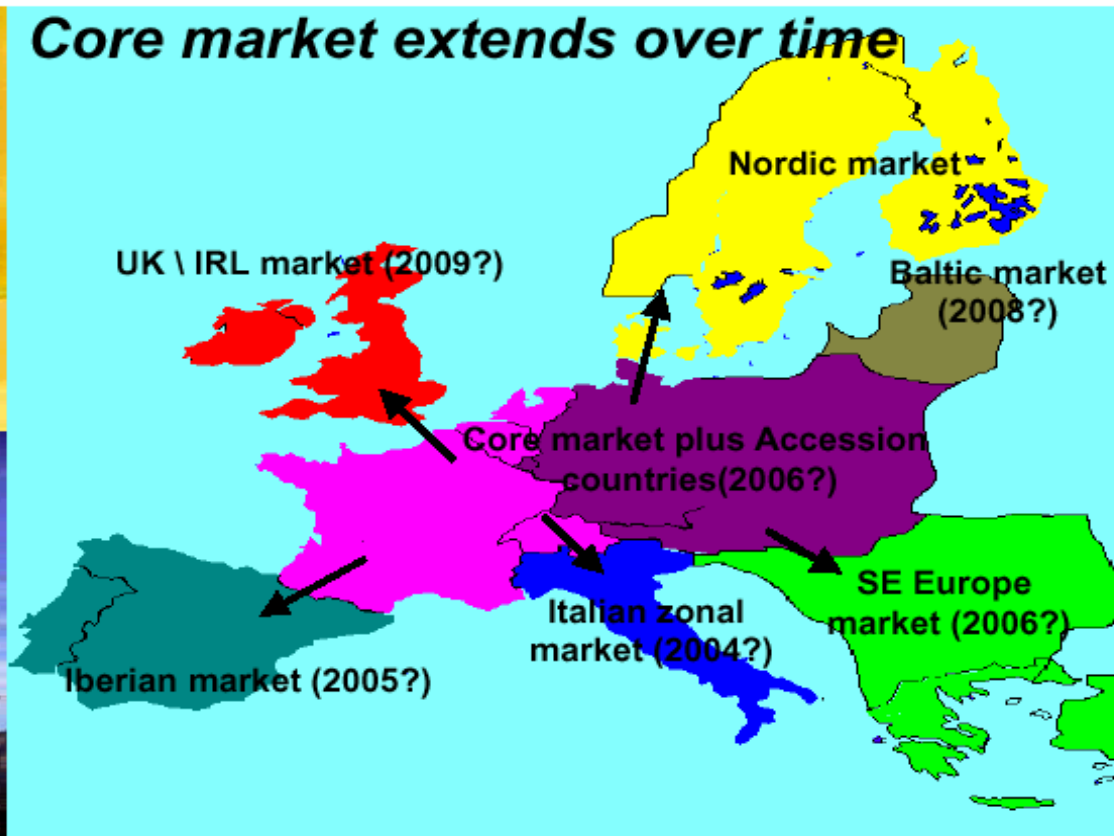
# Regional Market / European Perspective



## Role of regional markets



### Core market extends over time

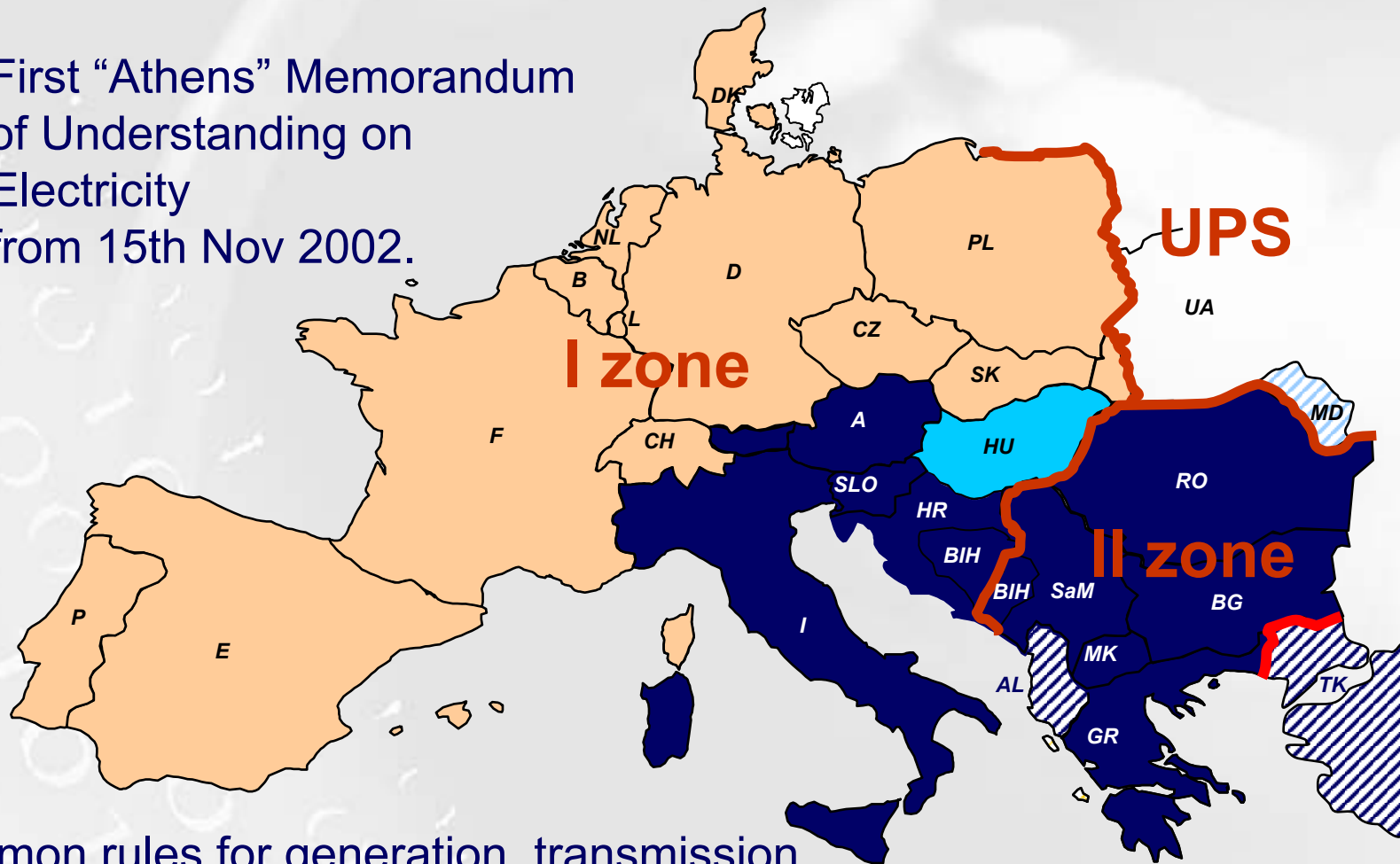


# INTERCONNECTION



# Regional Market / SEE Overview

First "Athens" Memorandum of Understanding on Electricity from 15th Nov 2002.



Common rules for generation, transmission, distribution / supply;  
 Common rules for market operation

# Regional Market / Objectives

- Increase market size and effectiveness of competition
- Enable reserve sharing and enhance the system reliability
- Improve commitment of generation units
- Integrate the Balkan electricity market into European Union's

Internal Electricity Market

# Regional Market / Implementation Steps

- Institutional Compliance of SEE countries with EU Legislation on Internal Electricity Markets within a specific timetable (2005)
- Non-discriminatory regulated TPA
- Unbundling of TSO/DSO
- Establishment of independent regulatory authorities and regional regulator
- Authorization and licensing procedures for generating capacity
- Definition of eligible customers/liberalization of the market
- Development of Grid Code (and market rules)

# Regional Market / Design Strategies

## Option 1 (Bottom-Up)

- Each country develops its own market arrangements while respecting a minimum set of common rules on cross-border trade and on the institutions undertaking the first step. Closer market integration is gradually pursued later on.

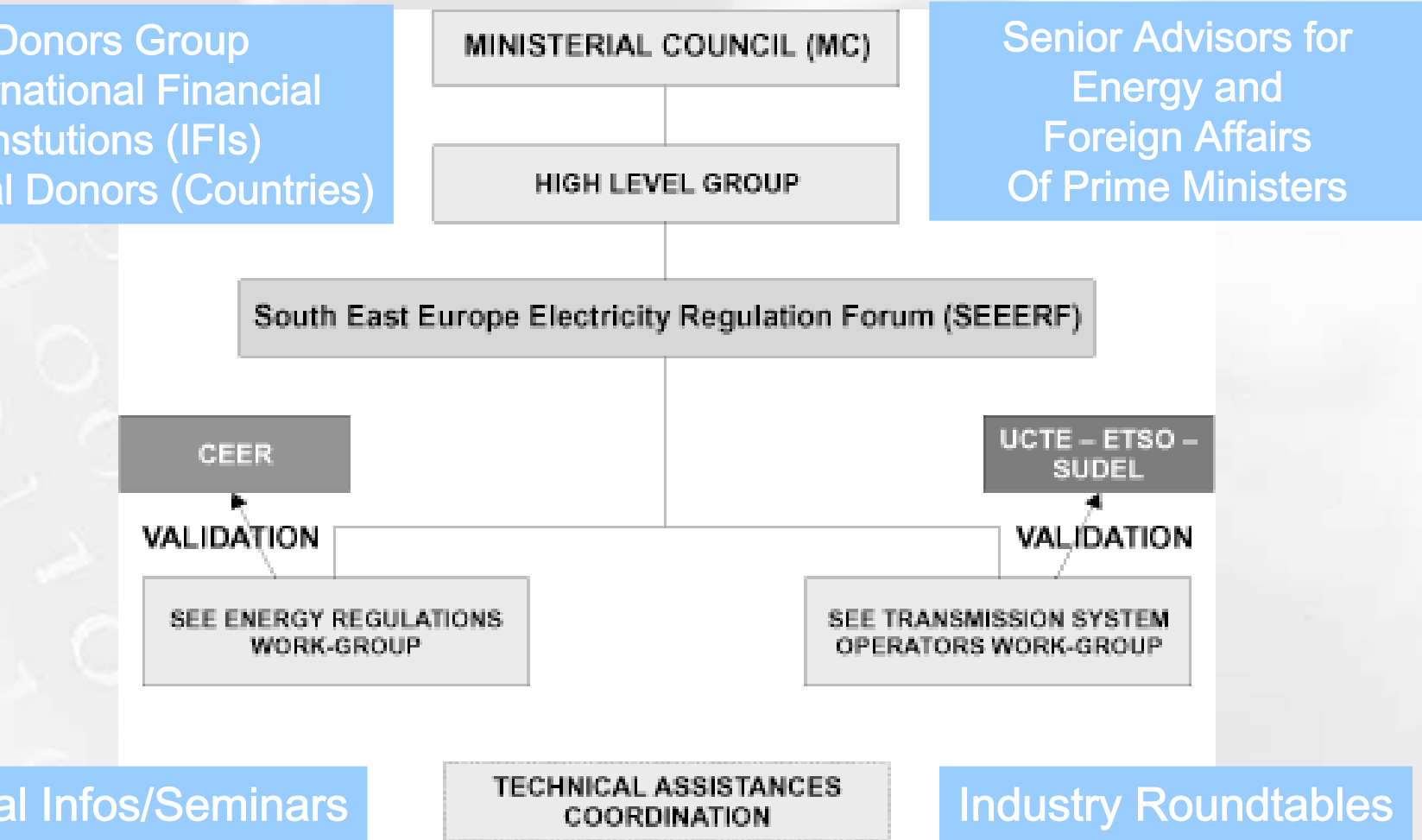
## Option 2 (Top-Down)

- A standard market design model for the organization of the electricity markets of the region is put in place directly. -> preferred option

# Regional Market / Preferred Design

- Two level of operation of SEE REM:
  - a regional commercial level including bilateral contracts (BC) and day-ahead market (DAM) operated by the regional market operator (SEEMO)
  - a physical (real-time) level including national balancing arrangements operated by the national TSOs
- Cross border and congestion management
- SEEERC (SEE Energy Regulatory Committee), leading coordination role of RAE, Greece and AEEG, Italy)
- SEEMO to be established jointly by all national TSOs

# Regional Market / Coordination and Monitoring



# Regional Market / Why to be optimistic?

Large market – demand more than 300 TWh

Low degree of concentration on regional level

Reasonable adequacy of interconnection capacities

Long tradition of cooperative behaviour between the countries

Substantial efforts and achievements on the national markets

# Regional Market / Challenges: Institutional Compliance

Stage and speed of the reform process in SEE countries

General trade-off between functional national institutions and regional harmonisation requirements

Inherited arrangements

Regulatory development and regulatory power to steer market arrangements

# Regional Market / Challenges: Market Arrangements

Market architecture - degree of centralisation and relative autonomy of national TSOs and market operators

- Day-ahead market
- Balancing arrangements
- Transmission access

Access arrangements (e.g. unbundling, network pricing)

- Congestion management
- Transmission pricing
- Transmission price regulation

# Summary

Dynamic restructuring process in all countries, however with different speed and achievements

Political commitment to establish a regional electricity market

Coordination efforts on regional and EU level

Challenges related to institutional framework and market arrangements still to be overcome